INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

Special Report on Renewable Energy Sources and Climate Change Mitigation

Expert Review of the First Order Draft
Dec 14, 2009 – Feb 8, 2010

Chapter 1

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[1] *see <<http://ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf>>, Section 4.1 and clarification in decision 8 on procedures taken at the 33rd Session of the Panel <<http://www.ipcc.ch/meetings/session33/ipcc_p33_decisions_taken_procedures.pdf>>*

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	1	-	41	-	-	-	-	"why the choice of ""energy services"" as the reference for all this chapter? Maybe not relevant regarding developing countries"	The goal is to present a notion of meeting energy requirements, not meeting energy demand.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	1	-	41	-	-	-	-	According to me there is a lack of explanation regarding mitigation issue for this special report (SR) at least in the introduction. Proposed definition hereafter: mitigation = reduction of greenhouse gas emissions, e.g. how can these emissions be reduced from the energy supply sector. To achieve this several options can be addressed: different energy efficiency measures, fuel switching, nuclear power, CCS technology, and renewable energy sources (RES). And this SR will focus on the RES item.	The renewed structure of the chapter and, in response to other similar comments, we will be more careful about the distinction between mitigation and the methods by which such mitigation is obtained
William Kyte (E.ON AG)	1	1	19	1	20	-	-	-	This is an unsubstantiated assertion	Eliminate the word "few"
Graham Pugh (U.S. Department of Energy)	1	2	13	2	15	-	-	-	"Include references to these ""Recent studies""."	Will supply references
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	2	1	-	-	-	-	-	The title is not the same like on the front page.	Will correct the inconsistency
John Twidell (AMSET Centre)	1	4	3	-	-	-	-	-	□ as a reservoir for EXCESSIVE heat trapping etc. 'Natural' concentrations of GHGs are essential. It is the excess that not wanted.	we can make that distinction
Miquel Mu&#65533;oz (Pardee Center, Boston University)	1	4	1	-	-	-	-	-	"""dumping ground"" find more technical and neutral language"	Use "receptacle"
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	4	25	4	25	-	-	-	"""new"": what are RES included within this adjective ?"	Authors will alter as appropriate
Gian-Kasper Plattner (University of Bern)	1	4	5	4	6	-	-	-	"""raising the temperature of the earth"" is not a good formulation"	correct this
Seth Dunn (GE Energy)	1	4	3	4	3	-	-	-	"""Utilizing the atmosphere as a dumping ground""; too colloquial?"	Use "receptacle"
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	4	33	4	33	-	-	-	"Add ""environmental"". Proposition: ""institutional, environmental and social barriers"""	Authors will alter as appropriate
Ralph Sims (Massey University)	1	4	22	-	-	-	-	-	"Add global ""primary"" energy"	Authors will alter as appropriate
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	4	19	-	-	-	-	-	"Adding: ""in combination with major changes in the end use of energy, including increasing efficiency and changing consumption patterns"""	Authors will alter as appropriate
Paulo Cesar de Campos Barbosa (Petrobras)	1	4	39	-	-	-	-	-	"Along with ""freeing up household time in developing countries"", the text should mention that electricity can add value to local products (like refrigeration of fish, for example), improving local economy and contributing to sustainability"	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	4	3	4	6	-	-	-	"As is well known and pointed out elsewhere in the chapter, the main GHGs include more than just fossil co2 and methane; this list should either be reasonably complete (i.e., include N20, HFCs, PFCs, and SF6) or omitted."	we may include a broader definition but may not feel it to be necessary in the final copy
Steve Sawyer (Global Wind Energy Council)	1	4	13	4	15	-	-	-	"As of Dec 2009 a total of 147 countries, accounting for more than 85% of global energy & industry related CO2 emissions and about 88% of global population in 2005 supported either a 2 degC or 1.5degC limit. More than 100 governments in fact now support an overall target of limiting warming to 1.5C>□see Climate Analytics Briefing paper at http://docs.google.com/viewer?a=v&pid=sites&srcid=Y2xpbWF0ZWFuYWx5dGljcy5vcmd8dGVzdHxneDo3YTlmMTVjZGE0NDY5ODEx"	source for above question
Ralph Sims (Massey University)	1	4	28	-	-	-	-	-	"Change ""This report shows that"" to Literature shows that"	Authors will alter as appropriate
Veronika Rabl (Vision & Results)	1	4	28	-	35	-	-	-	"Delete; this is an attempt to summarize the results of the entire report"	This is, in fact, the point
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	4	4	4	6	-	-	-	"Indicate approximate shares of methane from coal mining; production of natural gas, petroleum and coal; natural gas, petroleum and coal transport; and natural gas, petroleum and coal uses in raising the temperature of the earth - We need to assess the priorities to deal with in order to judge the effectiveness of renewable substitutions."	Our point in this section of the doc is not to delineate but to contextualize
Miquel Mu&#65533;oz (Pardee Center, Boston University)	1	4	11	-	-	-	-	-	"IPCC did not ""demonstrate"". Find softer language such as ""showed"""	Will do
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	4	28	4	31	-	-	-	"IPCC SRREN FOD: Economically feasible energy supply from renewable energy (RE) sources: 270 EJ by 2050 (31% of global demand [high-demand scenario]; 56% of global demand [lower-demand scenario])."	Authors will alter as appropriate
Javier Garcia (Renewable Energy Center)	1	4	32	4	33	-	-	-	"May I suggest to add ""legal"" to the enumeration of barriers."	Authors will alter as appropriate
Javier Garcia (Renewable Energy Center)	1	4	9	4	10	-	-	-	"May I suggest to add ""water supply"" to the description of the chronic effects of Climate Change."	Author's decision

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Keigo Akimoto (Research Institute of Innovative Technology for the Earth (RITE))	1	4	38	4	43	-	-	-	"Modern energy service is important to meet MDGs in developing countries; however, the descriptions will mislead that only renewable energies can contribute to freeing up household time etc. The descriptions should be modified."	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	4	15	-	-	-	-	-	"should read "" 2 degrees C above preindustrial values."	will do
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	17	-	-	-	-	-	"The expression ""recent data suggest that global warming is accelerating"" is too vague and not supported by the material provided in the Chapter. Either skip the statement or give a peer-reviewed reference for it and check for the existence of scientific evidence that is contrary to this hypothesis. In addition, the conclusion that more sever reduction is necessary, should be put into the perspective of the 2□C target and emphasis that the magnitude is not yet known from reliable quantifications."	We will provide support for this from more recent papers (in the text). Perhaps we need to suggest that the rate of climate change is accelerating.
