Expert Review Comments on the IPCC WGIII AR5 First Order Draft – Chapter 16

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4122	16					Please review chapter 4 section 4.3.8. If you feel that this section contains redundant and/or inconsistent duplications of chapter 16 discussions, please advice chapter 4 authors on how to revise their section.	Noted. Chpater 4 is a framing chapter and chapter 16 provides details.
4145	16					Please add an assessment of the literature on fast-start finance, including findings on flows and their effectiveness	Noted. Will be impleented for SOD.
4147	16					Overall, the chapter covers many important issues. Most issues are described in qualitative terms by answering the question "what is there?" in terms of finance instruments and insitutions. It would b useful to add a more quantitative assessment of "how much is there and to what effect?".	Noted. Will be impleented for SOD.
4148	16					It would be useful if you developed a storyline that guides the reader through your chapter and highlights how all these issues relate to each other and why they are treated in this order. At the beginning of each section, it should be stated how this section relates to preceeding ones.	Accepted. Will be implemented for SOD.
4149	16					If would be useful to synthesize numbers written in the text in more tables and figures.	Taken into account. Will be implemented for SOD.
4150	16					Please state at the beginning of your chapter how it relates to preceeding policy chapters (13-15). It would also be useful to highlight the relation of your chapter to the AR4. What has happened since? How was climate finance treated in the AR4 (if at all) and how do you expand on this assessment?	Accepted. Will be implemented for SOD.
13450	16				16	This section is unacceptably weak, with major gaps in coverage and repeated use of overly simplistic concepts. For example, the section does not address the potential for emissions mitigation in the ag sector of Industrializd Countries or the issue of financing measures to achieve this potential. The section does not address the impact of existing tax and subsidy policies on emissions-intensive activities or the financial potential of reducing or redirecting these subsidies, particularly in the cases of industrial agriculture and factory-like facilities for livestock production.	Taken into account. Section will be rewritten. Potential for ag sector is outside of the scope of this chapter - but can be found in chapter 11.
15410	16					see separate file: "wdavidmontgomery - general comments on chapter 16.doc"	Noted. Comment will be considered in the restructured section on enabling environments as appropriate.
12839	16					Check ODA (Abrev. clear to all readers?)	Will be addressed by the glossary
7502	16					No comments.	Noted.
10614	16					Comments on Chapter 16 as received from Chapter 8 LA Alan McKinnon <Alan.McKinnon@the-klu.org> follow below.	Comment not clear. No comments follow below.
8744	16					The public can also rasie money for climate measures through ordinary taxation	Noted. Addressed in SOD.
8745	16					Effective governance is also for getting those providing the finance (especially in developed countries) to provide more finance/and not cut of the finance stream.	Noted.
16428	16					All finance figures should be reported in constant USD values (e.g. 2010 USD values) to make them comparable (or at least it should be noted if current USD are used) -> in most of the cases throughout the whole text, it does not become clear whether current or constant USD values are used (notable exception: page 5, line 15) -> why is it important? Take e.g. the USD 100 billion commitment for 2020: will have a very different meaning, if we assume 2020 USD and not 2010 USD...	see comment 12821
2793	16					Throughout this chapter there is a confusion between the public sector funding of the gap in cost between clean energy and polluting energy and the private sector providing investment funds to invest against those "subsidy" mechanisms. This is a common and very damaging mistake which I am afraid permeates the whole chapter in this case. I think the distinction between these two very different things needs to be made early and then applied rigourously throughout. I will highlight a number of examples	Noted. Will considered in rewrite of chapter for SOD.
9969	16					Why in Figure 16.2 the finance developed countries need are even greater than that of developing countries?	Noted. Need to check the scenario and confirm the data for each country group.

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9929	16					Units for the data in the figure should be indicated.	Agreed.
9937	16					The caption of Figure 16.5 is not appropriate, which should be change into "Types of climate change mitigation activities in transportation sector ….".	Will be addressed if the figure is retained.
15411	16					The chapter describes second and third best policies and their deficiencies effectively, and appears to imply that there is a way to encourage financing of low carbon investments in the presence of such policies. The chapter should emphasize this point and start out by saying that without a carbon tax, cap and trade there will be no demand pull for low carbon investment other than state subsidies or other regulatory measures, and the efficiency of these instruments (discussed in ch 14) will determine the macro impact of investment.	Noted. Will be clarified in SOD.
17791	16					the title does not read well	Noted. Will be revised.
8728	16					Besides the many 2030 estimates, more estimates for 2020 and 2050 could be useful, as they are the years discussed in the negotiations. The section would also benefit form a clearer discussion of nthe difference between top-down and bottom-up modelling.	Noted. Depends on data availability.
7376	16					From the UNSG High Level Advisory Group on Climate Finance several "innovative sources" could also be included, such as international transaction taxes, taxes on bunkers, and Special Drawing Rights. It is also unclear if "south-south" is innovative, as it represents the model of direct Government contributions.	Agreed. Will be discussed in SOD.
17789	16					what is the total estimate range and how does it compare with what is needed?	Agreed. Will be discussed in SOD.
8734	16					Why is waste not addressed?	Chapter structure will be revised. Comment no longer relevant.
16462	16					This section (1) is very heterogenic; some determinants are mentioned for some sectors, but not for others, without any reason given for this -> will mention some examples below (2) as it stands now, it is not clear whether the chapter adds additional understanding of the financing problem in each sector -> either you delete this part and refer to the specialized sector chapters of AR5 or you focus much more what the "financing challenges and instruments" are in each sector. (3) the waste sector is missing	Chapter structure will be revised. Comment no longer relevant.
17788	16					at the end provide some indication of the estimates of "total mitigation potential"	Outside the scope of the chapter

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
10615	16					Developed countries:This section makes some strange assertions and is difficult to follow. It claims for example that 'The fragmentation of the transport GHG reduction project results in transaction costs that are generally superior to the climate benefits.' (Presumably by superior they mean higher) This is a very negative statement that grossly under-estimates the cost effectiveness of many GHG mitigation measures in the transport sector. Chap 16 goes on to argue that to address this transaction cost issue 'policies for the transportation sector that are integrated to other sectors are crucial. However, the high cost of this "policy packaging" often receives little attention.' (No substantiation of this latter claim is given). While it is often desirable to incorporate transport within more broadly-based carbon mitigation programmes, their importance seems to be exaggerated here. The statements are also highly generalised and need to be illustrated with specific examples and references. The impression is given that few 'free-standing' GHG-reducing initiatives in the transport sector are worth financing. This is too negative and lacks substantiation. The remainder of this section makes vague comments about the role and types of public funding for carbon mitigation in the transport sector. It concludes with a rather cryptic comment that needs clarification and elaboration: 'In the absence of a strong evolution of the tax base, the increase in rates will be limited, both for political reasons and often because of the application of ceilings or legal limitations, which are set at the central level, to avoid potential local drifting.'	Taken into account. Will be improved in rewrite for SOD.
10616	16					Developing countries: This section relating to the developing world is brief but stronger and more consistent with Chap 8. It recognises that funding can support a range of carbon mitigation measures, most of which we discuss. It foresees an ' immense expected rise in transportation demand in developing countries' and argues that ' given that much of the infrastructure is yet to be built, this is a sector with great potential for mitigation finance opportunities.' An accompanying table, from a German government study, gives examples of the measures, though could have been more closely tailored to the situation in developing countries. Missing from the table is any reference to transport investment in developing countries favouring a modal shift to lower carbon modes. The chapter could have made reference to the MAC analysis done in the transport sector and proposals to internalise the environmental costs of transport which, in addition to altering behaviour, would generate new revenue streams to fund GHG abatement schemes.	Taken into account. Will be considered in rewrite for SOD.
8735	16					One problem with creating credits from REDD+ is that there is a risk of flooding the market with dubious credits.	Outside the scoe of the chapter
8736	16					Unclear how the differnt kinds of means relate to investment, as they in my eyes would not drive investment.	Noted. Will be addressed in SOD.
8737	16					Why are susbidies not mentioned here? They can create barriers to effective implementation, e.g. by providing cheap alternatives to the low-carbon technologies. Why purchase EE technologies if energy is heavily subsidised?	Agreed. Will be discussed in SOD.
18360	16					Please link this discussion to the relevant sections in Chapter 3 (3.12.6) and 13 (13.9.3) to sharpen chapter specific focus and avoid redundancies.	Agreed
3269	16					This section called "Transfer" repeats information from earlier in the report and is not relevant to a chapter on finance. Would suggest rewriting to specifically discuss financing needs or mechanisms for climate-friendly technology transfer.	Accepted.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
3270	16					This section on funding approaches dissucsses FDI and the CDM bu these are small in the range of various ways to fund technology transfer. A broader overview should be given. The section on trade also seems to not fit here, and the TRIPS agreement seems to not be relevant to funding TT.	Noted. Chapter will be restructured.
3271	16					This section only discusses TT in the context of the UNFCCC briefly the GEF, as opposed to the many other ways in which technology transfer occurs and should be broadened.	Noted. Chapter will be restructured.
9060	16					This section attempts to throw light on the obstacle that ineffective governance presents for "an efficient and effective system of finance for mitigation" but it is too polite to state what problems must be overcome in order to obtain effective governance. In fact, the rest of section, which is not too long, can be read as mirroring the nature of the problem, while avoiding stating directly what the issues are. Let me list some of the phrases which describe these obstacles: inadequate volume of finance, politically dependent access to finance, lack of country ownership, proliferation, fragmentation, conditionality, lack of alignment to development strategies. It would useful to state these problems especially in section 16.6.2.1, the international level, in which issues of duplication, complexity, inadequate scale because of project as opposed to program modality, inconsistency among fund mechanisms and objectives, and proliferation have been identified. There are numerous references where these problems have been identified including: United Nations (2009b). World Economic and Social Survey 2009: Promoting Development, Saving the Planet. Sales No. E.09.II.C.1.; United Nations (2010a). World Economic and Social Survey 2010: Retooling Global Development. Sales No. E.10.II.C.1.; World Bank (2010b). World Development Report 2010: Development and Climate Change. Washington DC: The World Bank. There are many others. The approach embodied in the Convention, based on the Westphalian system of states and consistent with the principles on aid effectiveness discovered in Paris in 2005, is that nation-states must be responsible for climate change actions, with differentiated responsibilities between Annex 1 and non Annex 1 countries. Under this framework, international mechanisms must be support and facilitate state actions.	Noted. Comments will be considered in the restructured chapter as appropriate.
8740	16					The Standing Committee under the UNFCCC should also be mentioned here.	Agreed. Will be discussed in SOD.
17790	16					conclusion is somewhat vague, is this intended as an conconclusion	Agreed. Will be addressed in the SOD
4146	16					You conclude that this "weakness leads to fragmentation, duplication of efforts, and more importantly to misdirected efforts and waste of resources". This is a bold statement which is not a problem as long as it can be grounded in the preceeding text and the literature assessed there. It be would useful if you could provide an assessment of the literature on climate finance effectiveness.	Will reshapte the conclusion to reflect new chapter content
8742	16					Brings up new issues which have not been discussed before, which is unhelpful in an conclusion.	Will reshapte the conclusion to reflect new chapter content
9946	16					Still can't figure out the difference between financing approaches mentioned in this section and the ones mentioned in 16.2.2.	Chapter has be restrcutre to reflect this concern.
7562	16					Eco-point system for housing in Japan has to be mentioned: http://www.env.go.jp/en/wpaper/2011/pdf/22_Chapter4-3.pdf For example, insert the following sentences. Global warming countermeasures in the private sector are an issue that the residential sector should work on, and the government can actively encourage energy-saving in terms of housing, which will create an environmental effect that contributes to the establishment of a low-carbon society, and an economic effect that will stimulate new demand in the domestic market.	Noted.

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7563	16					Eco-point system for housing in Japan has to be mentioned: http://www.env.go.jp/en/wpaper/2011/pdf/22_Chapter4-3.pdf For example, insert the following sentences. Global warming countermeasures in the private sector are an issue that the residential sector should work on, and the government can actively encourage energy-saving in the housing sector, which will create an environmental effect that contributes to the establishment of a low-carbon society, and an economic effect that will stimulate new demand in the domestic market.	duplicate of previous comment
15413	16					Planning does not work for development in the poorest countries (see Easterly - The White Man's Burden: Why the West's Efforts to Aid the Rest of the World Have Done So Much Ill and So Little Good, 2006.), and most democratic middle income have avoided reliance on central planning, so how can the conclusion that planning will be either necessary or successful to bring about mitigation investments be supported?	Accepted, will be reworded carefully.
7377	16					Perhaps this could be re-phrased to consider both a 2C and 1.5C goals, noting the uncertainty, but recognising there would probably be a substantial difference. The answer could also be reformatted to more clearly delineate between "what has been currently directed" and "what is needed." Further, under "what is needed" it would be consistent to quote the numbers from 16.2.1.2 - i.e. "Estimates 26 range from USD 380 to 1,215 billion per year in 2030, at a global level; in developing countries 27 incremental investments range between USD 177 and 695 billion per year"	Noted. Chapter will be restructured and comment addressed based on data availability.
7432	16	0				In the 4th IPCC assessment spillover impacts of response measures was a cross-cutting issue, but in this version of the assessment there seems to be no mentioning of it, in spite of its vital importance for developing countries and the clear provisions in the UNFCCC for the minimization of its negative impacts through the appropriate design and implementation of policies as well as through funding and transfer of technologies.	Outside the scoe of the chapter
9406	16	0				Related to cross cutting issue, the following paper can provide useful information on GHG emissions by region (e.g. Japan, China, India, All Asia, USA, EU27, Russia, Annex I , Non Annex I and world) and by technological mitigation cost (e.g. 0, 25, 50, 75, 100, 125, 150, 175, 200 US$/tCO2) in the year 2020 and 2030, based on bottom-up type analyses. Hanaoka, et al, 2012 also provides technological mitigation potentials by region, by cost and by sector in the year 2020 and 2030. These discussions may be fit into this chapter, but information on this paper is missing. Dr. Hanaoka can help provideing data for this chapter. Hanaoka, T., Kainuma, M. (2012) Low-Carbon Transitions in the World Regions: Comparisons of Technological Mitigation Potentials and Costs in 2020 and 2030 by bottom-up analyses. Sustainability Science, 7(2):117-137, DOI:10.1007/s11625-012-0172-6	Noted, but outside the scope of the chapter. More relevant for sector chapter.
14258	16	0				I would expect it to be natural to here discuss the relationship between the negotiated abatement-commitments/quotas and the incentive to develop new/green technology: On the one hand, tough commitments (small emission quotas) makes it necessary for the member-country to invest in new technology. On the other hand, the anticipation of future bargaining rounds can create a fear to be held up then, since today's investments will then be "sunk", and this hold-up problem can reduce the incentive to invest in green technology (such as abatement technology or renewable energy sources). These relationships are analyzed in a recent working paper (Harstad, Bård, 2012, "The dynamics of climate agreements").	Noted. Also relevant for chapter 13.
16356	16	0				Please consider using the following paper in your assessment: The world at a crossroads: Financial scenarios for sustainability Jofre Carnicer and Josep Peñuelas Energy Policy 48, 2012p 611-617	Noted.