Graham Pugh (U.S. Department of Energy)	1	4	6	4	10	-	-	-	"The sentence ""Efforts to improve□"" could be eliminated and the sentence beginning the next paragraph ""IPCC AR4 demonstrated□"" could follow directly. This would shorten the text with no loss of relevant content."	Consistency between first and second paragraphs are required.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	31	4	35	-	-	-	"The sentence regarding policies does not comprise climate change mitigation policies!!! It refers to ""a shift in development strategy by systematically implementing policies"". It is necessary to refer explicitly to climate policies. The expression ""many of these policies are known"" without giving a list or anything cannot remain in this form. "	If we see this as solely a climate change picture, this is true but we are not. While we can provide an example of a policy, the intent is to show that, in terms of RE we have a set of policies already applied that show different outcomes with respect to RE. Author will alter as appropriate.
Keigo Akimoto (Research Institute of Innovative Technology for the Earth (RITE))	1	4	21	4	24	-	-	-	"The sentences can be read as follows; the renewable energies are universally available but only the small parts of them are utilized at present; RE shall intrinsically a good thing, and RE should be expanded without further discussions. The IPCC report should not be written normatively. The sentences should be changed accordingly."	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	28	4	29	-	-	-	"The term ""economically feasible"" makes no sense. Feasibility is a technical issue. Choosing among various feasible alternatives is the economic issue."	Feasibility is not just technical but can be easily economic.
Ralph Sims (Massey University)	1	4	23	-	-	-	-	-	13 percentage points (not 13% of 18%)	Authors will alter as appropriate
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	4	22	4	22	-	-	-	18% for RES, is it in primary or final energy ? What is the reference ? All references are missing in this executive summary	Authors will alter as appropriate
Ralph Sims (Massey University)	1	4	4	-	-	-	-	-	CH4 also from agriculture	Our point in this section of the doc is not to delineate but to contextualize
Douglas Arent (NREL)	1	4	25	4	27	-	-	-	check accuracy. Last reported wind was 42% of new adds in US, solar much less. Thus statement is not true. Add refs.	Authors will alter as appropriate
Douglas Arent (NREL)	1	4	2	4	10	-	-	-	delete. Non technical, not consistent with AR4.	Consistency between first and second paragraphs are required.
Ralph Sims (Massey University)	1	4	41	-	-	-	-	-	developing	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	4	16	4	16	-	-	-	Emissions in fact must peak by 2015, cf. AR4 SYR table 5.1 and corresponding supporting material in the WG III report□	We could add this but I'm not sure it is necessary, author will decide.
Gian-Kasper Plattner (University of Bern)	1	4	13	4	15	-	-	-	Executive Summary statement that governments advocate 2deg goal does not come from chapter	Support for this will be provided.
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	4	19	-	-	-	-	-	In any case reducing energy demand is a prerequisite. After RE and EE (energy efficiency) are the best option	Authors will alter as appropriate
Graham Pugh (U.S. Department of Energy)	1	4	19	4	20	-	-	-	Including end use efficiency with RE confuses the issue. Doesn't the use of RE alone achieve the same objective? Doesn't increased end use efficiency with non-renewable sources also achieve that objective? Or is the report a discussion of both RE and EE? I think this is important to clarify.	While there are some typical RE / EE complementary relationships, we will update the section to reflect this concern.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	4	27	-	-	-	-	-	Including some initial references regarding advances in thermal solar (for heating and cooling) and modern biomass as well as other renewables □ Avoiding the impression that only wind power and PV are feasible modern solutions.	Authors will alter as appropriate
John Twidell (AMSET Centre)	1	4	18	-	19	-	-	-	Introduce a line or short paragraph here, stating 'Atmospheric temperature forcing is increased because of the excessive use of fossil fuels, and so it is strategically vital to decrease the extraction and use of such fuels, so leaving the carbon underground. Forms of non-fossil-fuel energy are necessary, of which nuclear power and renewables are the only realistic options now. This report considers the present and future state of renewable energy supplies.	Authors will alter as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Steve Sawyer (Global Wind Energy Council)	1	4	22	4	22	-	-	-	Is this 18% final energy consumption? At any rate, it isn't sourced and conflicts with the numbers used on pages 14 and 15 in this chapter, which are sourced to the IEA 2009a. It would be good to get these straight	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	29	4	31	-	-	-	It is better to relate the 270EJ to the current energy consumption, because the percentage numbers are subject to certain scenario assumptions. The contribution to climate change mitigation need to be highlighted. Coordinate the statements here with those in Chapter 10.	Authors will alter as appropriate
John Twidell (AMSET Centre)	1	4	2	-	10	-	-	-	Leave out. Not needed for an Executive Summary since next paragraph repeats. Save space.	Some review to reduce repetition is required
C□ic Philibert (International Energy Agecy)	1	4	38	4	43	-	-	-	Most of indoor air pollution occurs from burning biomass in inefficient owens, and moving away from traditionnal biomass to cleaner, though fossil, fuels, provides effective relief. While it is also possible to substitute biomass with other renewable energy sources and technology, this is certainly not the obvious, undisputed example of ancillary benefits of RE that would find its place in an executive summary. The stress on smoke related diseases is misplaced here. What would better fit here is the possibility of getting access to some minimal electrification level in dispersed habitat through PV systems or micro-hydro, etc... with many benefits but no reduction of indoor air pollution due to cooking.	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	13	4	15	-	-	-	Please, refer to the Copenhagen final document.	see previous
Douglas Arent (NREL)	1	4	28	4	35	-	-	-	reduce to single sentence about the potential. Make scientificl. This chapte does not have to summarize the SRRE, not proclaim about sustainable development except in the appropriate chapters.	Authors will alter as appropriate
Douglas Arent (NREL)	1	4	13	4	18	-	-	-	remove ref to many gov't. Add ref for recent evidence.	see previous
Emmanuel Branche (Electricit□ de France (EDF))	1	4	38	4	43	-	-	-	Remove these lines (they shouldn't be reflected in an executive summary	Matter of opinion
Luc Gagnon (Hydro-Quebec)	1	4	22	-	25	-	-	-	Statistics can vary seriously, depending if PRIMARY or FINAL energy is used. This should always be mentionned. Suggestion: For renewable energy, using FINAL energy is the better option, as primary energy gives more importance to low efficiency fossil fuels.	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	2	4	6	-	-	-	The list of GHG emission only contains energy related sources. In the context of RES and biomass also emissions from the land-use sector are important to consider. Please add those to the list or emphasis the limitation to the energy sector.	Since our focus is energy related sources, we will stick with this. While it is true there are other sources, I'm not sure we need list them all. Authors will decide
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	4	36	4	43	-	-	-	The paragraph refers to to the MDGs. The main body of the chapter does only contain one sub-section (1.1.5) that refers to MDG and here only as one item among others. Chapter 9 deals with the issue of sustainable development. Hence, the issue should be treated there or a close coordination between the chapters is necessary.	Authors will alter as appropriate
Keigo Akimoto (Research Institute of Innovative Technology for the Earth (RITE))	1	4	11	4	18	-	-	-	The sentences are policy prescriptive, and should be changed.	This is not a policy prescription but a statement, see the ref in 165 below.
Steve Sawyer (Global Wind Energy Council)	1	4	29	4	29	-	-	-	This report shows□.'? Presumably it is looking at scenarios analyzed in chapter 10, rather than doing its own analysis?	As in #189
Miquel Mu□oz (Pardee Center, Boston University)	1	4	38	43	-	-	-	-	this text is too detailed for an executive summary. Delete or use elsewhere in the report.	Matter of opinion
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	4	14	4	18	-	-	-	We are giving only the most scaring scenario, which lead to almost unachievable goals. We should add an additional paragraph saying that, even if we accept some dangers from climate changes, we still have important challenges to deal with (for example, at least to stabilize the level of GHG emissions).	While adaptation is important, we constrain ourselves primarily to mitigation and attempt to address the demand of 147 countries
□vind Christophersen (Climate and Pollution Agency)	1	4	7	-	8	-	-	-	When referring to present impacts related to acute climate events (such as cyclones and floods) make sure to reflect the uncertainty in a balanced way. uncertain.	While the relationship is always tenuous, these are only examples of climate events; uncertainty issues regarding this relationship can be included.
Manfred Treber (Germanwatch)	1	4	15	-	-	-	-	-	when writing on the 2 degrees limit and forces who support this the Copenhagen Accord should be mentioned	see previous
Steve Sawyer (Global Wind Energy Council)	1	4	30	4	30	-	-	-	Where does this 56% come from, as opposed to 61% upper range mentioned in Chapter 10, p. 6?	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	4	2	4	3	-	-	-	Where does this statement come from? I didn't think that the report was to define the 'primum mobile' of which climate change was a symptom.	Given that the current energy system is seen to be unsustainable, it is reasonable to see CC as a symptom of that unsustainably. However, this could be written differently.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	4	40	4	43	-	-	-	while idealistically, saved time from energy products increase productivitity, published results in xxx () and xxx() have shown no real significant difference	Unclear if the person has sources or if it requires sources, or what?