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13429	16	0				In a number of places, the language in the chapter is vague and inconsistent concerning the definitions of incremental costs	Taken into account: LAs and CLAs will ensure consistent application of terminology and definitions across the SOD.
18256	16	0				In a number of places, the language in the chapter is vague and inconsistent concerning the definitions of incremental costs	see comment 18256
18286	16	0				Although many useful references are cited in this chapter, on balance the chapter is weak and incomplete. The chapter as written is "not ready for prime time." Coverage of activities and institutions related to climate-finance in developing countries are especially poorly covered. In its current form, I do not believe that this chapter measures up to the previous standards of research excellence found in earlier IPCC Assessment Reports.	Taken into account: LAs and CLAs will do deeper research on developing country issues and broaden the range of literature.
9047	16	0				The chapter can be clearly improved with greater self-reflection and integration of its substantive content. For example, the listing of the relationship of adaptation to mitigation in pages 38, lines 1 to 26, is simply a listing, without any attempt to relate each of the ideas to each other. There are many instances of incomplete writing, incomplete expressions. For example, in page 32, lines 27 to 28: "Even though the CDM bears weakness, it is one way to facilitate the technology transfer to Developing Countries." "EE" is never defined in the text. Etc.	Taken into account: will be considered in rewrite of chapter towards SOD.
12821	16	0				General Remark: It is unclear what the basis for calculating the monetary values is. E.g. does billion dollar in 2050 include an inflation rate and is billion dollar in year X in study Y equal to billion dollar in year X in study Z with regard to the underlying basis for calculation. This is also relevant in the context of required subsidies.	Taken into account. Standard units in accordance with WGIII provisions will be used.
8723	16	0				A good chapter but with room for improvement. Generally speaking, the different kinds of costs (incremental costs, incremental investments, total investments) clóuld have been explained better in the beginning, and subsequently used more consistently throughout the chapter. Also the concept of creating a global carbon price could be addressed more explicitly.Discussion of the importance of mainstreaming climate measures into ODA would also be useful. Finally, most of the discussions seem centred on the energy sector, whereas industrial emissions (especially non-CO2 emissions) are a bit overlooked. F	1. see comment 12821 2. Noted: will be considered in rewrite. 3. Taken into account: Sector coverage and coverage of gases will be enhanced in rewrite for SOD.
14351	16	0				In finance, issue on developed countries and those on developing countries are different. Developed countries can be financed with in their won country and/or international market. On the other hand, most of the developing country may be rely on financial assistance from developed countries and multilateral agencies. In this sense, nature of discussion on finance deems different between developed and developing countries. Therefore, this chapter should be devided into two: developed countries part and developing countries part.	We agree that te circumstances of developed and developing countries differ with respect to climate finance. They will be discussed in the chapter. But we do not believe that this is not the mostt effective way to organize the chapter.
8075	16	0				the incremental cost estimates referred to lack the information from which stabilisation scenario (xx ppm, 2°C etc.) the estimates are derived	Accepted. Will be improved in rewrite.
8083	16	0				it is not clear, why in so many cases reference is only made to mitigation finance and not also to adaptation finance, reference on page 13 line 23 does not make this sufficiently clear	Noted. The focus of this chapter is mitigation. The link to adaptation is made in FOD sec tion 16.7

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3186	16	0				This chapter has very little data that helps readers ground the climate investment discussion into broader investment questions—such as total investment levels, flows, the role of MDBs vs private capital, etc. We need an iconic figure on this and serious discussion. (FAQ 16.1 is a notable exception—it does, albeit thinly, discuss such realities.) The chapter has almost no discussion of the risk mitigation tools and other factors that have the largest impacts on baseline levels of private finance as well as possible increments in private finance for climate.	Taken into account. More emphasis will be given in rewrite for SOD. Risk mitigation will be further considered in SOD.
9930	16	0				A section about the influence from financial crisis and the relationship between financial crisis and climate financing should be added, as a response to the chapter 1, in which financial crisis is mentioned as one of the issues learned after AR4.	Accepted. Based on the limited amount of available literature some text will be added to SOD.
9933	16	0				When taking USD as the unit for economic numbers, please make sure whether it's in current USD or USD in specific year . Especially when data are from different model, it's important to make all numbers in an uniform unit.	see comment 12821
9935	16	0				As one of the innovative sources for climate financing, taxs from international aviation also need to be introduced	Accepted.
9936	16	0				Classification of 16.2.3 is not so reasonable. When talking about current sources and potential sources, I am afraid that there are some overlaps, for example, carbon tax. So maybe it should be reorganized.	Accepted.
9942	16	0				In this chapter, if a section about quantitive researches on climate financing and trade-offs between mitigation and adaptation can be supplemented, it would be helpful. Otherwise, this issue should be fully discussed in chapter 6.	Noted. Availability of literature will be examined.
9943	16	0				The relationship between this chapter and chapter 6 is unclear. Readers want to know the finace amount in each scenarios mentioned in chapter6.	Noted. A process to improve to consistency between chapters 6 and 16 has been established.
9947	16	0				Financing approaches are stated repeatedly in this chapter, which even makes readers confused if there is a difference when the same approach is mentioned in different section.	see comment 18256
9967	16	0				Since there has been some financing projects, it would be interesting to assess the influence of climate change from such financial flows based on IAMs.	Noted. We will look for such literature.
9968	16	0				Burdening sharing among developed countries is one of the key issues in international financing. And there are some literatures about this. I will submit two papers about the assessment on participations of the US and Australia in the 100 billion commitment pledged in Copenhagen(Houser and Selfe, 2011; Jotzo, et al., 2011).	Rejected. This is outside of the scope of our chapter but treated in other policy chapters.
11054	16	1		53		Chapter16 general comment: The description of the role of public finance (such a Export credit agency with conventional loan, government guarantee etc) is not insufficient. The public finance sector has its catalyze function to mobilize private finance with sensational loan through official dialogue with host country's MOE DOE MOF.These dialogue means capacity building for the host country. see	Accepted.
17237	16	1				This chapter is a welcome addition to the work of WGIII – and could play a significant role in 'speaking finance to the climate community' and 'speaking climate to the finance community'. To do this, the chapter needs to have a stronger focus on how the low-carbon transition intersects with capital markets, the barriers to 'climate finance', how financial stakeholders can be incorporated into policy design and how climate risks can be better addressed by finance and investment.	Accepted. The spirit of this comment will be considered in rewrite of the chapter.
17238	16	1				At its heart, effective climate finance ensures that the conventional risk:reward in all financial decision-making dynamic is transformed so that mitigation is assured. Historically, the risk:reward balance had weighed against low-carbon options; this has been remedied to some extent through policy intervention to internalize external costs. But high carbon options in nearly all economies are often seen to have a better risk:reward ration than low-carbon options.	Noted.

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17239	16	1				Global Capital MarketsIt is important to set out the size and structure of global capital markets in terms of key asset classes (equities, bonds, private equity, infrastructure, debt etc). The latest McKinsey Global Institute Report estimated that the total size was USD212trn: it is critical to incorporate this scope as it then places the challenge of 'climate finance' in context – and highlights that the scale of funding required is relatively small (eg 16.2)	Accepted. Quantitative information will be added in rewrite of chapter.
17240	16	1				http://www.mckinsey.com/insights/mgi/research/financial_markets/mapping_global_capital_markets_2011	part of comment 17239
17241	16	1				The relatively low amount is particularly striking if one considers that the share of investment in GDP has been historically low in recent year and will need to rise in coming decades: see Jorgen Randers, 2052 (2012) for some useful estimates.	part of comment 17239
17242	16	1				Key Financial Stakeholders: It is also important – perhaps diagrammatically – to set out the key actors in climate finance, and how they comprise the investment chain from:	part of comment 17239
17243	16	1				- asset owners (pension funds, insurance companies, sovereign wealth funds, foundations, states, private individuals)	part of comment 17239
17244	16	1				- actuaries and consultants which advise asset owners on strategic issues, including climate change See Mercer, Climate Change Scenarios – Implications for Asset Allocation, 2011	part of comment 17239
17245	16	1				- asset managers, across equity, bonds, private equity etc	part of comment 17239
17246	16	1				- banks, who provide investment analysis, raise capital for new assets in the form of equity and debt, provide leveraged finance drawn their own balance sheets and trade existing investment instruments	part of comment 17239
17247	16	1				- corporations,	part of comment 17239
17248	16	1				- ultimate assets and projects	part of comment 17239
17249	16	1				The OECD's Financing Climate Change Action programme also has some useful papers that frame the agenda	Noted. Will be checked for review.
17250	16	1				http://www.oecd.org/env/climatechange/financingclimatechangeaction.htm#Papers___pubs	part of comment 17249
17251	16	1				One stakeholder that is omitted from the chapter at the moment is the individual consumer/housbehold as source of finance/investment. CF is not just an institutional issue; HSBC estimates that a third of the spending on low-carbon energy supply and consumption by 2020 will be by households (eg building retrofit; cleaner vehicles – HSBC, Sizing the climate economy, 2010 available at	Acccepted. Will be addressed.
17252	16	1				http://www.longfinance.net/programmes/london-accord/392.html).	see 17251
17253	16	1				Climate Finance: It is important to re-examine the concept of 'climate finance'. The Executive Summary (l.33) admits 'there is no agreement on what qualifies as CF', but the chapter perhaps unconsciously assumes in many places that it is in effect public finance. At the heart of the problem lies uncertainty as to what climate finance includes in its orbit. I would suggest the following: ' Climate finance is the allocation of financial assets to activities that enable mitigation and adaptation' The important feature is that this leads to the possibility of measurement around defined investment themes (eg renewables, energy efficiency, public transport etc) and actors along the lines of the CPI report. A secondary issue is the stages of CF in terms of primary finance (eg funding a wind farm) and secondary finance (eg selling on this wind farm to a pension fund).	Taken into account. SOD will provide definition for climate finance.
17254	16	1				It is critical to recognize that this definition does not include – and nor does the draft chapter – a discussion on 'climate finance risks', in other words the risks that the transition to a low-carbon, resilient economy pose for finance and investment: I will address this in my final section. I would also suggest that the chapter is more disciplined in defining the elements of CF, breaking it into the following categories. - Type 1: domestic private climate finance; - Type 2: domestic public climate finance; - Type 3: international private climate finance	Noted. Will be refelcetd in the revised draft.
17255	16	1				- Type 4: international public climate finance	see comment 17254

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17256	16	1				This categorization is perhaps implicit in parts of the chapter – but it would be valuable to have an iron-cast framework that applies throughout.	see comment 17254
17257	16	1				It is also important to clear up some confusion in the language: 'financial flows' refer only to cross-border Type 3 & 4 CF. In addition, in the discussion of innovative sources (16.2.3.2) this is effectively only about innovative sources of public CF. And finally, private finance often funds the public in large measure through public bond issuance, for example, either through sovereign bond issuance and/or issurance from public financial institutions. This is important to recognize as there is growing demand from asset owners for 'climate bonds' (see Climate Bonds Initiative/HSBC, Bonds and climate change - the state of the market in 2012).	see comment 18256
17258	16	1				The key point that needs to be highlighted in the next draft for 16.8 on Gaps in Knowledge is the absence of a common system used by public and private sectors alike for categorizing and monitoring	Taken into account. To be considered in rewrite.
17259	16	1				Investment, Costs and Returns: The significant insight in the second paragraph of the Executive Summary of the difference between cost and investment (I.6>) is sadly lost in the rest of the chapter. One structural feature of the low-carbon, green economy is that it substitutes capital for resource use and carbon pollution: the low-carbon economy is thus generally a more capital-intensive economy, with one of the key strategic issues being how to raise this additional upfront capital, which will then deliver a flow of financial returns over the life of the investment. It is critical to communicate to policymakers and financiers/investors that CF investments envisaged yield a positive return, a point that has been emphasized in successive IEA World Energy Outlook's but appears to be omitted in the current section on scale 16.2.	see comment 18256
17260	16	1				Barriers to Climate Finance: The chapter lacks a clear analysis of what is preventing finance to flow at sufficient scale and speed to the right places for comprehensive mitigation. I would suggest the following	Taken into account. Will be accomodated in rewrite for SOD.
17261	16	1				- structural market failures (eg the externalities identified in previous chapters of AR5, as well as the policy failures such as fossil fuel subsidies)	part of comment 17260
17262	16	1				- financial market failures: these would include short-termism, bounded rationality, regulatory blindness, perverse incentives, obsolete interpretations of fiduciary duty, institutional inflexibility, transparency and path dependency. These are the barriers that this chapter should focus on removing.	part of comment 17260
17263	16	1				To highlight some of these in more detail	part of comment 17260
17264	16	1				Short-termism: This has been highlighted as a structural flaw in financial markets for decades, making it hard for investors to effectively assess and act upon the durational challenge of climate change. Financial myopia was identified by J.M Keynes as a key reason for structural imbalances in Chapter 12 of The General Theory of Money and Employment published in 1936. "It is the long-term investor, he who most promotes the public interest, who will in practice come in for most criticism wherever investment funds are managed by committees or boards or banks. For it is in the essence of his behaviour that he should be eccentric, unconventional and rash in the eyes of public opinion." This reality has been exacerbated in recent years, and quantitatively analysed by Andrew Haldane, Director of Financial Stability at the Bank of England: the market on its own will not act rationally in a temporal perspective http://www.bankofengland.co.uk/publications/Pages/news/2011/043.aspx	part of comment 17260
17265	16	1				This structural flaw could be addressed by incorporating in financial regulation a requirement on the investment chain for asset owners, managers, banks etc to assess and integrate the long-term challenge of climate change into their routine operations.	part of comment 17260

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17266	16	1				Bounded rationality: It would be worth referencing the latest insights of behavioural finance and the explanations these give for inadequate attention to climate change, and the failure of conventional financial theory (such as the efficient markets hypothesis) to root its notions in empirical evidence. James Montier Behavioural Investing is a good reference, and could be cross-referenced with the useful section on behavioural economics in Chapter 3.	part of comment 17260
17267	16	1				Perverse incentives: These are both public and private. Currently, finance and investment receives considerable fiscal support to encourage saving, an important public policy objective: in the UK, this amounts to £30bn p.a.. However, unlike in other policy areas such as energy, there is still little or no integration of environmental or climate factors into how this fiscal support is allocated. One solution to this would be to ensure that to qualify for tax relief savings and investments would need to be managed by funds/institutions which demonstrated an ability to manage climate/sustainability issues and risks.	part of comment 17260
17268	16	1				Regulatory blindness: A similar theme – unlike the agriculture, energy and transport sectors, little or no attention has been given to integrating climate change into core financial regulation. This has led in the case of the banking sector to new rules under Basel III which are discouraging banks from holding long-term project finance debt – a key source of funding for climate mitigation. This is clearly not something that can be dealt with in formal climate negotiations at the UNFCCC and elsewhere – but as with the issue of perverse incentives highlights the need for climate change factors to be integrated into regular financial policy if mitigation and adaptation is to be successful. This insight could be usefully incorporated into 16.6 Institutional arrangements.	part of comment 17260
17269	16	1				Transparency: Without transparency on climate factors, financial markets cannot effectively integrate migitation into decision-making. Considerable progress has been made on a voluntary basis through initiatives such as the Carbon Disclosure Project, and some countries are introducing mandatory climate/sustainability requirements. These need to be universalized so that financial markets can make informed decisions: again worth highlighting in 16.6.	part of comment 17260
17270	16	1				Finally, the important point about highlighting financial market barriers is to make clear to policymakers that simply addressing the first order climate externalities will not be sufficient to achieve mitigation; there are many obstacles in financial markets which will obstruct this signal being received.	part of comment 17260
17271	16	1				Incremental Cost: The chapter explores the problematic nature of this term – but it needs to be made clearer the difference between incremental cost and incremental investment, the latter is a classic form of financial deployment from which net benefit is expected. And although carbon externalities are certainly deep and widespread, technological innovation is such that low-carbon mitigation options are increasingly without 'incremental cost' – although there may be incremental upfront investment (but lower operating costs and thus higher net returns).	part of comment 17260
17272	16	1				Institutional Arrangements: The chapter could benefit from recognizing the growing evidence of private finance sophistication and demand for policy in the area of climate change, particularly institutional investors. Hitherto, institutional investors have been the 'missing stakeholder' in climate policy formation and delivery, with policymakers not addressing the barriers that investors face to contribute to climate security. As owners of corporations, investors need to be regarded as a distinct stakeholder that has interests that are not necessarily the same as the interests of corporate management (principal-agent problem/corporate governance). The chapter could usefully highlight the growing investor demand for policy certainty in recent years including:- the 2011 Investor Statement, supported by USD20trn in assets: www.iigcc.org/iigcc-investor-statement and Investment grade climate policy: reports by IIGCC/UNEPFI as well as CMCI (decc.gov.uk)	part of comment 17260

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
17273	16	1				Climate Risks: The chapter as currently structured focuses on how to mobilize finance behind key thematic investments in the low-carbon landscape. It doesn't, however, examine the flip-side: the risks facing high-carbon finance. One important expression of this is the topic of stranded assets. The absence of credible long-term policy frameworks compounded by financial myopia means that financiers and investors discount the possibility of robust action to hold global warming below 2 degrees celsius. The long-lived nature of key pieces of energy infrastructure in particular means that this has potentially serious implications in terms of locking economies into high-carbon pathways, which makes support for the low-carbon efforts even more difficult. This was an issue addressed in the IEA's 2011 World Energy Outlook. A related issue are the risks for financial stability posed by continued investment in fossil fuel assets which cannot be burnt if the 2 degree threshold is respected. This issue has been usefully examined by the Carbon Tracker Initiative in its report, Unburnable Carbon (2011 http://www.carbontracker.org/carbonbubble). This suggests an important topic for further research and enquiry – to examine the dynamic between climate change and financial stability.	part of comment 17260
17784	16	10	13			Chapter 1 talks about 2C by 2050	Noted. We will check the study and make sure we summarize it correctly.
9932	16	10	13		14	Since only MESSAGE and REMIND are mentioned on line 14, "three integrated assessment models" should be changed into "two…".	Editorial.
13436	16	10	14			The word "annual" is omitted between 'indicate' and 'incremental.'	Noted.
18263	16	10	14			The word "annual" is omitted between 'indicate' and 'incremental.'	See comment 13436.
17785	16	10	17	18		how much effort needed to do get this done?	Comment not clear.
16427	16	10	7	10	11	Would be helpful to have an "overview" table showing the most important differences in assumption within the models	Noted. The SOD will provide greater detail on the cited studies.
13437	16	11	24			The word 'will' should be replaced by "may" or "can."	Comment not clear. Perhaps line 27. Noted.
18264	16	11	24			The word 'will' should be replaced by "may" or "can."	See comment 13437.
16429	16	11	46	11	46	Explain "t450"	Noted. The SOD will provide greater detail on the cited studies.
12827	16	12				Billion US D calculated with regard to which year?	Noted. All measurement units will be homogeneous (if possible) in the SOD.
16430	16	12				Explain abbreviations of the different scenarios	Noted. Will be more precise in the SOD.
13438	16	12	10			The phrase "for power generation" should be inserted after 'consumption' and before 'is expected.' No one expects oil consumption to go to zero in the transport sector in a 2 degree scenario.	Noted. Will be more precise in the SOD.
18265	16	12	10			The phrase "for power generation" should be inserted after 'consumption' and before 'is expected.' No one expects oil consumption to go to zero in the transport sector in a 2 degree scenario.	See comment 13438.
16431	16	12	10	12	10	CCS can also be applied to oil but most oil is used in the transport sector where CCS would be too expensive	Noted. Will be more precise in the SOD.
9053	16	12	12			A reference to the empirical complementarity of energy, capital, and labor should be made for this claim.	Noted. Will add references to the empirical literature and to results from IAMs

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16432	16	12	15	12	15	You may add (5) full information on technologies, no transaction costs	Noted. SOD will improve this section as the ful set of scenarios from other chapters will be available. Also the hypothesis used by those models will be discussed.
16433	16	12	29	12	36	This paragraph only refers to the 4th assumption (absence of risk and uncertainty) -> explain why you only discuss this point and not the others	Agreed. The text will be revised in the SOD.
13439	16	12	4	12	8	It is unclear as written whether this para refers to savings due to higher efficiency or savings due to lower fuel cost resulting from decreased demand or both.	Noted. The paragraph will be rewritten.
18266	16	12	4	12	8	It is unclear as written whether this para refers to savings due to higher efficiency or savings due to lower fuel cost resulting from decreased demand or both.	See comment 13439.
19007	16	13		13		Unit is needed	Accepted.
13440	16	13				Figure 16.4 claims to represent "current financial flows" of climate finance. However this figure and the accompanying discussion ignores South-North investment flows, e.g., Chinese investment in US advanced battery and electric vehicle companies. These investments in low-emissions technologies should be recognized as a part of the international flow of climate finance.	Noted. More data will be available for the SOD and will be reflected there.
18267	16	13				Figure 16.4 claims to represent "current financial flows" of climate finance. However this figure and the accompanying discussion ignores South-North investment flows, e.g., Chinese investment in US advanced battery and electric vehicle companies. These investments in low-emissions technologies should be recognized as a part of the international flow of climate finance.	Noted. More data will be available for the SOD and will be reflected there.
9061	16	13				The Chapter will make a distinct contribution if it will distinguish between financing often counted as "climate finance" and which financing flows can be counted as climate finance in the sense that it discharges the developed country obligations under the Convention. In page 13, it reproduces a financing flow diagram from Buchner et al. (2011) in which private financing flows are counted as climate finance. The draft should be commended about the fact that even counting these sources of financing it makes the judgement that the scale of financing so far is insufficient.	Agreed. The SOD will include a definition on climate finance that will clarifiy how it differs from climate finance under UNFCCC.
8729	16	13	1	13	5	How closely correlated are the risk premiums on a country's government bonds and on the projects taking place within that country?	Noted. Will be addressed in SOD.
2798	16	13	20	13	20	This diagram is very confused. It makes no sense to add tax revenues spent on funding clean energy investments with private capital which is looking for a return to invest against those cash flows. I would recommend that this diagram is removed as it makes no financial sense.	Noted. More data will be available for the SOD and will be reflected there.
16435	16	13	21			Some of these flows are not North-South, (1) a substantial part of the USD 55 billion of private finance will be South-South or domestic (see my comment 8), 20% of Bilateral development banks finance is provided by Southern institutions (Brazil, China, India); (3) some financial payments of MDBs are made possible by developing country shareholder equity (to mobilize debt on the capital market) -> NON-annex-1 countries have e.g. roughly a 35% share in IBRD capital subscriptions	Noted. More data will be available for the SOD and will be reflected there.
13726	16	13	26	13	26	Add after "… broad interpretation.": "(for a discussion of possible definitions see Stadelmann et al. 2011)". Reference: Stadelmann, M.; Roberts, T.; Michaelowa, A. (2011): New and additional to what? Assessing options for baselines to assess climate finance pledges, in: Climate and Development, 3, p. 175-192,	Noted. The reference will be checked and used as appropriate in the SOD.
16434	16	13	3	13	3	define "investment-grade"	Noted. Will add a definition
2818	16	13		19		For latest figures in current flows of climate finance, refer to Clapp et al (2011) "Tracking Climate Finance" OECD/IEA, http://www.oecd.org/env/climatechange/50293494.pdf -- see Section 2 pgs 10-12 of paper. This paper builds on previous OECD work by Corfee and Buchner, and offers more recent OECD data that Buchner et al Landscape of Finance. Clapp et al also includes ranges which are more accurate than one average figure for private sector flows.	Noted. Reference will be evaluated and included as appropriate. More data will be included.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
8730	16	14	13	14	14	Reg the 28 out of 45 billion: does the term "domestic projects" in this context refer to projects within developed countries, or how? This is not clear.	Noted. Data will be checked and text will be clarified.
8061	16	14	18	14	20	It is not clear where the definition of international climate finance used here comes from; I do not think that it is undisputed that private finance flows are considered as "international climate finance"; but rather that it is understood as finance that has been mobilised explicitly for climate finance; there should be a discussion on available definitions; I also think this study (number) also includes domestic flows (Buchner et al, 2011, p.8),s o therefore one might need to indicate that the 97 billion are not fully international climate finance	Accepted. The SOD will include a definition on climate finance that will clarifiy how it differs from climate finance under UNFCCC.
16437	16	14	21	14	22	As noted before, give not only the point estimate but the range in the Buchner et al. 2011 figures; make clear that they also include some domestic private finance	Noted. SOD will include additional data and will include ranges.
16438	16	14	31	14	31	The Stadelmann et al. (2011) figure does not only include international private finance, but also domestic and South-South private finance that is mobilized by industrialized countries	Taken into account. We will check the reference.
16439	16	14	37			You may also refer to the sources that Buchner et al. Cite: OECD rio markers, Atteridge et al. (2009) for bilateral finance institutions	Noted. Will be included as appropriate.
13729	16	14	39	14	39	Revise footnote 4 as follows: "Michaelowa and Michaelowa (2011) find severe miscoding of projects and a correlation between overcoding and political variables."	Noted.
16436	16	14	8			The BNEF figure is not only domestic, it includes international investments	Agreed. BNEF includes both domestic and international.
11227	16	15	13			CDM and JI projects have been under criticism for their negative impacts on the environment and on the human rights of affected communities. In 2001, the CDM board decided to launch an internal review into its public participation and consultation policies , following allegations human rights violations related to some CDM projects	Noted, but chapter 6 deals only with financial aspects. Other aspects of CDM are dealt with in chapter 13.
16440	16	15	13	15	13	This figure depends very much on the year and the assumptions (e.g. on carbon credit prices, which are mostly confidential in the primary market; and the share of primary and secondary transactions), e.g. check the way Stadelmann et al. (2011) calculated the USD 1.6-1.8 billion for the CDM; using the same methodology, you would roughly receive USD 5 billion in 2011.	Noted. Data and assumptions will be checked.
16441	16	15	38			You may refer to the literature on stimulus packages, which included funding for clean energy; you may cite Höhne et al. (2009): Economic/climate recovery scorecards: How climate friendly are the economic recovery packages?	Thank you. Reference will be reviewed.
2799	16	15	20	16	49	Again this section confuses sources of public funding with private investmnent which are two totally different things.	Taken into account. Section on sources will be restructured in SOD.
12484	16	15	21			This section covers the additional risk currently inherent in low-emission technologies. What the section does not cover in much detail, is the increased financial risk associated with investing in fossil technologies in a scenario where carbon pricing (more fully) reflects the true costs of GHG emissions. The fact that proven hydrocarbon reserves contain much more carbon than we can burn if we want to limit climate change, is not reflected in today's share pricing/financing costs. This "market failure" / hidden financial risk should be pointed out in the financing chapter. It is particularly important that long term investors (e.g. pension funds) also develop tools to deal with this kind of "carbon risk".	Noted.
9940	16	16				Since paragraphs on this page is supposed to describe the scale of financing, please pay attention to give some numbers about their potential financing capacity for each finance source.	Agreed. Will be revised in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16442	16	16	1			Among "international climate finance", you have - in my view - to A) specifically refer to funds/operational entities under the UNFCCC financial mechanism (GEF, SCCF, LDCF, GCF) and B) clearly distinguihs between climate-specific funds (e.g. CIFs, GEF trust fund, several bilateral initiatives, see Climate Funds Update for an overview), and ODA funds that have climate benefits (e.g. refer to Michaelowa & Michaelowa (2011) "Old Wine in New Bottles?"; where they show that ODA funding for renewables and energy efficiency has already existed in the 1980s and is mainly dependent on the oil price, but does not very much relate to climate change agreements, see http://www.zora.uzh.ch/57335/1/am_old_wine_in_new_bottles11.pdf)	Thank you. Reference will be checked. In the SOD there will be a section on operating entities.
14352	16	16	1	16	9	Discussion on international public finance focus on ODA. But, there are another source of international public finance called "other official flows, such as export credit. Therefore, this section should focus on other official flows as well as ODA.	Agreed. OOF are a source of climate finance.
2180	16	16	10	16	25	The section on private climate finance seems a bit weak in terms of identifying and analyzing emerging low carbon/sustainable energy investment funds as well as enterprises. Companies like DESI Power in India, for instance, is serving as a model for sustainable energy innovation/development in the developing world and little of this in documented here and/or places in thic chapter.	Noted. Section will be revised and expanded in the SOD.
16444	16	16	10	16	25	This paragraph should (a) more refer to specific types of private finance relevant for low-carbon technologies and (b) somewhere make clear that private finance may/will have to provide a substantial part of needed investments but it can not be expected to cover incremental costs of low-carbon technologies (unless it is incentivized via or compensated to do it).	Noted. Will be reflected in SOD.
9934	16	16	10		49	The third to sixth parapgraphs are supplementary to the second paragraphy in this page. But the starting words in third to sixth paragraphs are all in bold, which seems to me that these paragraphs are parallel to the second paragraph.	Editorial. Will be clarified in SOD.
16445	16	16	26	16	49	Structuring unclear; everything form businesses to private philanthropy is potentially part of private climate finance; FDI and retail investors may be part of "business and corporations" (which itself is a relevant type of actor, but not type of funding)	Noted. Will be clarified in SOD.
8062	16	16	26	16	35	not clear why business/corporations finance and FDI is in a separate paragraph from private climate finance	Noted. Will be clarified in SOD.
13728	16	16	5	16	5	Add after "… action": "However, the share of development assistance channelled into mitigation activities has not been influenced in a statistically significant manner by the international climate policy regime, but essentially been correlated to the level of the oil price (Michaelowa and Michaelowa 2011)." Reference: Michaelowa, A.; Michaelowa, K. (2011): Old Wine in New Bottles? The Shift of Development Aid towards Renewable Energy and Energy Efficiency, in : Carbonier, Gilles (ed.): International Development Policy: Energy and Development, Palgrave Macmillan, London, p. 60-86	Thank you. Reference will be checked.
16443	16	16	5			Make clear that MDBS/BDBs use both ODA and Other Official Flows (OOF)	Noted.
10458	16	17	0			The section on Carbon taxes on coal and others in India need to be expanded	Noted.
16448	16	17	10			Mention that Germany already uses part of EUA auctioning for international climate finance	Noted.
12485	16	17	15	17	15	Please consider to add a sentence about other emission trading systems that are being developed (e.g. Australia, China, California, South Korea). (See section 15.5.4 -New approaches to emission trading)	Noted. Will be considered for the SOD.
8733	16	17	16	17	19	The problem with selling AAUs is that it raises the emissions in the country buying them.	Noted.
16449	16	17	17			You may call this "allocation and selling of surplus emission allowances" (more neutral); then you may refer (apart from the eastern EU countries) to the idea of allocating headroom allowances to non-Annex-1 countries in order to give them financial assistance and include them in the global carbon market, see Wagner et al. (2009) Docking into a Global Carbon Budget, published in OUP book (http://www.edf.org/sites/default/files/9410_clean-investment-budget.pdf)	Source will be evaluated.
12828	16	17	22	17	30	Can you provide a reference?	We will cite source in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16450	16	17	22			You may give some numbers on how large these revenues are (e.g. in Europe, more than 50% of the petrol price is due to taxes…)	Noted.
16446	16	17	3			Define "innovative sources", e.g. "not yet used" would not be appropriate…	Taken into account. "Innovative sources" will be defined in SOD.
16447	16	17	3			Somewhere quote Harmeling et al. 2008 "Funding Sources for International Climate Policy" who reviewed most of these 'innovative' sources	Thank you. Source will be reviewed.
12829	16	17	33	17	38	See comment 6	Comment not clear.
14353	16	17	35	17	38	I cannot find how the author estimates the level of subsidy as USD 100 billion. Without reason, it may mislead the reader.	Noted. Amount will be verfied and source cited.
14354	16	17	39			Definition of "South-south cooperation" should be explained.	Accepted.
13442	16	17	4	20	28	The discussion of Innovative Sources of Finance and Innovative Instruments is overly simplistic and not credible. It completely ignores recent published work on potential use of a Tobin Tax type mechanism or a user fee on transport fuels used in the international aviation and marine freight sectors as possible sources of Tens of Billions of dollars for climate finance. This represents a glaring and profound weakness in this chapter.	Taken into account. "Innovative sources" will be defined in SOD.
18269	16	17	4	20	28	The discussion of Innovative Sources of Finance and Innovative Instruments is overly simplistic and not credible. It completely ignores recent published work on potential use of a Tobin Tax type mechanism or a user fee on transport fuels used in the international aviation and marine freight sectors as possible sources of Tens of Billions of dollars for climate finance. This represents a glaring and profound weakness in this chapter.	Taken into account. "Innovative sources" will be defined in SOD.
8731	16	17	4	17	15	It should be mentioned, that carbon taxes also have an impact on emissions in developed countries.	Noted.
8732	16	17	5	17	6	Are the mentioned carbon taxes explicit carbon taxes or both explicit and implicit ones.	Under consideration for clarification in SOD.
8312	16	17	6	17	7	Correction: change sentence to "In Canada, the provinces of Quebec and British Columbia have raised approximately USD 1 billion through carbon taxes".	Noted.
16958	16	17				There is at least one potential international funding source not mentioned here, which is to incorporate importers into domestic carbon pricing schemes but make the money raised at the border available for international climate finance. See Michael Grubb (2011): International climate finance from border carbon cost levelling, Climate Policy, 11:3, 1050-1057.	Noted. Reference will be reviewed and considered for the SOD.
12652	16	17	16	17	21	Estonia, Czech Republic and Poland are involved in "Green investment scheme" as well. This paragraph should refer to "Emission Trading " as written in Article 17 of Kyoto protocol.	Noted. Text will be clarified in SOD.
7436	16	17	3	17	43	Consider debating these questions to better inofrm this subsection: 1) are these sources really innovative? 2) To what extent does funding through the carbon market in developing countries be considered additional rather than a self-financed given the principle of common but differentiated responsiblities? 3) what are the impacts of funding mitigation through the carbon market in developing countries in relation to access and affordability of energy, economic development, and welfare? 4) To what extent does revenues generated through the carbon market in developed countries be used to replace the forgone revenues from fossil fuel taxation in their public budgets and how much will be avialable to finance climate change mitigation and adaptation in developing couuntries?	Noted. Section on sources will be revised to better address these issues in SOD.
12651	16	17	3	17	43	Other innovative sources such as Taxes based on globalized activities or Debt swaps have been discussed in Leading Group on Innovative Financing for Development(http://leadinggroup.org/IMG/pdf/Mapping_FIDENG-3.pdf)	Reference will be evaluated for inclusion in SOD.
2800	16	17	3	17	43	These are all sources of public funds which can be used to fund subsidies. They are not sources of investment, they are simply ways for governments to raise money.	Noted. Section on sources will be revised in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
15673	16	17	4	17	15	Discussion of innovative financing sources could include explicit reference to revenue generated from schemes to regulate emissions from international transport (bunker fuels), as these have been prominent in both the Report of the High-Level Advisory Group on Climate Change Financing (AGF) and broader policy debates. See also World Bank. 2011. Mobilizing Climate Finance: A Paper Prepared at the Request of G20 Finance Ministers. October 6, 2011. http://www.g20-g8.com/g8-g20/root/bank_objects/G20_Climate_Finance_report.pdf.	Noted. Section on sources will be revised in SOD.
11047	16	18	16	18	37	Pubulic export insurance system also contribute to technology transfer of infrastructural goods. For example, china, Korea, France(Coface) , Germany(Euler Hermes) , US(US-EXIM (Overseas Private Investment Corporation)and Japan(NEXI) etc have such a operation to mitigate political and credit risk.	Accepted. Will be reflected in SOD.
7437	16	18	2	18	9	It may be argued that concessional rather than competitive financing is needed to foster mitigation in developing countries. The question then whether the suggested sources and institutions of financing will be able to deliver this.	Taken into account in rewrite for SOD.
16454	16	18	33	18	33	If you mention FITs, which are essentially a policies, you also have to mention other finance-related policies, e.g. tenders, tax breaks, public investment in electricity infrastructure (important for grid access), check e.g. REN21	Rejected. AMCs are on contract mechanism to respond to policy mandates; but will clarify in SOD. Other mechanisms will also be addressed.
12830	16	18	34	18	35	The abbreviations "EE" and "RE" are introduced without a definition which should be added.	Editorial.
16455	16	18	39			Not all power purchase agreements enable mitigation -> specify which ones (long-term, fixed-rate, rate high enough to cover costs)	Accepted. Will be reflected in SOD.
16456	16	18	39			(1) For the free-rider or additionality problem, you may cite Baumol & Oates (1988) as classic, or the newer literature of the CDM ; -> the free-rider problem actually occurs for any instrument with a subsidy element (so also FITs, concessiona loans, tax exemptions) -> this does not become clear in my view	Noted, but we don't understand the comment in relation to the referenced text.
13441	16	18	53			The acronym "PBI" is never defined.	Editorial.
18268	16	18	53			The acronym "PBI" is never defined.	Editorial.
16453	16	18	7	18	9	Write out EPC	Editorial.
16451	16	18				The whole section is very much focused on instruments related to energy policy/management; the climate-specific instruments (carbon taxes, emission trading etc.) are MISSING	Accepted. Will be implemented for SOD.
16452	16	18				This section mentions many interesting instruments, but also misses many (e.g. public-private equity funds, exchange rate risk-sharing pools, carbon price instruments, mezzanine financing, export risk credits….) -> either you provide a comprehensive overview or you select specific ones because they have advantages according to specific criteria -> mention your selection criteria or refer more to the literature	Accepted. Will be implemented for SOD.
12960	16	18	2	18	9	It is worth noting here that different types of investors will have different appetites for risk. Institutional investors may have requirements to conform to certain benchmarks defined by the designated asset class.	Accepted. Will be implemented for SOD.
2801	16	18	38	18	46	AMCs are a subsidy mechanism they are not a financial instrument	Rejected. AMCs are on contract mechanism to respond to policy mandates; but will clarify in SOD.
12961	16	18	45	18	45	INSERT AFTER 2009). "However, FITs still present some extrinsic risks to investments, for example the possibility of retroactive changes to FIT levels on existing projects, as was instituted by Spain in 2010, damaged investor confidence in renewable energy projects on a broader scale." CITATION: IIGCC (2010). Shifting Private Capital to Low-Carbon Investment. Available at: http://www.iigcc.org/__data/assets/pdf_file/0016/12247/IIGCC-Position-Paper-on-EU-Climate-and-Energy-Policy.pdf	Accepted. Will be implemented for SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16457	16	19	23	19	24	Green bonds: discuss it broader, include Climate Bonds; if you want to focus on the residential sector, then include it the sub-section below	Taken into account. Will be included in SOD as appropriate.
12486	16	19	3	19	3	Please consider to add a paragraph about Certificates. "Green" certificates are used to increase the production of renewable energy in Sweden/Norway and "white" certificates are used to promote energy efficiency. For details, see section 15.5.3.7	Taken into account. Will be included in SOD as appropriate.
11048	16	19	5	19	6	Government involvement (DOE(Department of Energy) etc)and garantee is required, see thailand ESCO funds http://www.ecft.org/home/index.php?option=com_content&view=article&id=67%3Aesco-fund&lang=en	Under consideration / evaluating for inclusion in SOD.
12962	16	19	2	19	2	INSERT AFTER: ...public benefit funds. “Key features of the sustainability of Germany’s FIT scheme are a clearly stated tariff digression over time to match all reductions in technology costs and an end target of renewable energies achieving grid parity with fossil fuels.” CITATION: IIGCC, INCR, IGCC and UNEP-FI (2011). Investment-grade climate change policy: Financing the transition to the low-carbon economy. Available at: http://www.iigcc.org/__data/assets/pdf_file/0010/15310/2011-Investment-Grade-Policy-Report.pdf	Accepted. Will be reflected in SOD.
2802	16	19	4	20	28	The first six mechanims mentioned are ways of providing subsidy for clean energy / efficiency and the last two are forms of financing . Again, they should not be in the same catergory.	Rejected, but classification of instruments will be clarified in SOD.
17781	16	2				There should not be a conclusion at section 16.6.3?	Agreed. Section will be revied in SOD.
16459	16	20	17	20	28	Pooling: cite the literature (becomes not clear from where you get the information)	Accepted. Will be reflected in SOD.
17787	16	20	25			give one sentence summary	We don't understand the comment in relation to the referenced text.
17786	16	20	29			give a preamble after the section heading	Noted. Section will be largely revised
13443	16	20	31	21	10	This discussion of the "Energy and Power Sector" is grievously simplistic and incomplete. There is no discussion at all of the very substantial financial requirements associated with the replacement of frail and aging power sector infrastructure, particularly in Industrialized Countries, as has been well-documented by the IEA.	Taken into account. Section will be largely revised
18270	16	20	31	21	10	This discussion of the "Energy and Power Sector" is grievously simplistic and incomplete. There is no discussion at all of the very substantial financial requirements associated with the replacement of frail and aging power sector infrastructure, particularly in Industrialized Countries, as has been well-documented by the IEA.	see comment 13443
15414	16	20	40			barriers to renewable financing – nonsense, concern about profitability are the only difference from anything else. Need generality about calling something difficult to finance or facing barriers when the plain meaning is “too expensive”	Noted. Text will be calrified in restructred SOD.
16460	16	20	43			Competitive public auctions: add "tenders" (common wording)	Taken into account. Will be considered in restructured SOD as approproate.
16461	16	20	44			"specific percentage of renewable energy" -> this is normally called Renewable Portfolio Standard (RPS)	Agreed. This will be changed
16458	16	20	8			Green bonds: discuss it broader, include Climate Bonds	Noted, per above response to comment 16457.
12963	16	20	39	20	39	Therefore it is important to understand the asset allocation requirements for institutional investors on infrastructure investments, notably specific liquidity and ownership requirements and leverage ratios. SOURCE: NAPF News (2012) Issue 1 “Pension Funds and Infrastructure.”	Noted, per above response to comment 12960.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12831	16	21	11	21	17	You may like to mention policies which explicitly aim at correcting the effect of ENVIRONMENTAL market failures as a third category of policies that contribute to the development and dissemination of green technologies. The subsequently cited emissions trading system constitutes such a policy instrument that aims at environmental market failures (negative externality of THG emissions) and is meant to create incentives for the development (and in consequence also for the dissemination) of greener technologies.	Taken into account. Will be considered in rewrite for SOD.
16464	16	21	12	21	17	When discussing technology & innovation, it looks strange that you just cite one World Bank study, while there is a whole strand of literature on these questions, called "science & technology studies" (check for books and papers of Malerba, Lundvall, Dosi, Winter); much of this literature actually looks at mitigation technologies, e.g. Johansson & Bergek, Hekkert, Geels, Unruh...	Taken into account. Will be considered in rewrite for SOD.
16463	16	21	13			"new technologies" -> needed in all sectors	Noted.
16465	16	21	18	21	18	The mentioned policy instruments also apply to other sectors	Noted.
11049	16	21	20	21	20	The legislation of energy saving is dropped, the low of energy efficiency improvement,energy saving is required to insert in text, please see APEC energy overview http://eneken.ieej.or.jp/data/4431.pdf	Noted. Will be taken into account in rewrite of this section
12832	16	21	23	21	23	The sections 16.3.2 and 16.3.3 refer to sector specificities in developed and developing countries, respectively. Which criteria are used to differentiate between theses two groups of countries? It would make clear why India, which serves as example in section 16.3.2, is classified as a "developed country", here.	Noted. We will ensure consistency with the glossary (discussed in X-cut meeting)
4529	16	21	25	21	37	This paragraph highlights the role of venture capital. However, venture capital is responsible for a tiny fraction of investment, and for the industry sector (e.g. steel, cement and chemicals) the investments that would reduce GHGs largely have to do with improving efficiency of their operations and are not an area for venture capital finance. This paragraph seems more relevant to renewables where it would be interesting to compare VC investment with the pace of investment of for example solar manufacturing in China (and place this in the energy sector section).	Noted. Will be considred in rewrite for SOD
13444	16	21	25	21	37	This discussion is outdated and fails to reflect recent developments. The discussion of a contraction in venture capital flows to clean technologies in 2009 is misleading in that it ignores the substantial growth of ventue funding for these technologies in 2010 and 2011.	Noted. Message and data will be updated
18271	16	21	25	21	37	This discussion is outdated and fails to reflect recent developments. The discussion of a contraction in venture capital flows to clean technologies in 2009 is misleading in that it ignores the substantial growth of ventue funding for these technologies in 2010 and 2011.	Noted. Message and data will be updated
13445	16	21	40	21	41	This sentence is totally incomprehensible.	Agreed. Will be rewriten.
18272	16	21	40	21	41	This sentence is totally incomprehensible.	see comment 18272
9056	16	21	40	21	43	This is sentence is incomprehensible to me: "The fragmentation of the transport GHG reduction project results in transaction costs that are generally superior to the climate benefits." Superior? Greater than?	Agreed. Will be rewriten.
16467	16	21	44	21	44	The difference between investment and operation costs is relevant for most sectors (e.g. energy, industry, buildings…)	Noted.
9055	16	21	23			The section 16.3.2 is on sector specificities in developed countries but in this line the example is from India, a developing country.	Agreed. This will be corrected
16466	16	21				The whole section very much focuses on the public sector; the private sector can play an important role, e.g. in the operation of buses or railway lines, but also owners of air and road transport fleets	Agreed. The section will be largely revised
13446	16	22	1	22	3	This section is totally incomprehensible.	Agreed. Will be rewriten.
18273	16	22	1	22	3	This section is totally incomprehensible.	see comment 13446
13447	16	22	10	22	18	This discussion incorporates a fundamental misconception in setting the boundaries of an economic problem and assumes a system that privatizes all benefits and socializes all investment losses.	Noted
18274	16	22	10	22	18	This discussion incorporates a fundamental misconception in setting the boundaries of an economic problem and assumes a system that privatizes all benefits and socializes all investment losses.	see comment 18447