Vicente Schmall (Petrobras S.A.)	1	4	19	4	19	1	-	-	Should be changed for: RE in combination with energy efficiency and carbon sequestration are the main solutions that (see IEA scenarios for this century)	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	4	2	4	6	1	-	-	Where is write saying GHGs such as carbon dioxide.... Should substitute for: GHG such as carbon dioxide, that in energy sector is mainly due to burning fossil fuels...etc... Renewable Energy and Biofuels have important contribution to reduce GHG.	Not clear what this is requesting
Richard Taylor (International Hydropower Association (IHA))	1	4	24	4	24	Executive Summary	-	-	"Add ""Of all RE only hydropower makes a substantial contribution to the world's energy supply currently (16% of global electricity production)"" after ""...and ecologically unsustainable""."	Authors will alter as appropriate
Richard Taylor (International Hydropower Association (IHA))	1	4	43	4	43	Executive Summary	-	-	Comment: The Executive Summary lacks narrative on the contribution of renewables to adaptation. For example, the role of hydropower in meeting the challenges posed by hydrologic change.	Authors will alter as appropriate
Michael Jack (Scion (New Zealand Forest Research Institute))	1	4	36	4	43	Executive Summary	-	-	The justification here misses the point about renewable energy being an economic growth opportunity. For industry and goverement officials from countries with a strong economic growth agenda this is an important point to list here in the executive summary along with the other benefits.	Authors will alter as appropriate
Michael Jack (Scion (New Zealand Forest Research Institute))	1	4	2	4	10	Executive Summary	-	-	The overriding theme of this document is that renewable energy adresses the more fundamental problem of unsustainable development. While I do not disagree with this, I do wonder if this is within the scope of this document. The aim as I see it is for the IPCC to evaluate renewable energies role in climate change mitigation, not broader sustainable development as such. The danger with the approach taken here is that renewable energy is being justified on grounds other than its mitigation potential. It will therefore be difficult to compare with other mitigation options and could lessen the impact of this report. I do not have an answer to this issue but I would like to raise it for the authors consideration.	The focus is more comprehensive than just the mitigation option. In order to do a more complete critique of RE, we need to review all aspects, including social, economic and environmental (beyond impacts on CC).
Essam El-Hinnawi (National Research Centre)	1	5	19	-	-	-	-	-	" should read :"" □ and burning biomass and by land□"""	Authors will alter as appropriate
Laura Cozzi (International Energy Agency)	1	5	33	-	-	-	-	-	"""GHG emission rates from fossil fuel"" shouldn't it be ""GHG emission rates from fossil fuel and other emitting sources""?"	Authors will alter as appropriate
Aviel Verbruggen (University of Antwerp)	1	5	27	-	-	-	-	-	"A ""very recent"" report: avoid unspecified time-referencing, because this report may be of public interest in the years 2011/12; replace by specified time such as a ""2009"" report ..."	Authors will alter as appropriate
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	5	11	5	13	-	-	-	"CO2 from fossil fuels accounting for approx. 60% of radiative climate forcing; by 2008, increase of concentrations from preindustrial levels of 280ppm to 385 ppm."	Not sure what is asked for here
Essam El-Hinnawi (National Research Centre)	1	5	33	-	-	-	-	-	"Delete "" from fossil fuels"""	Authors will alter as appropriate
Ralph Sims (Massey University)	1	5	27	-	-	-	-	-	"Delete ""very recent"""	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	5	19	-	21	-	-	-	"Delete sentence "" Analysis also suggests□□.earth's surface""."	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	5	15	-	17	-	-	-	"Delete sentence "" Solomon et al□□. Emissions stop""."	Authors will alter as appropriate
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	5	33	5	33	-	-	-	"no reference to ""Copenhagen diagnosos, 2009"". Status of this report ?"	Authors will alter as appropriate
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	5	24	5	24	-	-	-	"no reference to ""Prinn, 2009"". Status of this report ?"	Will review status
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	5	20	5	20	-	-	-	"no reference to ""Ramanathan, 2009"". Status of this report ?"	Will review status
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	5	11	5	12	-	-	-	"Recent studies (Shindell, D.T. et al. Science, 2009, 326, 716-718) suggest that methane emissions have a larger impact than previously thought. The phrase could be rewritten in the form ""CO2 from fossil fuels accounts for the major part of the underlying radiative climate forcing"""	Authors will alter as appropriate

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Keigo Akimoto (Research Institute of Innovative Technology for the Earth (RITE))	1	5	24	5	25	-	-	-	"The AR4 reports that the temperature rise in 2100 is between 1.1 and 6.4 degrees C by many experts and through reviews. This report is for renewable energies, and authors should limit themselves to their own fields. The discussion on the projection of temperature rise should not be developed by only one of the recent articles in this report. The sentence should be deleted. Such discussions should be made in the AR5."	Only point out that the issue is not yet done. While we do not make pronouncements, we do indicate that recent reviews may suggest already that the AR4 outcomes are low.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	5	13	-	-	-	-	-	"The phrase ""recent studies"" requires references on every point. The statement ""consequences more severe"" is not backed with sceientific evidence. "	Add refs
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	5	28	-	-	-	-	-	"The term ""front"" must be skipped."	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	5	15	-	-	-	-	-	"The use of the word ""than"" makes no sense here. "	Yes, it does. ??
Gian-Kasper Plattner (University of Bern)	1	5	29	5	31	-	-	-	"this sentence is quite confusing as written; seems to be missing a link between tipping points and temperature rises"	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	5	29	5	31	-	-	-	"This should read, 'temperature rises to 2degC or less'. As of Dec 2009 a total of 147 countries, accounting for more than 85% of global energy & industry related CO2 emissions and about 88% of global population in 2005 supported either a 2 degC or 1.5degC limit. More than 100 governments in fact now support an overall target of limiting warming to 1.5C>□see Climate Analytics Briefing paper at http://docs.google.com/viewer?a=v&pid=sites&srcid=Y2xpbWF0ZWFuYWx5dGljcy5vcmd8dGVzdHxneDo3YTlmMTVjZGE0NDY5ODEx"	Authors will alter as appropriate
Emmanuel Branche (Electricit□ de France (EDF))	1	5	41	5	41	-	-	-	"what is the reference year for ""current levels"""	Authors will alter as appropriate
Patrick Matschoss (WG III TSU)	1	5	39	-	-	-	-	-	2□ policy prescriptive, delete	Is a statement of fact, not definition of policy
Laura Cozzi (International Energy Agency)	1	5	31	-	-	-	-	-	A reference to the Copenhagen Accord as well as to the G8 communiqu□f L'Aquila would better justify the reference to 2 degrees	Authors will alter as appropriate
Gian-Kasper Plattner (University of Bern)	1	5	20	-	-	-	-	-	black carbon not carbon black	Authors will alter as appropriate
Laura Cozzi (International Energy Agency)	1	5	12	-	-	-	-	-	Clarify if concentrations is CO2 only or CO2equivalent	Authors will alter as appropriate
Laura Cozzi (International Energy Agency)	1	5	41	-	-	-	-	-	clarify if emissions refers to CO2 only or all GHGs	Authors will alter as appropriate
Gian-Kasper Plattner (University of Bern)	1	5	27	5	29	-	-	-	Copenhagen Diagnosis grey literature? Not research report rather compilation of recent research results	Authors will alter as appropriate
Ralph Sims (Massey University)	1	5	17	-	21	-	-	-	Could add a comment on CH4 from agriculture also N2O and CFCs	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	5	3	-	6	-	-	-	delete	Authors will alter as appropriate
John Kessels (International Energy Agency Clean Coal Centre)	1	5	29	5	31	-	-	-	Delete this is not referenced	Add refs
Gian-Kasper Plattner (University of Bern)	1	5	36	5	37	-	-	-	Fig 1.1 shows emissons increasing and then declining, not continuing to increase as written here	Authors will alter as appropriate
Charles Kutscher (National Renewable Energy Laboaratory)	1	5	40	-	-	-	-	-	I think it's about time IPCC stopped citing 450 ppm as a reasonable target. Recently Rajendra Pachauri has embraced 350 ppm. It is clear from the accelerated loss of ice mass in ice sheets and mountain glaciers that the ice is not sustainable at the current value of 388 ppm and there is no strong evidence that the ice will achieve a new stabilization point unless atmospheric greenhouse gases are reduced. Similarly with the 2C limit, and at 450 ppm slow feedbacks will likely cause the temperature rise to exceed this limit anyway.	We do not want to second guess or propose a break with IPCC without further analysis - this is a job for AR5
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	5	40	5	43	-	-	-	Implication for limiting average temperature increase to 2□C: Decrease of global CO2 emissions by 50 to 80% below current levels by 2050, beginning by about 2020.	not sure what is expected here
□vind Christophersen (Climate and Pollution Agency)	1	5	37	-	-	-	-	-	It is somewhat confusing that yet another temperature interval is used here compared to the paragraph above. The text would be easier to understand if the upper temperature limit here was the same as in line 23, since both refer to the AR4.	Authors will alter as appropriate
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	5	8	5	10	-	-	-	Measured increase in global average temperature of 0.76□C (□ 0.2 □C) between 1850-1899 and 2001-2005, significantly increased warming trend over the last 50 years.	Not sure what is asked for here
Gian-Kasper Plattner (University of Bern)	1	5	40	-	-	-	-	-	needs a citation for the assertion: below 450ppm	Add refs

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Gian-Kasper Plattner (University of Bern)	1	5	37	-	-	-	-	-	needs a citation for the assertion: increase by 3-5C by 2100	Authors will alter as appropriate
Gian-Kasper Plattner (University of Bern)	1	5	27	-	-	-	-	-	not clear what is meant by multiple trends	Authors will alter as appropriate
Patrick Matschoss (WG III TSU)	1	5	24	5	25	-	-	-	only one source for a general qualification of central findings from the AR4	not sure what is expected here
Antoine Bonduelle (EE Consultant)	1	5	24	-	-	-	-	-	Prinn et al is not in the list of sources for the chapter	Will review status
Gian-Kasper Plattner (University of Bern)	1	5	24	-	-	-	-	-	Prinn, 2009 missing from reference list	Will review status
Gian-Kasper Plattner (University of Bern)	1	5	13	-	-	-	-	-	Rather than citing Solomon et al 2009, should cite primary source CDIAC	Add refs
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	5	24	5	25	-	-	-	Recent projections indicate a rise in global annual average temperature by the end of this century in the range of 3.5 to 7.4□C.	Authors will alter as appropriate
Douglas Arent (NREL)	1	5	32	5	43	-	-	-	reduce to simple summary from WG2 , and include probabilities and refs.	Authors will alter as appropriate
Douglas Arent (NREL)	1	5	29	5	31	-	-	-	remove. Not a discussion of gov't advocay or positions.	It is not a prescription but a statement of fact
Patrick Matschoss (WG III TSU)	1	5	13	5	15	-	-	-	Source(s)?	Add refs