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
9057	16	22	11	22	11	The section 16.3.2 is on sector specificities in developed countries but the example cited is from Asia in which only Japan and possibly the Republic of Korea are developed countries.	Agreed. Will be changed in rewrite.
15460	16	22	19			The principal-agent problem is a major stumbling block to building efficiency in China. See http://eec.ucdavis.edu/publications/2010analyzingretrofitinbeijinggov.pdf	Agreed. Will be considered in rewrite of the section.
13448	16	22	39	22	42	This statement is incorrect. In many countries (including in the US and the EU), the reason that the emissions-reducing potential of the Ag, Land Use, and Forestry sectors remains untapped is not due to technical problems but rather due to policies that provide incentives for expanding emissions-intensive activities rather than their low-emissions alternatives.	Noted. Will be considered in the rewrite of this section.
18275	16	22	39	22	42	This statement is incorrect. In many countries (including in the US and the EU), the reason that the emissions-reducing potential of the Ag, Land Use, and Forestry sectors remains untapped is not due to technical problems but rather due to policies that provide incentives for expanding emissions-intensive activities rather than their low-emissions alternatives.	see comment 13448
12965	16	22	12	22	18	According to Ürge-Vorsatz et al, in an appraisal of 20 regulatory instruments, a diverse portfolio of policy instruments is the most effective way to drive CO2 reductions in buildings, with the most cost-effective being appliance standards, demand-side management programmes and mandatory labelling. See, Ürge-Vorsatz, Koeppel and Mirasgedis (2007). Appraisal of policy instruments for reducing buildings' CO2 emissions, in Building Research & Information, 35:4, 458-477.	Noted. Will be considered in the rewrite of this section.
12966	16	22	19	22	27	To complete the bullet points in this section, allow me to suggest a recent paper compiled by IIGCC's Property Working Group: IIGCC (2012). Enhancing the real estate sustainability policy framework. Available at: http://www.iigcc.org/__data/assets/pdf_file/0005/15377/IIGCC-enhancing-the-real-estate-sustainability-policy-framework.pdf This paper outlines 7 barriers to scaling up finance in energy efficiency as identified by institutional investors: Policies that inadequately target the relevant practitioner making key management decisions, failure to target opportune stages in a building's lifecycle, tendency to focus on design over operational performance, market signals do not currently value sustainability, lack of strong compliance regimes – to enforce existing regulations, lack of information and skills in green building and failure to consider unintended consequences of policy – for example premature forced obsolescence of buildings.	Noted. Will be consider in rewrite the section.SOD will focus more on investment barriers.
12964	16	22	9	22	9	There is also a need to differentiate ownership agreement because renters and owners operate under different incentives in terms of investing in energy improvements, and trends in property ownership vary drastically across markets.	Agreed . Will be taken into account in rewrite of the section.
16468	16	22				The whole section is very much written in a "abatement cost" language; a stronger focus on "finance" is needed	Taken into account. The section will be largely rewriten.
11228	16	23	2			As regards tropical forest countries, the land rights of indigenous peoples and local communities are seldom fully recognized in national legal frameworks (RRI, 2012)	Check reference.
11050	16	23	27	23	40	There are "immense" opportunities for financing mitigation is not appropriate, a lot of countries face on financial barrier, even in emerging country. According to our study and steel company, India has no any special financial assistance such a tax break, subsidy etc.	Linked to the discussion on complementariness and trade-offs.
16471	16	23	43	23	43	write "non-CO2 GHGs" for clarity and mention which ones (HFC?)	The text will be reviewed to be clearer.
16469	16	23				Becomes not clear why you discuss all sectors for developing countries again -> many of the mentioned points (e.g. relevance of policies, CCS, digital technologies) also apply for industrialized countries -> would suggest to just focus on the main differences between North and South (e.g. currency risks, political risks, economic risks, many sectors are still dominated by the public sector in many developing countries...)	Accepted. SOD will be largely restructured.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
14355	16	23	12	23	25	CCS is available at very limited developing countries. I don't think it is appropriate as example of new technology in developing countries. Rather, smark grid must be appropriate. In general, developing countries need to increase their energy supply since many of poor people still have no access to the energy. This means that most of developing countries will be green field of renewable or low carbon energy which could help poor countries to supply energu to poor people. Such potential of low carbon energy supply in developing countries should be focused.	Discussion with the group and with the x-cutting group on adaptation.
9058	16	23				Authors might want to consider citing and learning from an important study India on incremental cost on six sectors: Centre for Science and Environment (CSE) (2010). Challenge of the New Balance. New Delhi.	Try to re-structrure the sub-sections.
16470	16	23				You may mention that some energy-intensive industries are shifted from developed to developing countries, which leads to additional emissions in developing countries (see e.g. Peters/Hertwich & Edenhofer)and to many investment decisions where low-carbon tech could be applied	Check references. Re-structure the title of sub-section to accommodate a broader perspective.
16472	16	23				The whole section only refers to technologies, not to finance	Check with WGII.
16474	16	24				Mention in caption that this is about "transport"	Additional data and literature will be sought.
16473	16	24	15	24	22	Sections needs rewording: 1) "but there are many…" does not make sense as intro; 2) whole section only refers to technologies, not finance; 3) "with great potential" -> not clear what this means, sounds very unscientific, add details (e.g. % of potential below 20 $/tCO2)	Taken into account. It has already been mentioned that these are only few examples. It can be reinforced in the redrafted SOD.
13449	16	24	4	24	9	This discussion is overly simplistic and not correct. In many Industrialized countries, growth in buildings sector demand for energy is strongly driven by increases in "plug load"-related demand for electricity, not just by HVAC demand driven by increased floor space.	It will be re-structured.
18276	16	24	4	24	9	This discussion is overly simplistic and not correct. In many Industrialized countries, growth in buildings sector demand for energy is strongly driven by increases in "plug load"-related demand for electricity, not just by HVAC demand driven by increased floor space.	Linked to the discussion on complementariness and trade-offs.
14356	16	24	26	25	15	Major source of GHG in agriculture sentor in developing countries include Methan Gas from rice paddy. Many of developing countries rely their economy and employment on agriculture sector. So, agriculture and land use is critical for them in terms of economy and employment, in turn, GHG mitigation.	The text will be reviewed to be clearer.
18277	16	24	27	25	16	This section is unacceptably weak, with major gaps in coverage and repeated use of overly simplistic concepts. For example, the section does not address the potential for emissions mitigation in the ag sector of Industrializd Countries or the issue of financing measures to achieve this potential. The section does not address the impact of existing tax and subsidy policies on emissions-intensive activities or the financial potential of reducing or redirecting these subsidies, particularly in the cases of industrial agriculture and factory-like facilities for livestock production.	It is just an introduction to the sub-section. However, a reference can be sought.
11229	16	25	11			Significant challenges still exist as regards full compliance with relevant international human rights and environmental obligations and standards.	Noted. Comments will be reflected in the restructred SOD as appropriate.
16475	16	25	3	25	5	Cite literature why public and not private sector is important (in many cases the public sector is responsible for forestry policy but the private sector is the one investing or not…)	Taken into account. The differentiation will be highlighted in the SOD (maybe in a footnote).

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
8063	16	25	4	25	4	as written here it seems as if international public finance could only be ODA	Comment doesn't make sense in line 4. We assume it refers to line 2. International public finance is not all ODA but "Other official flows" are very low compared to ODA and probably even negligible in AFOLU. Text will be clarified.
8064	16	26	10	26	10	is it really "to enable mitigation finance" and not rather "mitigation action"? And would this not also be applicable to adaptation?	Noted.
16476	16	26	2	26	2	Sentence needs re-wording	Rejected.
11231	16	26	21			In addition to facilitating the political, fiscal and educational frameworks, government should also provides modalities for full and effective participation of stakeholders and rightsholders.	Under consideration / evaluating for inclusion in SOD.
16477	16	26	21	26	27	Some policies may not be at the right place, e.g. quotas are rather mandating, financial incentives can be seen as facilitating. Difference between facilitating and resourcing does not become clear	Noted. Will clarify in SOD.
11232	16	26	23			Information should be made publicly available to stakeholders and rightsholders as well, not only to the market.	Noted.
18279	16	26	29	26	10	This is just a mental error. Line 29 announces that the section will treat "five broad categories" but it covers only FOUR categories.	Editorial.
11230	16	26	4			Proper consideration should also be paid to the, legal and regulatory frameworks and social actors... as key requirements to ensure social and environmental sustainability as well as the attractiveness of financing. Governments should ensure legal reforms aimed at ensuring that climate finance and related activities will do no harm to local communities and indigenous peoples, be participatory and directly accessible - for financing activities based on traditional knowledge and traditional sustainable resource conservation.	Noted. Covered by other sections of WGIII report.
18278	16	26				This section is also weak. This where the chapter should treat the topics of removing perverse incentives and subsidies for emissions-increasing activities. Unfortunately, it ignores both important topics.	Under consideration / evaluating for inclusion in SOD.
12967	16	26	10	26	14	To enable mitigation finance, government needs to a) evolve TRANSPARENT policy, fiscal, legal and educational frameworks THAT ARE ALIGNED WITH WIDER POLICY GOALS INCLUDING ECONOMIC, ENERGY, RESOURCES AND TRANSPORT POLICY OBJECTIVES b) build institutional capacity across sectors and at various levels; c) proactively respond to the needs and preferences of ACTORS BY PROVIDING INCENTIVES TO INVEST WHICH RECOGNIZE AND COMPENSATE FOR ANY ADDITIONAL RISK INVOLVED IN THE INVESTMENT d) establish and maintain a range of oversight, accountability , and feedback mechanisms; and e)mobilize and allocate public resources and investments.	Noted. Edits will be included as appropriate in restructured section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
13064	16	26	2	26	27	I think it should be appropriate to mention in this section a synthesis work undertaken by WBCSD and published in April 2010 called "Enabling Frameworks for technology diffusion". This work was undertaken at the request of EGTT (Expert Group on Transfer of Technologies) of UNFCCC when consultation of business was framed by this body. This publication, which refernces are below could be accompanied by the following text which summarises the findings : "Business has experienced that five elements are necessary to enhance investments and sales of low carbon technologies : strong signals from governments towards low carbon growth, adequate institutionla frameworks, appropriate absorptive capacity in institutions , business and society, economic and financila incentives, energy efficiency drivers, and business engagement with governements. Specific enablers were indentified in the following sectors :power,cement, road transport, buildings and forests (WBCSD, 2010).". The publication can be quoted as : WBCSD (2010). Enabling Frameworks for technology diffusion. WBCSD, Geneva, 13 Switzerland, 32 pp., (ISBN: 978-3-940388-61-2). Available at: http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=149&NoSearchContextKey=true	Noted. Reference will be evaulated and included in SOD as approproiate.
12968	16	26	31	26	31	...performance, and facilitating markets."	Editiorial.
11051	16	27	35	27	35	MEPS for appliance is very populler policy in developing countries as well,thus, several counties should be listed in the text. More comprehensive study is needed.	Noted. Will cite sources that provide more info.
16479	16	27	38	27	42	Mention instruments here, e.g. capacity building, information campaigns, labels, knowledge platforms… (the IEA policy database has a good overview)	Rejected, but how facilitation occurs will be included in the SOD.
16480	16	27	43	27	43	here you can refer to section 16.3.1. , where a whole range of instruments are discussed to improve access to finance	Noted.
16478	16	27	9	27	25	mention carbon price and quantity driven instruments (e.g. ETS or RPS) -> both of them also affect price of consumption -> your distinction btw "affecting price" and "affecting "performance" is not very useful, as both of them can be linke -> a beter distinction may be btw price-based and quantity-based instruments. Among quantity-based instruments, you may distinguish btw. flexible quantity-based instrument (e.g. ETS or RPS) that affect the prices in the market an non-flexible quantity-based instruments (e.g. standards)	Accepted. But will probably not be discussed in this section, but in other section of SOD.
12969	16	27	48	27	48	Additionally, private investors may have a difficult time financing energy projects in developing countries because of less developed local banking sectors.	Under consideration / evaluating for inclusion in SOD.
16481	16	28	1	28	1	Why are you discussing barriers for policy-makin g and implementation here? Isn't this the finance chapter?	Noted. Will clarify in SOD.
8313	16	28	27	28	33	Given that well-designed regulations, which are stringent and flexible, can spur innovation and enhance competitiveness, please add "if poorly designed" before "they can become impediments to innovation and competition".	Will revise in SOD.
8065	16	28	4	28	7	it would be interesting to mention shortly the other barriers here	Noted.
18280	16	28	9	28	25	The discussion of the fiscal dimension of climate financing omits any discussion of the impacts of fossil fuel subsidies on climate finance. This section needs to compare the impacts of fossil fuel subsidies on future emissions to the impacts of proposed incentives for climate finance and emissions-reducing activities.	Noted. Addressed in other section(s).
16482	16	28				Mention import taxes for low-carbon technologies	Noted.
16483	16	28				Difference btw regulations and statues does not become clear according to the description; what is the relevance of the distinction for the low-carbon finance context?	Noted. Will consider revision for SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4530	16	29				This figure is at odds with the facts regarding funding of R&D and exaggerates the governmental role. This figure/depiction should be contrasted with the reality who is actually making R&D investments today. Examination of the R&D statistics (reference OECD report on R&D Statistics) shows that for the OECD roughly two thirds (and rising) of R&D is carried out or funded by the private sector, and a third by government.	Noted. Comments will be considered in the restructured chapter as appropriate.
3268	16	29	7	29	9	This paragraph states that "A variety of different theoretical and analytical perspectives has been applied to study and understand technology transfer, but no comprehensive theories yet exist." This seems misleading and would be better replaced with a reference to the other sections of AR5 that actually discuss some of these perspectives and definitions.	Accepted. Section will be disolved in SOD.
16484	16	29				(1) whole section needs re-writing (english language native should check it), (2) more academic literature needed, does not help too much when just citing UNFCCC; (3) in general, it is not obvious why this section is needed as a) this is the finance and not the technology chapter and (b) almost everything (policies, R&D, financing) is discussed in other sub-chapters of chapter 16; (4) to better integrate this into the whole chapter, this section could focus on the link of finance and technology transfer, e.g. financing tools that promote tech transfer (e.g. CDM) or transfer of "financing technology or know-how") tools and knowledge needed for financing low-carbon technology)	Noted. Chapter will be restructured.
6951	16	29	14	29	15	Please provide a more specific reference to WGI AR5.	Noted. Reference will be provided if paragraph will be retained.
18281	16	30	13	30	30	This para needs a citation for the quoted statistic on the declining share of government research and a footnote on how nuclear R&D is included in the cited calculation (e.g., as energy R&D or as defense spending).	Noted. Appropriate referencing will be used if paragraph will be retained in SOD.
9059	16	30	43		46	There is a direct quote in this paragraph from a UNEP publication which refers to an "inflection point." But the preceding paragraphs do not describe what the previous situation was to justify characterizing 2008-2009 as a inflection point. The observation of the UNEP study of an inflection point just when the financial crisis erupted can be interpreted as an instance that the private sector will tend to over-finance environmental projects during periods of high financial liquidity in search of high returns through risky projects. This means that the levels of private financing during period of abundant global liquidity in 2000-2008 cannot be directly interpreted as evidence that the private sector can provide climate financing at the scale required except in periods characterized by speculation in search of potentially but unsustainably high returns. This is the same point as my comment no. 20 . Long-term and steady public sector climate policy, not abundant liquidity arising from other flaws in the international financial system, is indispensable to mobilize sutainable private investment and risk-taking in climate change.	Noted. Comments will be considered in the restructured chapter as appropriate.
16485	16	30	7	30	7	purchase/trade of CDM credits as "technology transfer" sounds strange, but CDM projects involve tech transfer, cite the extensive literature (e.g. Seres et al., Schneider et al. -> cite them also on page 31, line 40)	Noted. Reference will be reviewed and included in the restructured chapter as appropriate.
13058	16	30	20	30	32	A reference could be attached to this sesction on Research and Development, to the following publication of WBCSD that was done at the request of EGTT in the private sector consultation handled by this body : WBCSD (2010). Innovating for Green Growth, 40pp, ISBN: 978-3-940388-68-1 and can be found at the site : http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=151&NoSearchContextKey=true	Noted. Reference will be reviewed and included in the restructured chapter as appropriate.
16486	16	30				Substantial part of this section is referring to R&D (which is chapter 16.5.1.1)	Noted. Chapter will be restructured.
18253	16	30	33	30	36	Similar terms are used referring to “processes of research, development, demonstration, and deployment (RDD&D) is reducing the private spending on climate-smart technology, delaying its diffusion,”	Noted. Chapter will be restructured.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16487	16	30				What is difference between "tech diffusion" and "tech transfer" (according to your definition of tech transfer, there should not be any)	Noted. Text will clarified if retained in SOD.
9938	16	31	16	20		If you can list the detailed technology transfer in energy sector in a table, which can demostrates which technology has been tranfered from which country to which coutry.	Noted. Outside the scope of the chapter.
18282	16	31	22	32	17	This section again ignores the potential use of large-scale mechanisms such as a Tobin Tax or a fee on emissions from international air and marine freight travel as a mechanism for funding climate-related technology transfer.	Accepted.
9939	16	31	22	32	17	The funding approaches for technology transfer is almost the same to climate financing in 16.2, so actually funding for tranfer is one part of climate financing. Maybe this chapter should be recomposed, according to the lifecycle of climate financing, which includs the finance sources, instruments, usages, etc.	Noted. Chapter will be restructured.
8066	16	31	31	31	31	which sector is being referred to?	Take into account. Text will be revised in restructured chapter.
12003	16	31	36	31	42	see my comment above in cell K11: one third is wrong, it is more, difficult to say how much, but definitely more.	Noted. Reference is provided.
11233	16	31	39			In some cases CDM projects have resulted in adverse social and environmental impacts.	Noted. Outside the scope of the chapter.
13724	16	31	39	31	43	Replace by cross-reference to Ch. 13.13.1.2	Noted. Will be incorporated if retained in SOD.
16488	16	31				You miss two key funding challenges for tech transfer: domestic finance and financial instruments of multilateral development banks	Noted. Comment will be considered in the restructured chapter as appropriate.
14996	16	31	22			The chapter should discuss offsets in cap-and-trade systems as a means of financing developing country mitigation efforts. Beyond the CDM, some programs (e.g., California, Australia) are considering inclusion of international offsets in their trading regimes. Such provisions could drive significant flows of investment from private entities with compliance obligations to mitigation efforts in developing countries.	Noted. Comment will be considered in the restructured chapter as appropriate.
3305	16	31	43	32	17	Delete these paragraphs because they overlap with chapter 13, International Cooperation, and they are not strong paragraphs and are understandably not fully developed.	Noted. Chapter will be restructured.
11106	16	32	1	32	11	Both Chapter 13 and Chapter 15 deal with issues on IPRs in details. Compared to these chapters, the description of this paragraph is partial, probally because of the limit of space. Thefore, it may be better to refer to these chapters and avoid duplicating similar descriptions in this chapter. My suggestion is "Another sector relevant for technology transfer flows is the international market. There is evidence that those links go through trade on intermediate goods and capital goods. In this regard, IPRs play an important role, and Chapter 13 and 15 deals with IPR-related issues."	Accepted.
11052	16	32	12	32	17	The following description is quite misleading. “Over the last years, data show that a .. official export credits flows have “gone to transport and industry sectors, followed by energy projects”. The role of trade financing technology transfer for mitigation “may” not conclusive, however, these mentioned financial share is not directly explain its effect. The citation is not appropriate. Through my working experience at Bilateral Financial Institution, without these export credit, environment efficient technology in industry and transport sector is not realized in developing country. These country face financial and technology barrier to introduce expensive but environmental sound efficient infrastructure with concessional loan	Noted. Comment will be considered in the restructured chapter as appropriate.
13725	16	32	25	32	31	Replace by cross-reference to Ch. 13.13.1.2	Noted. Will be incorporated if retained in SOD.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12004	16	32	28	32	31	you need to explain more the issue with the transaction costs. The transaction costs have been greatly reduced during the last two years.	Noted. Outside the scope of the chapter. CDM will be discussed in more depth in chapter 13.
8738	16	32	28	32	31	Why does a price have to be high to generate demand?	Noted. Text will be revised.
7129	16	32	32	32	37	Information can be updated on the basis of UNFCCC COP, decision 1/CP.16, establishing a Technology Mechanism, under the guidance and accountable to the COP, which consist of a Technology Executive Committee, and a Climate Technology Centre and Network (CTCN), being one of the priorities areas "Increased public and private investment in technology development, deployment, diffusion and transfer".	Agreed.
16489	16	32				This sounds like industrialized countries, CDM and GEF are responsible for tech transfer but you miss some of the key players: companies in Annex-1 countries, governments and companies in non-Annex-1, non-UNFCCC institutions such as MDBs and UN organizations	Noted. Comment will be considered in the restructured chapter as appropriate.
16491	16	33	10			Define "institutions" for this chapter-> only organizations and funds, or more general: set of rules that shape scocial interaction (if second, refer to North (1990) or other social scientists)	Accepted. Definition will be included. Text refers to a broader defintion of institutions but that include organizations and funds.
16492	16	33	21	33	28	Many statements, no references, cite literature	Accepted. More references will be cited.
11234	16	33	32			Direct access to financing for adaptation and mitigation actions designed and implemented by local communities and indigenous peoples should also be allowed. (Martone, Rubis, 2012)	Noted. Will make reference to this new modality when referring to GCF and other funding mechanisms.
8739	16	33	42	33	44	Two things: Firstly, finance ministries are generally invovled with all public expenditure, i.e. all projects involving public co-financing. Secondly, ministries of energy, planning, etc are also increasingly involved in implementing such activities.	Accepted. Will add a reference to this.
18283	16	33	45	34	6	This section needs to expand the reference to national finance channelling entities such as the Indonesia Climate Change Trust Fund as a vehicle for integrated planning and targeting of national, international, and FDI-related investments. This section also needs to cover the role of entities such as the BNDES in Brasil as a national arrangement for managing climate-related investments.	Accepted. A table will be added listing those that have been creating recently.
16490	16	33				Wholesub- chapter could be part of the policy sub-chapter; try to focus more on institutions relevant for finance (not for climate policy in general)	Accepted. Text will be revised to focus only on institutions relevant to finance in coordination with policy chapters
14994	16	33	1			This section should be expanded significantly. In particular, the discussion on bilateral finance should be expanded to identify the level and nature of investments that the major donor countries are making. Also, some discussion of the various institutional arrangements and their relative merits or challenges would be appropriate here.	Noted. Section will be revised.
16493	16	34	2	34	3	"national implementing entities" -> they are now established as part of the "direct access" window of the Adaptation Fund; as "direct access" is an important development, also for the GCF/GEF, discuss it somewhere (you may cite Horstmann 2011/2 in "Climate Policy" or others)	Accepted. A table listing these and their main characteristics will be added
16495	16	34	25	34	25	Replace "Multilateral" with "Global" (else the distinction between multilateral and regional and trilatereal does not make too much sense)	Rejected. Here we refer to multilateral arrengements.
16496	16	34	32	34	33	Only Kyoto but not UNFCCC includes "binding emission reductions"; both call for "new and additional finance"	Accepted. Text will be revised.
15675	16	34	33			Financing commitments under the UNFCCC and KP only apply to Annex II, not Annex I countries.	Accepted. Text will be revised.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16497	16	34	35	34	35	The voluntary market has not been generated by the UNFCCC/Kyoto	Rejected. Although not directly generated, voluntary markets have been triggered by ETS under the UNFCCC. But will revise text to clarify.
16498	16	34	40	34	40	Write out SCCF and LDCF	Accepted. Will do.
8067	16	34	44	34	45	unclear what is being referred to with this transitional process; where is the 2013 coming from?	Accpeted. Will update the text to reflect new agreements and decisions.
11235	16	34	45			The first meeting of the Board of the Green Climate Fund took place in August 2012. Among te key challenges it will have to face are the need to ensure full and effective participation of stakeholders, ensuring a robust safeguards system and related compliance and accountability mechanisms	Noted. Will make reference to role of stakeolders when speaking of GCF.
16494	16	34				Interesting chapters but does not refer to finance	Accepted. Text being revised to focus only on issues of finance in coordination with policy chapters.
9421	16	34	36			When discussing institutional arrangements in the international level, do authors only focus on the basket of six GHGs in the Kyoto Protocol? Isn't it also important to take into account non-CO2 GHG emissions, not only six Kyoto gases but also transboundaryair pollutants and Montreal gases that also have a large impacts on climate change? For example, as for Montreal gases such as CFCs and HCFCs, these are long-lived gases with very high global warming potentials that the policy makers were aware of. These gases were excluded from the UNFCCC to avoid any overlap with the Montreal Protocol, however, there will be still large amount of emissions in CO2 equivalent in the next 10 -20 years which are difficult to be reduced even regulated under the Montreal Protocol, because the Montreal Protocol only regulate the phase out schedule of consumption and production of CFCs and HCFCs and still allow production of HCFCs especially in developing countries.	Noted. Reference will be made in SOD where appropriate.
15674	16	34				Either here or in section 13.11 it would be useful to elaborate further on the range of ways in which financing can support international cooperation on climate change. See generally Rübbelke, D.T.G. 2011. International Support of Climate Change Policies in Developing Countries: Strategic, Moral and Fairness Aspects. Ecological Economics 70 (8):1470-80. Either way, it would be useful to cross-reference between these two sections.	Rejected. This belongs more in chapter 13.
14995	16	34	25			The chapter should discuss the World Bank's Forest Carbon Partnership Facility as a key example of multilateral financing that can play a role in capacity building and mitigation. This section could be an appropriate place for that discussion.	There is already a reference to the CIFs administered by WB - will list each separately in SOD.
8068	16	35	23	35	23	should be "bilateral climate finance" instead of "bilateral ODA"	Rejected. Some ODA is dedicated to climate finance as defined in the chapter - but will make sure to clarify this in the revision o fthe text
8741	16	35	31	35	35	Given that it is very much up to the countries to report whether financing deserves the Rio marker or not, it is not certian how precise an instrument the Rio marker is.	Accpeted. Will clarify the shortcomings of this tool, nevertheless as an important but imperfect tool to provide some orders of magnitude.
16501	16	35	35	35	35	Apart from Corfee-Morlot, also cite Michaelowa&Michaelowa(2011) for a more critical view on the markers	Accpeted. More references will be added in the re-write of the chapter.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
8069	16	35	35	35	35	there is now also an adaptation marker	Accpeted. Will make a reference to this.
17792	16	35	36			plurilateral or multilateral to keep it clear for more non-specialised audience?	Rejected. The two terms refer to different things but accept that a clarificaiton on these terms is needed.
16499	16	35				(1) The EU is an important regional arrangement, also for finance; (2) you may cite the Climate Funds Update webpage for the funds you mention here (also before)	1) Rejected. The EU is not a financing mechanism though it is true that it manages funds under its purvue and will make reference to that. 2) Accepted. Will do.
16500	16	35				This section should be more about the bilateral institutions and not the data collection	Rejected. We include the Rio Markers as an important tool to help track climate finance but agree that the text needs to cover better funding by bilateral institutions.
16502	16	35				(1) Not clear if this section is needed -> are these arrangements relevant? give examples for the case of climate change; (2) instead, you may discuss multi-bi institutions, like the CIFs, this is an important development…	1) Accepted. Text being revised to focus only on those relevant to finance to climate change 2) CIFs are covered under multilateral arrangements
8070	16	36	1	36	7	are there also such plurilateral or triangular arrangements for renewable energies or energy efficiency?	Yes there are and will make reference to this as appropriate in redrafted section.
18284	16	36	12	36	20	This concluding section refers to the importance of mitigation activities that are integrated into overall national plans. However, the preceding sections of this Chapter make no mention of any of the most successful of these efforts, including the efforts of the NDRC and the provisions of China's 12th Five Year Plan or the efforts of BAPPENAS in Indonesia that have led to the creation of Indonesia's Sectoral Roadmap for Climate Change and Development or Ethiopia's program of Green Economic Development. The omission of any reference to these and similar activities in other developing countries reinforces the unacceptable "tilt" of this section toward the activities and interests of Annex 1 (i.e., Industrialized) countries.	Accepted. There will be a new table added to these national entities and the important role that they are playing or that will potentially play.
11053	16	36	13	36	20	"The overall state of institutions in developing countries is weak." change to "need further capacity building"	Accepted. Will revise text to place focus on need for building the capacities of these institutions.
16503	16	36	13	36	14	This is a very strong statement, and certainly not an obvious "conclusion" of what you discussed before. -> You may cite the work of Winkler on SD PAMs but I am not sure if this is enough to make such a strong statement	Accpeted. Will cite references and efforts of countries to do this and the reasons for doing it.
8071	16	36	18	36	20	national implementing entities and national funds have also great potential. If followed by the sentence currently in the text, it sounds like they could also lead to the mentioned weaknesses	Accepted. Will add.
16504	16	36				Why are these conclusions only about domestic instutions? Why do you refer to important things in the conclusions like fragmentation and duplication that were, however, not discussed before?	Accepted. Conclusion will be rewritten to cover all the issues of the section.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12835	16	37	12	37	13	This sentence is contradictory. If mitigation and adaptation were complementary, the investment in mitigation would increase the need to invest in adaptation (and not, as mentioned, reduce it). If more mitigation reduces the investment in adaptation, the two strategies are substitutes, and not complements.	Noted. Wording will be clarified.
15415	16	37	23			I know Tol and cant figure out what they are talking about – eg private vs public good aspects of adaptation	Noted. Reference will be double-checked and SOD text clarified.
12836	16	37	24	37	29	The message is unclear to me.	The text will be reviewed to be clearer.
12834	16	37	1			In this subsection the notions of complementariness/complement/complementary should be defined to avoid confusion. The economic term "complement" in its strict sense implies that more mitigation leads to an increase in the effectiveness of adaptation and vice versa. According to that, the general relationship of mitigation and adaptation is the following: An increase in mitigation lowers the expected damages of climate change, and so adaptation becomes less effective. In the literature we also find that mitigation and adaptation are economic substitutes, and not complements (see e.g., Ingham, A., J Ma and AM Ulph (2005), Can adaptation and mitigation be complements? Tyndall Centre Working Paper No. 79. Barrett, S (2008) Dikes v. Windmills: Climate Treaties and Adaptation, Discussion Paper, Johns Hopkins University, and Tol, RSJ (2005) Adaptation and mitigation: trade-offs in substance and methods, Environmental Science & Policy 8, pp. 572–578). Also note the short summary concerning this issue in chapter 13.3.1, p.18 ll. 27 to 36. If the notion "complements" is just used to illustrate the fact that it is optimal to apply a mix of both strategies, mitigation and adaptation, (instead of one strategy), then it would be helpful to use another term or to define this notion at the beginning. Nevertheless, in some special sectoral cases there might exist synergies between mitigation and adaptation which could be discussed in detail in section 16.7.2.1 (see Yohe and Strzepek (2007) Adaptation and mitigation as complementary tools for reducing the risk of climate impacts, in Mitigation and Adaptation Strategies for Global Change, Vol 12, 5.).	Noted. Term will be clarified in SOD and discussed with the x-cutting group on adaptation.
16505	16	37				Whole section is not very easy to read, consider better structuring: question, elaboration, conclusion (particularly sections 16.7.2.1 to 16.7.2.3 are not very well structured)	Noted. Section will be re-structrur as appropriate.
12833	16	37	9			While the "macro-level perspective" of investments in mitigation and adaptation is described in section 16.7.1, the (expected) "micro-level perspective" is missing as an explicit section in this chapter. Due to the global-public-good character of mitigation in contrast to the private-good property of adaptation, this would lead in a micro-level perspective (without a global agreement to mitigate GHGs) to an underinvestment of mitigation due to free riding (see, e.g. Zehaie, F (2009) The Timing and Strategic Role of Self-Protection, Environmental and Resource Economics 44:337-350, Heuson, C et al. (2012) Which mode of funding developing counrtries' climate policies under the post-Kyoto framework?, RECAP15 Discussion Paper Series 4).	Noted. Reference will be evaluated and included as appropriate. Titel will be reformulated to accommodate a broader perspective.
16506	16	37				Check if this is not discussed elsewhere in AR5	Check with WGII.
12837	16	37	37			Besides the integrated assesment models, there are also theoretical contributions to the issue of timing. You may like to mention that by timing adaptation before mitigation the non-cooperative contributions to mitigation decrease because of strategic actions (see Zehaie, F (2009) The Timing and Strategic Role of Self-Protection, Environmental and Resource Economics 44:337-350).	Check reference.
9941	16	38	1		26	Literatures in these paragraphs should not just be listed one by one, but the implications and contributions to time dimension should be recomposed.	It will be re-structured.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12838	16	38	20	38	26	You may like to check whether your interpretation of the term "complememts" is in line with the authors'. They may refer to their result that "an integrated adaptation and mitigation strategy is more effective" (Wang and McCarl (2011) Inter-Temporal Investment in Climate Change Adaptation and Mitigation. Department of Agricultural Economics, Texas A&M University, Pittsburgh, Pennsylvania, p. 12) which is a different meaning.	Noted. Reference will be double-checked.
9944	16	38	32		35	You may have to highlight that the followings are just several examples for sectoral financing approaches, which are far more than those mentioned followed.	It has already been mentioned that these are only few examples. It can be reinforced.
16507	16	38				Add a reference to your statement	It is just an introduction to the sub-section. However, a reference can be sought.
11236	16	39	19			Social and environmental aspects must also be considered	Comments will be reflected in the text, although I cannot change the message by the author quoted.
8743	16	39	22	39	26	See commont number 13 above.	Which comment 13? I believe that the number corresponds to the list of comments by Prof. Skovgaard. I do not have access to that. Ask TSU.
11238	16	39	23			REDD+ has generated a significant debate around its potential social and environmental costs and benefits, the positive contribution of and to indigenous peoples and local communities as well as the need to ensure that any REDD+ action, in order to be effective, will have to respect and recognize the rights of indigenous peoples and local communities (Nussbaum and Moss, 2011)	Check reference.
11239	16	39	23	39	27	No agreement has been made yet at the UNFCCC on sources of financing for REDD+ , whether public, private or a combination of the two. It is worth noting however, that the last COP in Durban acknowledged that non-carbon benefits of REDD+ (social, livelihoods, and biodiversity among others) should be taken into account for REDD+ related results-based payments).	Noted. Reference to COP acknowledgment will be included as appropriate in restructured text.
16508	16	39	42	39	43	What does this section address: adaptation funding or synergies/trade-offs? Would suggest the 2nd, which is more in line with 16.7 overall	Linked to the discussion on complementariness and trade-offs.
11237	16	39	53			Significant challenges still exist as regards legal and governance reforms aimed at ensuring the full and effective participation of stakeholders and compliance with human rights and environmental obligations and standards. (IUCN, 2010)	Check reference. Linked to comment 463.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7316	16	39	6	39	10	The text discusses the presumed benefits of diverting waste from a landfill to composting, stating the following: "Waste management projects, especially those who have the dual benefits of producing compost and reducing methane emissions by diverting organic waste from dumping at a landfill to dumping at a composing plant (e.g. CDM project “Composting of Organic Waste in Dhaka”), which is highly suitable to LDCs, can be successful in achieving investment and delivering on sustainable development benefits (Ayers and Huq, 2008)." Waste industry experience indicates that this is an overly simplistic view. Typically, only open windrow composting operations are sustainable and cost-effective for the LDCs. If optimally managed, composting of waste is a highly desirable strategy. However, during rainy seasons or in wetter climates the windrows are seasonally characterized by high water contents, resulting in loss of aeration, the development of anaerobic conditions, and the generation of N2O and CH4, as well as highly objectionable odors from intermediate decomposition products under less than optimum aeration (esp. carboxylic acid generation). I don't know the particulars of the Dhaka project but would just note that, to date, since registration, the Dhaka project has achieved 7131 verified CERs out of an annual projected average of about 89,000 CERs. This plant is semi-enclosed with cells and a "maturing" windrow area according to publically-available information on the CDM website.	Another example and additional literature on the trade-offs with waste sector can be sought.
9945	16	39				It's good to introduce the regional financing approaches, but this section seems to be too simple to learn about the issue. Maybe some data or case on this issue can be supplemented to make this section interesting.	Additional data and literature will be sought.
12653	16	39	41	40	17	It might be better to describe diference between GEF and CIF (GEF is additional grant,CIF is loan, equity or other instruments)	Taken into account. The differentiation will be highlighted (maybe in a footnote).
17783	16	4		5		The executive summary states "investment and finance inadequate" - how much is needed and how much is the shortfall estimate?	Taken into account. We will provide more information in SOD.
14417	16	4	19			need to translate to percent of (2030) GDP	Unfortunately, it is not possible to translate into a share of 2030 GDP because these estimates are from bottom-up models that do not have global GDP figures.
2272	16	4	2	4	2	The idea that the climate can be "stabilized" merely by controlling greenhouse gas emissions is absolute rubbish and is without a scrap of evidence. It is not only a question as to whether such a "stabilization" is desiteable , there has also to be a realisation that such an objective is completely absurd, as we do not have that degree of control of the many factors influencing the climate and may never have it.	There is ample scientific evidence that shows how growing GHG emissions are altering global climate. It is true that we cannot fully control global climate. However, it is possible to reduce the human-induced component of global warming. We rephrased to reflect more accurately such subtlelty.
16400	16	4	20	4	21	Incremental investment can already be considered a 'net' figure, so reduced investment in other parts of the economy should already be deducted.	Agree, we cut the sentence