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	5	16	5	17	-	-	-	The quotation is not related to the previeous and the following sentence.	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	5	29	-	-	-	-	-	The report is - up to my knowledge - not peer-reviewed. Please skip it.	Authors will alter as appropriate
John Kessels (International Energy Agency Clean Coal Centre)	1	5	7	5	43	-	-	-	These lines could be reduced to a couple of paragraphs with deleting repetition	Authors will alter as appropriate
Laura Cozzi (International Energy Agency)	1	5	13	5	15	-	-	-	This sentence needs to have one or more references - it is of crucial importance	Add refs
Manfred Treber (Germanwatch)	1	5	30	-	-	-	-	-	when writing on the 2 degrees limit and forces who support this the Copenhagen Accord should be mentioned	Authors will alter as appropriate
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	5	8	5	8	1.1	-	-	this sentence is incomplete	Authors will alter as appropriate
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	5	19	-	27	1.1.1	-	-	" (Ramanathan, 2009); (Prinn, 2009) are missing references and the selected text should be shortend ."	Authors will alter as appropriate
Anca-Diana Barbu (European Environment Agency)	1	5	35	-	-	1.1.1	-	-	"suggest changing the text to ""CO2 emissions □.will need to decrease below (more than) the rate at which they can be removed from the atmosphere□"". To my understanding, the efficiency of the carbon sinks has been declining over the last 60 years or so and I am not sure to what extent this is fully captured in climate models. At the same time, the human perturbation of the carbon cycle, according to the global carbon project, goes stronger every year leading to the current trends where the actual emissons track the most carbon intensive scenarios of IPCC. A good reference is for instance the recent presentation from the global carbon project: http://www.globalcarbonproject.org/carbonbudget/08/files/GCP2009_CarbonBudget2008.pdf"	Authors will alter as appropriate
Anca-Diana Barbu (European Environment Agency)	1	5	20	-	-	1.1.1	-	-	"suggest to change ""carbon black"" to ""black carbon"""	Authors will alter as appropriate
Andries Kruger (South African Weather Service)	1	5	36	5	37	1.1.1	-	-	A reference is needed for this statement	Authors will alter as appropriate
Anca-Diana Barbu (European Environment Agency)	1	5	41	-	42	1.1.1	-	-	I suggest rephrasing to avoid confusion	Authors will alter as appropriate
John Kessels (International Energy Agency Clean Coal Centre)	1	5	3	5	6	1.1.1	-	-	Need to mention also deforestation and perhaps increase in population	Authors will alter as appropriate
Michael Jack (Scion (New Zealand Forest Research Institute))	1	5	19	5	19	1.1.1	-	-	Only certain types of land use change lead to increased emissions. Aforestation for example leads to the reverse. This sentence reads as if land use change is the issue.	Authors will alter as appropriate
Andries Kruger (South African Weather Service)	1	5	8	5	10	1.1.1	-	-	Rephrase sentence, unclear.	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	5	6	5	6	1.1.1	-	-	Should add at the end of the sentence....and climate change that has also the contribution of other factors all of them related to comsuming patterns of the world.	Authors will alter as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Vicente Schmall (Petrobras S.A.)	1	5	33	5	36	1.1.1	-	-	Should change to : GHG emissions rates currently exceed the ability of natural sinks to absorb them...(they do not come only from fossil fuels....)	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	5	17	5	19	1.1.1	-	-	Should include also landfill	Authors will alter as appropriate
Ralph Sims (Massey University)	1	5	-	-	-	1.1.1	-	-	This well understood - could be shortened	Authors will alter as appropriate
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	5	39	6	7	-	1.1	-	Please, note that the CO2 emissions should be reduced by 50 to 85 (not 80) percent by 2050 according to AR4 WG3 Technical Summary Table TS.2 (Category I which corresponds to 2 C warming limit). Also at the end of the century the CO2 emissions shoud be much less than the sinks, because the emissions of other greenhouse gases like CH4 and N2O are much more difficult and expensive to reduce than CO2. So the green line in the Figure 1.1 shoul be at lover level both by 2050 and 2100. You can see this e.g. in the Figure TS.8 (Category I) of AR4 WG3 Technical Summary.	Authors will alter as appropriate
John Twidell (AMSET Centre)	1	6	20	-	-	-	-	-	-	not sure what is expected here
Aviel Verbruggen (University of Antwerp)	1	6	20	6	22	-	-	-	"""sustainable' has a broader meaning than ""durable""; avoid confusion on the terms"	Authors will alter as appropriate
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	6	11	6	11	-	-	-	"add ""Stern, 2008"" as a reference for appropriate discount rate analysis"	Authors will alter as appropriate
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	6	14	6	14	-	-	-	"add ""technology"". Proposition: ""in the appropriate technology chapters"""	Authors will alter as appropriate
Kamal Abed (National Research Centre)	1	6	27	-	-	-	-	-	"after emissions add: during the operation ; in order to omit life cycle emissions"	Authors will alter as appropriate
Douglas Arent (NREL)	1	6	22	6	23	-	-	-	"clarify what is meant by sentence. Simply that the source of solar is the sun, and therefore with ""infinite"" supply? "	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	6	20	-	23	-	-	-	"Delete from "" It is possible to utilize☐☐"" To "" ☐☐ it reaches the earth."""	Authors will alter as appropriate