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
4525	16	4	23	4	31	This paragraph gives the impression that incremental cost is a comprehensive metric for viewing investment. However, the cost might not be borne by the investor or a set of investors. In many (most?) cases, different pathways imply investments by different investors with costs borne by those implied by the policy assumed. The idea promoted in this paragraph of using incremental cost as a metric for investment policy is confounded by the fact that the investor is not necessarily the impacted by the macroeconomic cost, and these costs often are not estimated to include transaction and other cost contributors.	Agreed.We will clarify it in the SOD.
16401	16	4	23	4	31	Your definition of incremental costs is quite narrow; incremental costs may also include transaction costs (e.g. contracting, enforcement, overcoming information barriers via capacity building, costs of setting up policies etc.), see how the GEF and the Multilateral Fund under the Montreal Protocol use it.	Noted. We will provide a clear definition.
13431	16	4	28	4	30	Language used is unclear whether the author is referring to a cost of $100billion per country, $100Billion per technology, or $100Billion in aggregate globally.	This is an aggregate global figure. We rephrased the sentence.
18258	16	4	28	4	30	Language used is unclear whether the author is referring to a cost of $100billion per country, $100Billion per technology, or $100Billion in aggregate globally.	see comment 13431
8076	16	4	28	4	31	the incremental cost estimates referred to lack the information from which stabilisation scenario (xx ppm, 2°C etc.) the estimates are derived	see comment 8075
2399	16	4	3	4	3	from activities to technologies. This sentence needs a rewrite.	Agreed. Will be rewritten.
4526	16	4	32	4	38	This paragraph is not able to define climate finance, but nevertheless the chapter repeatedly uses the term and tends to limit itself to climate finance rather than investment and finance more generally. Suggest that the chapter clearly define the boundaries it will cover in clearly defined terms. Otherwise, this chapter may give a biased view of what is important for climate change in the areas of investment and finance.	Agreed. We will provide a definition of climate finance in the SOD.
16402	16	4	32	4	33	Some authors (e.g. Buchner et al. 2011) include total investments of mitigation technologies (not just the incremental part compared to fossil fuels) in climate finance.	Agreed. Several authors have suggested different definitions of climate finance but there is not a commonly accepted definition.
16403	16	4	32	4	36	National climate finance is not only provided by development banks but also by the private sector	Noted. Text will be clarified in SOD.
2794	16	4	32	4	45	I think that this is confusing fiannce with aid flows	Noted. We will provide a definition of climate finance in the SOD.
9054	16	4	33	4	34	The Convention does not define what "climate finance" is. However, it defines WHAT kind of finance CANNOT be counted as climate finance for purposes of fulfilling developed country obligations in the Convention. In order to claim a comprehensive treatment of the topic, this chapter must recognize the categories of finance that are not countable under the Convention as climate finance. Under Article 4 paragraph 3, climate finance provision for mitigation is a mandatory for developed country signatories. These obligations cannot be met be through ODA which is voluntary, subject to domestic political decisions of aid givers, and bearing of conditionality. Climate finance must be "new" and "additional" and cannot involve redeployment of current aid flows towards climate change purposes. Climate finance under the Convention cannot be provided through loans which must be paid back because under the convention developed countries are responsible for the incremental costs of developing countries' fulfilling their obligations toward mitigation and adaptation. The grant element of loans or the subsidy element in the interest on loans could be climate finance, but not the loan itself. Private foreign investment cannot be counted as climate finance under the Convention because the obligation is that of Annex 2 parties, including the United States. Annex 2 parties can collect funds from the private sector to discharge their climate finance obligations, but voluntary private financing and investment does not qualify as climate finance under the Convention.	Noted. We will provide a definition of climate finance in the SOD and note how it differs from climate finance under the Convention

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16404	16	4	39	4	39	Most of the flows are not really "meant" to support mitigation/adaptation (particularly private finance but also some ODA/OOF); so to avoid the doubtful interpretation that their is some intention behind it, you may simply write that they "support" mitigation and adaptation	Agreed. Text will be revised.
16405	16	4	40	4	40	"international" means by definition that it comes from "foreign" countries	Agreed.
12822	16	4	41	5	45	Executive summary: The results in section 16.7.1.2 are more concise than it is written in the summary ("investments in mitigation should anticipate investments in adaptation" section 16.7.1.2, p. 37, l. 42))	Agreed.
18259	16	4	42	4	45	Para cites "the only overview available" - but includes no citation. Citation is required.	Agreed. There are now at least 2 estimates that will be summarized.
5242	16	4	42	44		It is unclear wheather USD 97 billion is an annual amout of money for 2009 or 2010, or wheather it is a cumulative amount of money over several years until 2010?	It is for 1 year, but not for a specific calender year
16406	16	4	43	4	43	The estimates of Buchner et al. Are rather "best estimates", so you should give ranges (can be found in their report).	Agreed. We will include ranges.
8059	16	4	43	4	43	I think this study also includes domestic flows (Buchner et al, 2011, p.8), therefore one might need to indicate that the 97 billion are not fully international climate finance	Noted. The 2012 report has explicitly included domestic finance and we will discuss it as well in the SOD.
16407	16	4	44	4	44	The private finance figure of Buchner includes domestic sources; their figure is the average of USD 37 billion, an estimate of Green FDI flowing into developing countries by UNCTAD (so only international finance here) and USD 72 billion, the BNEF estimate for renewable energy investment in developing countries (of which a substantial part will be domestic); the lower bound seems to be a better proxy for "international private climate finance" in my view, even when the UNCTAD figure does not include all climate-friendly transactions is not based on official corporate reporting but on a dataset from the Financial Times that uses only publicly available data (many FDI transactions may be confidential)	Noted. We will used updated CPI data in the SOD.
7433	16	4	6	4	10	Note that 1- The distributional consequences across sectors may have negative macroeconomic impacts if they negatively affect international competitiveness, 2- distributional impacts across sector that has no international competitiveness implications can be dealt with through the domestic polcies but when the distributinal impacts are across regions the fix is difficult. This prevent the movement in allocation to be Pareto optimal and the issue of who gains and who loses can not be ignored.	Agreed, but outside the scope of chapter 16. Should be addressed by chapter 6 and 14.
2400	16	4	6	4	7	That is one weird definition of macroeconomic costs. Suggest a rethink. Investments can go into people, institutions or concrete. Not just one.	The sentence is not intended to define macro economic costs
16509	16	40	1	40	1	1) GEF is not a fund, but it manages several funds, e.g. the GEF Trust Funds, LDCF, SCCF; 2) the GEF Trust Fund had a adaptation window even before LDCF/SCCF were created; 3) GEF funds for biodiversity should have had adaptive benefits	Comments will be reflected in the text, probably in a footnote.
15676	16	40	18			The text could refer to the problematic nature of the CDM levy in that it represents a tax on mitigation in order to finance adaptation: see Eisenack, K. 2012. Adaptation Financing in a Global Agreement: Is the Adaptation Levy Appropriate? Climate Policy 12 (4):491-504.	Check reference.
16511	16	40	18	40	24	Better separate synergies (CDM as institution initates adaptation funding, AF funding may have mitigation co-benefits) from trade-offs (adaptation levy in CDM reduces finance for mitigation)	Linked to the discussion on complementariness and trade-offs. The comment will be reflected in the text.
8072	16	40	22	40	22	the AF is also financed through pledges of developed countries, hence not only CDM revenues	Comments will be reflected in the text, probably in a footnote.
18285	16	40	25	40	29	This para offers the only passing reference in the entire chapter to some important and innovative approaches to climate finance. It is good that these passing references appear somewhere in this chapter. It would be better if the reference included additional citations and provided some of the associated analysis available in these publications, including some measure of the scale of the possible contribution from each such source of funding.	Coordination with the part on innovative means of finance. Measure of scale will be sought in additional literature.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16512	16	40	26	40	29	This rather belongs to 16.2.3 (sources) where it is actually missing	Coordination with the part on innovative means of finance: 16.2.3.2.
8073	16	40	27	40	27	a levy on international transport is not only proposed for adaptation, but for both, mitigation and adaptation activities (although of course this specific author might only propose it for adaptation)	Coordination with the part on innovative means of finance: 16.2.3.2.
16513	16	40	30	40	36	Does not belong here -> burden sharing also applies to mitigation, and should rather be discussed in chapter 16.2.3 (sources)	Coordination with the part on innovative means of finance: 16.2.3.2. I believe it belongs here, because this sub-section deals with the synergies and trade-offs between adaptation and mitigation. This discussion can be replicated in the section 16.2.3 purely on mitigation aspects.
16510	16	40	4	40	4	You may have to mention that the SCCF addresses both mitigation and adaptation, while LDCF is for adaptation only	Comments will be reflected in the text, probably in a footnote.
11240	16	40	7			There is already literature on the Green Climate Fund, see lost below FPP and JOAS have produced a report titled “Indigenous Peoples and the Green Climate Fund” that contains a series of recommendations on how to ensure that the GCF activities respect international human rights obligations and standards such as the UN Declaration on the Rights of Indigenous Peoples, ensure full and effective participation of indigenous peoples as active observers and direct access to financing. (Martone and Rubis, 2012)	Noted. Reference will be evaluated and inclueded in restructured SOD as appropriate. Linked to comment 459.
15677	16	40	30	40	32	The problem is primarily about who should fund adaptation in poorer countries, given that they don't have sufficient resources - as is, the text implies that the answer is to look to the rich (i.e. capacity to pay), whereas later in the paragraph it rightly suggests that responsibilities to provide adaptation finance should be based on a mix of responsibility and capacity.	This can be reflected in the text, although I cannot change the message of the literature quoted. A reflection on the point raised can be added and additional literature fought.
16517	16	41				After reading the whole chapter, I am surprised to find no sub-chapter on effectiveness and efficiency of climate finance, given that this is a topic that is both important and more and more discussed!	Noted. The second order headings have been decided by the IPCC plenary in 2009. However, the restructured SOD will focus more on evaluating instruments.
16514	16	41	11	41	13	Again, better give a range than a point figure for the Buchner et al. estimates	Taken into account. Answers will be revised and updated.
8074	16	41	12	41	12	I think this study also includes domestic flows (Buchner et al, 2011, p.8), therefore one might need to indicate that the 97 billion are not fully international climate finance	see comment 8059
16516	16	41	22	41	37	This section does not make clear that substantial governmental policies (ETS, taxes, FITs…) will be needed to reach the needed level of financing; risk-mitigation tools may be an important complement but they will never generate the level of investments needed; generating a high level of public funding will both be very difficult and will also be less inefficient than mobilizing the investment via policies.	Accepted. Role of policies will be clarified.
16515	16	41	6	41	20	This section does not clearly distinguish btw. Incremental costs and investment needs. The Buchner etal figure is somehow a mix between the two; -> would be helpful to distinguish the two	Accepted. The SOD will include a definition of incremental cost and investment. Text will be clarified.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11241	16	5		40		Full references for the comments on chapter 16 : Johl Alyssa and Lador Yves: “A human rights-based approach to climate finance” Friedrich Ebert Stiftung, Geneva, February 2012 Global Witness, “Safeguarding REDD+ finance” February 2012 Nancy Dubosse and Richard Calland “Beyond the Jargon: the governance of climate finance” Climate Finance Governance Initiative /IDASA November 2011 Liane Schalatek and Nancy Bird “The principles and criteria of public climate finance” Heinrich Boell Foundation and Overseas Development Institute, November 2011 Richard Doornbosch and Eric Knight, “What role fo public finance in International Cimate mitigation? OECD, 2008 Sean Stephenson, “Does ODA grow on trees? A legal analysis of REDD-ODA finance, European journal of Legal Studies, vol 4, issue 1 summer 2011 Francesco Martone and Jen Rubis : “Indigenous Peoples and the Green Climate Fund technical briefing for indigenous peoples, policy makers and support groups”, Forest Peoples Programme (FPP) and JOAS, August 2012 Smita Nakhooda and Alice Caravani “REDD-plus finance”; Climate Finance Fundamentals, Overseas Development Institute, Heinric Boell Foundation , November 2011 Rights and Resources Institute (RRI): “What rights? A comparative analysis of developing countries' national legislation on community and indigenous peoples' forest tentur rights” Washington DC, 2012 K.W.Abbott and D. Gartner : “The Green Climate Fund and the future of environmental governance” earth System Institute, working paper 16, 2011 Fukuda, K., Wakiyama, T. and Shimizu, N. 2011. Financial support to the implementation of adaptation measures – comparative analysis of the Adaptation Find and the Climate Investment Funds, and implications for the design of the Green Climate Fund. Working Paper CC-2011-03. IGES, November. UNFCCC Secretariat,” Financing options for the full implementation of results-based actions relating to the activities referred to in decision 1/CP16 paragraph 70” technical paper, July 2012 N. Moss and R. Nussbaum, “A review of three REDD+ safeguard initiatives” UNREDD FCPF, June 201	Noted. We will review the comments and inclued as appropriate.
12483	16	5	10	5	10	The section referred to (16.2.3.1) covers the additional risk currently inherent in low-emission technologies. What this section does not cover in much detail, is the increased financial risk associated with investing in fossil technologies in a scenario where carbon pricing (more fully) reflects the true costs of GHG emissions. The fact that proven hydrocarbon reserves contain much more carbon than we can burn if we want to limit climate change, is not reflected in today's share pricing/financing costs. This "market failure" / hidden financial risk should be pointed out in the financing chapter. It is particularly important that long term investors (e.g. pension funds) also develop tools to deal with this kind of "carbon risk".	Noted, but outside the scope of chapter 16.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11044	16	5	11	5	14	The role of Public Finance sector should be shed the right on in executive summary, for example "Public finance has significant role to promote technology transfer and leverage new and additional private fund with catalyze function" see OECD. 2008. Richard Doorn Bosch and Eric Knight, Round Table on Sustainable Development, What Role For Public Finance In International Climate Change Mitigation	Noted. The catalytic role of public finance is necessary when there are externalities, as mentioned in the text. This reference will be reviewed.
11222	16	5	14			Proper governance reforms should also be ensured , including – among others - respect of human rights and environmental obligations and instruments, in particular as regards indigenous peoples and local communities. (Johl and Lador 2012)	Noted. But topic is outside the scope of the chapter.
8079	16	5	15	5	15	add "inter alia by instruments such as" after revenues; since the following list is not comprehensive and there are no reasons given why the mentioned instruments are preferred	Accepted. Text will be redrafted.
12823	16	5	16			You may like to consider that selling of AAUs leads to emissions elsewhere (the incentive to buy AAUs is not to take mitigation measures). So the money raised by selling AAUs can not fully be attributed as additional money for mitigation, especially not if the money is used for other investment purposes.	Noted. We are simply considering possible financial revenues for governments. We are not making any assumption on how revenues from carbon taxes etc. are used.
9050	16	5	20	5	23	The discussion on fossil fuel subsidies applies well to developed countries but must be qualified in the case of developing countries where the contraction of fuel subsidies is circumscribed by the equity impact and objectives of providing access to modern energy to poor populations. See: United Nations (2009). World Economic and Social Survey 2009: Promoting Development, Saving the Planet. Sales No. E.09.II.C.1.	Accepted. Fossil fuel subsidies should be replaced by some form of income support in low-income countries. Therefore the net effect of phasing-out fossil fuel subsidies on government finances is uncertain.
8080	16	5	20	5	20	what is not compatible: the contraction of fossil fuel subsidies, or the fossil fuel subsidies themselves? confusing	Taken into account. We rephrased the sentence.
13433	16	5	22	5	23	Para asserts that fossil fuel subsidies will "vanish" in a low-emissions world. This is not necessarily true. No citation is given for this assertion.	Noted. We will check text and amend if necessary.
18260	16	5	22	5	23	Para asserts that fossil fuel subsidies will "vanish" in a low-emissions world. This is not necessarily true. No citation is given for this assertion.	see comment 13433
12824	16	5	23			If the goal is reached there is no problem if sources of funding "vanish in a low-emission world".	Disagree. In several countries, taxation of fossil fuels provide public funds used to finance government activities (i.e. beyond their pigouvian scope). If funds vanish, taxes on income or on other goods must be increased (for the same level of spending).
2795	16	5	24	5	30	Some of the tools mentioned are public and some are private. The paragraph implies that there are some which are common which is not the case.	Noted. We separated public and private tools
4799	16	5	26	5	27	I think that tradable green certificates (TGC) should also be mentioned, not only FIT has proven its success in the development of renewable energy sources.	Agreed. We will mention TGC.
2402	16	5	31	5	35	that para needs a rewrite. Do we need international governance to have good national finance for mitigation? And the second sentence is a run-on.	Agreed. Paragraph will be redrafted.
8060	16	5	32	5	32	Why not also for adaptation?	Adaptation will be addressed in Working Group II. We will discuss adaptation finance only where appropriate.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
11223	16	5	35			Full and effective participation of stakeholders and right-sholders both in governance and in the design and implementation of projects should also be guaranteed. Experience in various global funds show that direct engagement of communities is a key prerequisite for ownership and effectiveness. (Abbott and Gartner, 2011)	Agreed. Text will be revised.
17782	16	5	36			in certain sectors, for example in PV area - where Australian and US inventions have been commercialised in China	Comment not clear.
16408	16	5	36	5	40	The domestic enabling environment is key for tech transfer, see the discussion under the TEC and the IPCC special report on "Methodological and Technological Issues in Technology Transfer"	Agreed. We will review the report.
8081	16	5	44	5	44	also the link could be mentioned that lack of funding for mitigation will likely increase the costs for adaptation (and the required finance) and loss and damage	Noted. The chapter incluedes a section on synergies and trade-offs between mitigation and adaptation finance
7434	16	5	6	5	10	Taking into account the inhert risks in developing countries together the public good nature of the environmental provision, the type and extent of private funding to climate change may be quite limited.	Noted. We agree with the reviewer. In fact we explicitly say that private finance will play a role only if "the right incentives will be established".
2401	16	5	6	5	6	that is a poor definition of the private sector.	It is not intended to be a definition, it is a list of major actors in private finance.
9049	16	5	6	5	8	"The private sector – e.g. pension funds, insurance companies, banks, mutual funds, and private foundations – has developed tools to finance large and risky projects when there is a clear return on the investment." This statement has to be qualified in light of 2007-2008 financial crisis and the too-big-to-fail phenomena. States have proven to be the ultimate guarantors of the "clear return on the investment" even where there was no explicit guarantee.	Noted. Topic is outside the scope of the chapter.
13727	16	5	9	5	9	Add after ".. established.": "However, the target of leveraging a maximum of private funds is unlikely to lead to an effective outcome, as high leverage ratios are likely to mask lack of additionality of the underlying project (Stadelmann et al. 2011)." Reference: Stadelmann, M. Castro, P.; Michaelowa, A. (2011): Is there a leverage paradox in climate finance? Efficiency of the CDM and the GEF in leveraging funds and reducing CO2, Working Paper, Climate Strategies, Cambridge	Noted.
8078	16	5	9	5	9	the word "right" incentives in my understanding is quite normative, something like appropriate would be more adequate	Accepted. Text will be redrafted.
16410	16	6	11	6	14	This part needs references in the literature, check e.g. Painuly (2001) or refer to other parts of AR5	Agreed. We will check the reference and change if necessary
2403	16	6	2	6	16	careful here. This sounds like a repaet, and a biased one, of the climate negotiations.	Comment is not clear.