Miquel Mu&#65533;oz (Pardee Center, Boston University)	1	6	26	-	-	-	-	-	"insert ""direct"" before carbon dioxide emissions. I think everyone can agree to that. Indirect emissions are more controversial and depending on what you choose to count, so better use safe language."	Authors will alter as appropriate
Zolt&#65533;n Somogyi (Hungarian Forest Research Institute)	1	6	26	6	27	-	-	-	"It is not true that renewable technologies do not produce any, or very low, emissions. More precisely, everything depends on the definition of these technologies, i.e. the boundaries of these systems. Also, it is not only about CO2, rather, about several GHGs. For example, if an energy plantation is established, and fertilizers are used, then the production and use of these fertilizers in terms of N-oxides could be included, or exluded, depending on the definition of the ""energy plantation"" as a renewable energy system (see Table 2.3.1). Taking decisions both at a global scale, as well as a local scale on the use of these systems heavily depends on this definition. Therefore, I suggest to expand the analysis with respect to this definition to allow the reader to have a more complex view of the issue."	Authors will alter as appropriate
Javier Garcia (Renewable Energy Center)	1	6	18	6	19	-	-	-	"May I suggest to specify the definition of Renewable Energy as: ""Renewable Energy (RE) is any tyupe of energy produced from geophysical or biological sources that are naturally replenished in timeframe comparable to the human life."" (Because fossil fuels are also naturally replenished but in a timeframe measured in geological scales)."	Authors will alter as appropriate
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	6	2	6	2	-	-	-	"replace ""missions"" by ""emissions"""	Authors will alter as appropriate
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	6	8	-	-	-	-	-	"Replace ""Recent"" by ""Numerous"""	Authors will alter as appropriate
Ralph Sims (Massey University)	1	6	19	-	-	-	-	-	"replenished ""over a short timeframe"""	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	6	26	-	27	-	-	-	"should read "" ☐.the advantage of not producing (or very low) GHG emissions☐."""	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	6	17	-	-	-	-	-	"should read ""The role of Renewable Energy in Addressing Climate Change"""	Authors will alter as appropriate
Zolt&#65533;n Somogyi (Hungarian Forest Research Institute)	1	6	18	-	19	-	-	-	"The definition of renewable energy should be completed by adding ""&#65533; or that are replenished by associated human induced activity"""	Authors will alter as appropriate
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	6	19	-	-	-	-	-	"The expression ""then the resource is sustainable"" should be replaced by a more exact sentence ""then the resouce use is sustainable in respect to energy balance."" There can be, however, other factors like particulate or trace gas as N2O emissions which couse such harm that the resouce use in not sustainable. "	Authors will alter as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ruben Guisson (Flemish Institute for Technological Research)	1	6	19	-	-	-	-	-	"The quote 'As long □.then the resource is sustainable' pretends to give a full and complete definition of what sustainable resources are. This seems a little dangerous. The definition is a very 'ad hoc' and 'current situation' one. The definition does not take into account land-use change effects. So a new palm oil exploitation can be seen as a sustainable one when the 'natural energy flow rate is not exceeded' but it takes not into account the historical and land-use change effects. An other question can be; 'what is understood by natural energy flow rate'? "	Authors will alter as appropriate
Patrick Matschoss (WG III TSU)	1	6	8	6	14	-	-	-	"What's the conclusion from the issues? General statement about BU/TD not found in lit and there is no source given here; ""recent studuies"" backed by only one source; there is a vast literature on the (controversial) discussion of no-cost potentials; delete whole Para"	Authors will alter as appropriate
Aviel Verbruggen (University of Antwerp)	1	6	14	-	-	-	-	-	Ackerman (2009) : PR?	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	6	8	-	16	-	-	-	Delete	Authors will alter as appropriate
Thuc Tran (Vietnam Institute of Meteorology, Hydrology and Environment)	1	6	20	6	22	-	-	-	Further explanation is not necessary. If so, "By contrast,□ should be something like "However,□	Authors will alter as appropriate
John Twidell (AMSET Centre)	1	6	20	-	-	-	-	-	Have as a footnote 'It is possible to utilize biomass□.unsustainable'.	Authors will alter as appropriate
Douglas Arent (NREL)	1	6	8	6	16	-	-	-	is this subsection not on climate change, NOT economics? Delete	Authors will alter as appropriate
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	6	18	6	23	-	-	-	Make sure to indicate the importance of technology to make any source of energy more or less sustainable. Moreover, sustainable natural replenishing should not be considered the only criterion to define sustainable renewable energy.	Authors will alter as appropriate
Graham Pugh (U.S. Department of Energy)	1	6	12	6	14	-	-	-	Reword sentence for clarity on what the shift in perception has been.	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	6	27	6	27	-	-	-	suggest that this is 'in practice', rather than 'in principle', since 'in principle' energy is not infinite.	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	6	8	6	14	-	-	-	The paragraph is misleading in this sub-section because it goes beyond the limits of the sub-section's content. Please skip it.	Authors will alter as appropriate