16411	16	6	24	6	26	Why are innovative sources "crucial"? In theory, you may just use public budgets and regulations (taxes, standards/cap&trade) to mobilize the needed investments.	Noted. Text will be revised.
11224	16	6	26			Any financing from public and private sources will have to be subject to social and environmental safeguards and related compliance and performance evaluation. Respect for safeguards will be key to create an enabling environment for genuine and effective long term mitigation and adaptation action, while recognizing the possible role and contribution of indigenous peoples' and local communities' traditional knowledge and livelihoods. (Johl and Lador, 2012; Global Witness, 2012, Martone and Rubis, 2012)	Noted. Topic is outside the scope of the chapter.
7435	16	6	27	6	33	The climate finance in this reference is meant to be additional and predictable. This may impose a constraint on the possible sources.	Noted. This applies to climate finance under the UNFCCC but not to climate finance in general.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
9051	16	6	27	6	33	The text claims that: At the Conference of the Parties in Copenhagen 28 2009 (COP 15) and Cancún 2010 (COP 16), developed countries made a concrete commitment, in the context of meaningful mitigation actions and transparency on implementation, to a goal of jointly mobilizing USD 100 billion per year by 2020 to address the needs of developing countries." First of all, the commitment was made in COP 16; the statement from COP 15 is not an actual commitment since the statement was only noted by the Parties. Second,This commitment does not "meaningfully"discharge the obligations of developed countries under the Convention because the Convention does not recognize voluntary financial flows, such as ODA, as fulfilling developed country obligations. To avoid confusion and error, this qualification must be stated in the paragraph.	Noted. The SOD will discuss the USD 100 billion p.a. commitment.
7126	16	6	27	6	33	Information can be update to reflect Decision 2/CP 17 (Durban), in particular par.127 which decides to undertake a work programme on long-term finance in 2012... to progress on long-term finance in the context of decision 1/CP.16, paragraphs 97-101. The LTF programme, according to Par.130, is to ""... analyze options for the mobilization of resources from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources and relevant analytical work on the climate-related financing needs of developing countries".	Agreed. SOD will be updated regarding the new developments.
16412	16	6	27	6	27	Art 4.3. of the FCCC only refers to "financial resources" provided by Annex-2 countries (Annex-1 w/o former Eastern Bloc) for non-Annex-1 countries; it does not include the full world of climate finance as defined on the same page (domestic, South-South)	SOD will include a definition of climate finance that is broader than climate finance under UNFCCC
15672	16	6	31			Text should clarify that the $100 billion is for both mitigation and adaptation.	Agreed.
5226	16	6	39			Please better specify 'green tourism'. In most scientific literature 'sustainable tourism' is translated into eco-tourism and pro-poor tourism, both basically long haul air transport based rich to poor countries tourism, with a very high cabon footprint (and often many associated socio-economic and political issues as well). So this is very much unhelpful within this IPCC report. My suggestion to replace 'green tourism' with 'sustainable transport based, short haul and/or domestic green tourism'. I know, not a nice term, but the general term is not helpful (skip the whole term is another option, may be better; too many problems with tourism to label it a green solution). See further discussions in chapters 8 and 10.	Sustainable tourism will not be covered in the SOD.
16413	16	6	46	6	47	for the credible and long-term strucuturing of incentives you may cite Hamiltion (2009) "Unlocking Finance for Clean Energy" and Brunner et al. (2012) "Credible commitment in carbon policy" in Climate Policy	Thanks. We will check these references and cite as appropriate.
16409	16	6	9	6	9	Would add "as understood/defined here" after "climate finance", as there is no agreed definition of climate finance	Noted. SOD will include a definition of climate finance.
11225	16	7	15			Public sector should also play a crucial role in setting the REGULATORY framework	Agreed. We also meant the overall regulatory framework.
16416	16	7	15	7	22	Whole paragraph needs references (can also refer to past IPCC reports or other chapter in this IPCC report)	Agreed. We will look for appropriate referencecs.
16415	16	7	16	7	17	What is difference between "leveraging" and "mobilizing"? (be careful, as particularly the word "leveraging" is understood very differently, see Brown et al. (2011) "[...] a survey of leveraging methodologies". Rather write "mobilizing new and redirecting existing private investment flows"	Agreed. Text will be revised.
11226	16	7	22			Furthermore the public sector has an obligation to ensure that any climate related action complies with international obligations and standards on the environment and human rights.	Noted. Should be addressed in chapter 3.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
7127	16	7	23	7	24	This affirmation is controversial. Under UNFCCC the main request of developing countries is that finance should come from public sources, as an obligation of developed countries, as reflected in Article 4.7 of the UNFCCC. In addition to the political compromise, public finance is relevant , to support mitigation measures not well addressed by carbon market because they face non-price barriers or more financial support is required than the provided by the market price. That also depends of the country, because carbon market does not operate with the same effectiveness everywhere. Public is also important to finance R&D when private sector not willing to invest due to high risk, long development times or 'public good' character. So public finance is crucial to correct market failures and for leverage private financing.	Agreed. Text will be revised.
16414	16	7	7	7	7	"legitimate development needs" is a normative statement, not backed-up by research. Delete or write "development needs, as perceived by stakeholders X, Y and Z "	Noted. Text will be revised.
13430	16	8				Language used is vague in separating the concepts of annual vs. aggregate incremental costs	SOD will include a more precise definition of incremental cost.
18257	16	8				Language used is vague in separating the concepts of annual vs. aggregate incremental costs	See comment 13430
4527	16	8	12	8	27	Finance largely comes from the private sector and not from governments. Investment flows do not flow only from developed countries to developing countries. Currently, investment is often flowing from countries with strong trade surplus to other counties, regardless of whether the country is developing or not developing. This paragraph is not presenting a description of current investment flows, but rather is stating how many think the flows should work. As such it is expressing a value judgment and should be balanced by a description of the current flows of investment which are being driven largely by economic forces.	Agreed. Text will be revised.
2796	16	8	12	8	17	This again confuses aid flows with financing.	Noted. SOD will include a definition of climate finance.
9052	16	8	15	8	16	Text says: "however, countries at the opposite end of the wealth spectrum will be unable to self-finance and 15 will require assistance from the funds committed at COP16." This presumes that the the funds committed in COP16 are the only funds that will be available from now until the future. To be correct, the "16" should be deleted.	True, need to change.
4528	16	8	18	8	23	This paragraph seem to advocate greater financing of risky projects, whereas, the added real cost of risk and the principle of minimizing cost would argue for the opposite. Suggest that both sides of such an argument be given here, and since this is only introductory the paragraph should refer forward to sections where both sides are explained with evidence.	Noted.
13435	16	8	18	8	23	Implies that investment risk is lower in Industrialized Countries than in Developing Countries. This not universally true. Investment risks in Spain, Italy, Portugal, Greece and Ireland are likely to be higher, for example than the parallel risks in India, Brasil, Indonesia, and China.	Noted.
18262	16	8	18	8	23	Implies that investment risk is lower in Industrialized Countries than in Developing Countries. This not universally true. Investment risks in Spain, Italy, Portugal, Greece and Ireland are likely to be higher, for example than the parallel risks in India, Brasil, Indonesia, and China.	See comment 13435.
16418	16	8	19	8	19	rather "risks", not "risk"	Noted.
8726	16	8	20	8	23	Prejudice or limited knowledge leading to an inflation of the perceived risks is a similar problem: often investors want a higher risk premium than what can be empirically justified simply because they do not know enough about the country in which the investment is taking place.	Noted. Behavior depends on perceived risk, even if the perception is not accurate.
16419	16	8	20	8	20	replace "must flow to" with "must be invested in" -> most investments will be domestic	Noted.
16420	16	8	30	8	30	Check for definitions of "incremental costs" under the GEF and Multilateral Fund; the wording "incremental cost" has first been used in the ozone regime, where it was meant to clarify that benefits have to be deducted from costs (see e.g. Benedick 1991)	Taken into account. SOD will include a definition of incremental cost.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
9048	16	8	34	8	41	The paragraph proposes a definition of incremental cost as lost welfare measured via GDP and derives the implication that incremental cost can only be measured through modeling. Lost welfare through a counterfactual GDP calculation is probably the most direct way to measure incremental cost at the nation-state level. But lost welfare can also be measured at the local, firm, regional, household level and thus incremental cost can also be measured at these levels without the need for economic modeling. So, economic modeling is not the only way. See, for example, Centre for Science and Environment (CSE) (2010). Challenge of the New Balance. New Delhi in the case of 6 high emission sectors in the case of India. Of course, for the purpose of deriving a national estimate it would be necessary to aggregate these estimates but methodologically this alternative method can generate a national incremental cost estimate.	Taken into account. SOD will include a new and broader definition of incremental cost.
8727	16	8	34	8	41	If we operate on the national scale, one could argue that the benefits of avoided climate change, or at least co-benefits such as avoided air pollution, also should be included.	Noted. SOD will state more clearly that the analysis deals only with costs and not benefits of climate change mitigation.
15285	16	8	34	8	34	remove "and" after "from"	Noted.
8724	16	8	6	8	7	And vice versa: viable institutions influence how much finace can be raised.	Noted. Text will be revised.
13434	16	8	8	8	11	Assumes that Industrialized Countries will necessarily have first priority in allocation of global resources for climate mitigation. This is not necessarily true. Investments in energy efficiency and low emissions technology in China, Brasil, and India are already greater than parallel investments in many Industrialized Countries, including Belgium, Spain, Portugal, Austria, New Zealand, Netherlands, Czech Republic, etc.	Noted.
18261	16	8	8	8	11	Assumes that Industrialized Countries will necessarily have first priority in allocation of global resources for climate mitigation. This is not necessarily true. Investments in energy efficiency and low emissions technology in China, Brasil, and India are already greater than parallel investments in many Industrialized Countries, including Belgium, Spain, Portugal, Austria, New Zealand, Netherlands, Czech Republic, etc.	see comment 13434
8725	16	8	8	8	11	I do not think it is a question of not having enough headroom, the global capital markets have plenty of money to meet those needs, the question is how to create incentives to invest in order to meet those needs.	Agreed. Text will revised.
16417	16	8	8	8	12	Strange wording in my view: the paragraph gives the impression that capital markets may not be able provide the right amount of capital for CC mitigation, even the right incentives are in place. Can you back up this "risk" or "fear" with any study? If yes, cite them?	Noted. Text will be revised with citations.
16421	16	9	11	9	12	"the adequacy of the USD (-> replace 'US$') 100 billion commitment to meet the developing country mitigation and adaptation" needs ->this does not only depend on the level of incremental costs - which is analyzed in this chapter - but also on the own contribution of developing countries you assume; while the UNFCCC 1992 may be interpreted in a way that Annex-2 countries have to pay for all incremental coss in Non-Annex-1 (see e.g. Biermann 1997), this is much less clear under the Copenhagen Accord where the USD 100 billion are provided "in the context of meaningful mitigation actions".	Noted. The SOD will provide context for the 100 $bn commitment.
12825	16	9	21	9	29	Investment may be made due to non "climate motives", e.g. due to biodiversity protection. So you may like to add some words on the underlying assumptions of the models considered, here.	Noted. The SOD will provide a definition of climate finance.
16422	16	9	21	9	21	Olbrisch et al could not include a recent estimate from Landis & Bernauer (2012) in Nature Climate Change -> the latter provides an estimate for "financial transfers" needed under a 2 degrees path -> they take into account that Annex-2 may not have to pay all incremental costs of non-Annex (see my comment 22)	Thanks, will include the reference.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
16424	16	9	21	9	42	You use different terminologies, like incremental investment, additonal invemstmen, incremental costs, abatement costs -> for the reader, it would helpful if you define them somewhere and show where relevant differences exist or where terms mean actually the same (e.g. incremental costs and abatement costs?)	Taken into account. SOD will provide definitions for incremental cost and investment.
2797	16	9	21	9	42	These paragraphs mix the funding of the cost gap between clean and dirty and actual financing investment throughout	Noted. The SOD will use a new set of definitions.
16423	16	9	30	9	42	make clear whether the cited studies; (1) include GHGs other than CO2; (2) included biogenic CO2; (3) have a macro or micro view on costs -> as far as I understand, the IEA is a macro-study, while McKinsey is micro (but check)	Noted. The SOD will provide greater detail on the cited studies.
9931	16	9	31		32	When "New Policies Scenario" is mentioned, it's better to introduce the NPS in footnote in case readers have no idea about the NPS.	Noted. The SOD will provide greater detail on the cited studies.
16426	16	9	34	9	34	It may useful to note that MAC studies like the one of McKinsey do not include transaction costs, so the acutal costs may be higher (see e.g. Kesicki 2012 in "Climate Policy")	Noted.
12826	16	9	41			You may like to add some words on the height of subsidies in a different context, e.g. with regard to coal or nuclear power, in order to get an impression on the relative height of the subsidies mentioned here.	Noted. The sentence will be rephrased in the SOD.
16425	16	9	41	9	41	the USD 200 billion do not have to be provided via subsidies, the incremental costs can also be overcome by taxes, emission trading and other means.	Agreed. The sentence will be rephrased in the SOD.
15412	16	9	43			Outstanding	Agreed.
7128	16	9	8	9	14	The 100 billion is definitely a political commitment, and do not reflect the developing countries needs, that is why when adopting the long term finance programme in Durban, part of the mandate of the LTF programme is relate to develop "...relevant analytical work on the climate-related financing needs of developing countries. The analysis will draw upon relevant reports including that of the High-level Advisory Group on Climate Financing and the report on mobilizing climate finance for the Group of Twenty and the assessment criteria in the reports, and will also take into account lessons learned from fast-start finance. A recent presentation (South Centre) in the Long Term Finance Workshop (July 2012), mencioned as sources of information and estimated of finance requirements form mitigation: • IEA (2010) “Blue Map” scenario, up to 2030 $750 billion a year, 2030-2050 $ 1,600 billion a year • Global Energy Assessment (2011), 2010-2050 $ 1,700-2,100 billion a year • Edenhofer et al. (2009) “RECIPE” up to 2030 $480 – 600 billion a year, in 2050 $1,200 billion a year • Mckinsey (2009) Pathways to a Low-Carbon Economy, in 2020 $ 660 billion a year, in 2030 $1,000 billion a year • UNFCCC (2009) expert group on technology, Global additional financing required, $300 to 1,000 billion a year until 2030 . Developing country share in costs of technology deployment and diffusion (excl. research and development) $182 to 505 billion a year. • World Bank Development Report 2010. •Incremental mitigation costs in development countries • $140 to 175 billion a year . “Associated financing needs”, $265 to 565 billion a year . • UNDESA (WESS 2011), Global investments for energy transformation, $1,800 billion a year. Developing country requirements: Energy transformation - $1,080 billion a year, Agric. investment 20 billion a year, Total $1,100 billion a year	Noted. The section will be substantially revised in the SOD.
8082	16	9	8	9	14	it is implied that the 100 bn commitment would refer to incremental costs, however, this is not clear; politically it is more likely that developed countries will try to count more flexible, which may increase the actual gap between the financing needs and the funding delivered	Noted. The SOD will provide context for the 100 $bn commitment.

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
12650	16	all	all			ETP2012 describes clean energy financing. "Risk analysis for investments in low-carbon energy technologies" and "Mechanisms and financing vehicles to leverage private-sector investment" in ETP2012 should be suggestive	Taken into account. ETP 2012 will be considered as appropriate in SOD.
13432	16	icle	42	4	45	Para cites "the only overview available" - but includes no citation. Citation is required.	Accepted.