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	6	15	6	16	-	-	-	The paragraph must be skipped for two reasons. First, it is misplaced here. Second, RES do not limit GHG emissions automatically.	Authors will alter as appropriate
□vind Christophersen (Climate and Pollution Agency)	1	6	18	-	19	-	-	-	This definition might be somewhat imprecise as regards direct solar energy. Check that it include solar radiation.	Authors will alter as appropriate
Patrick Matschoss (WG III TSU)	1	6	15	6	16	-	-	-	This sentence appears rather abrupt	Authors will alter as appropriate
Laura Cozzi (International Energy Agency)	1	6	15	6	16	-	-	-	This sentence could be cut or moved elsewhere _ it is mispaced here	Authors will alter as appropriate, probably can be moved to the next section
Aviel Verbruggen (University of Antwerp)	1	6	8	-	-	-	-	-	unspecified time	Authors will alter as appropriate
Aviel Verbruggen (University of Antwerp)	1	6	12	-	-	-	-	-	unspecified time	Authors will alter as appropriate
Antoine Bonduelle (EE Consultant)	1	6	-	7	-	1,1,2	-	-	This section is interesting but does not define RE enough to distinguish it with cycles such as fusion energy	Authors will alter as appropriate
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	6	12	6	12	1.1	-	-	**whether one utilizes a top down (usually more costly) or bottom up (usually less costly) analysis	Will review status
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	6	10	-	12	1.1.1	-	-	" (UCS, 2009); McKenzie, 2008); (Nordhaus, 2008) are missing references and the selected text should be shortend ."	Accepted
Andries Kruger (South African Weather Service)	1	6	18	6	19	1.1.1	-	-	"The definition of RE can be changed by: ""renewable energy is any type of energy produced from geophyisical or biological sources that are naturally replenished, and can be utilised in a sustainable manner"" - as is, coal and oil can also be condiered an RE source."	Authors will alter as appropriate
Michael Jack (Scion (New Zealand Forest Research Institute))	1	6	22	6	23	1.1.1	-	-	"The sentence startign ""By contrast □"" is a bit confusing it makes something very simple quite complex. I suggest a change of wording or remove the sentence altogether."	Authors will alter as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Anca-Diana Barbu (European Environment Agency)	1	6	26	-	-	1.1.2	-	-	I suggest deleting from the text that most RE have the advantage of not producing any CO2 emissions. As the text following this sentence correctly states, each energy technology has environmental impacts over the life cycle. The EEA has completed a recent study on LCA emissions of energy systems. Should there be an interest, the study could be shared (it is not yet published by the EEA). For follow up on this issue please contact Peder.Jensen@eea.europa.eu	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	6	20	6	-	1.1.2	-	-	Rephrase. Biomass 'renewable' resources are unsustainable. By contrast, there is no bearing on the rate at Which it reaches the earth. The InterAcademy Council publish a study panel about the challange of energy transition, last September 2007. Some of recomendation would enrich the present report.	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	6	18	6	19	1.1.2	-	-	Should include in the RE definion, during human time....because fossil fuels are also renewable in geological time...	Authors will alter as appropriate
Dan Bilello (NREL)	1	6	18	6	20	1.1.2	-	-	The definition of sustainable resource as one for which the rate of energy extracted is balanced by the energy flow into the resource is incorrect. Sustainability criteria such as impacts on indigenous populations, water resources, net greenhouse gas emissions, etc. are completely ignored in this definition. Even the most basic of definitions of sustainability, e.g., the Bruntland Commission definition, expands beyond the concept of natural energy replenishment.	We are referring here to a very limited view of the resource as being continuous or consistently available or some similar term. We will change the dynamics so as to be consistent with the term.
Ernesto QUILES (Ministerio de Agricultura, Ganaderia y Pesca)	1	6	2	-	-	-	1.1	-	"Change title: missions by ""emissions"""	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	6	-	-	-	-	1.1	-	Presumably these are 'alternative emissions scenarios'☐There is much literature which paints the odds of remaining below 2 deg C as considerably less than 50% at 450 ppm concentration levels☐, i.e., Schaeffer, M., T. Kram, M. Meinshausen, D.P. van Vuuren and W.L. Hare, 'Near-linear cost increase to reduce climate-change risk.' In: Proceedings of the National Academy of Sciences (PNAS), 105(52): 20621-20626.. Why make up a new chart when one of several from the AR4 or from published literature would do the job better. But if this one is to be used then the charts from the Global Carbon Project should be referenced.	Authors will alter as appropriate
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	6	-	-	-	-	1.1	-	what are the blue lines ?	Authors will alter as appropriate
Ralph Sims (Massey University)	1	6	-	-	-	-	1.1	-	Y axis - CO2 or all gases? Confusing as is all gases stabilising at 450 to give 2 degrees- not just CO2	Authors will alter as appropriate
Andries Kruger (South African Weather Service)	1	6	2	6	7	1.1.1	1.1	-	Only describe the graph in the caption. The sentences in line 2-5 belong in the text.	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	6	1	6	1	1.1.1.	1.1	-	Figure should show GHG instead of Fossil Fuel Emission. If we continue to separate the source of emissions and focus only in fossil fuels we should abandone the other emissions ...	Authors will alter as appropriate
Ladislaus Rybach (Geowatt AG)	1	7	24	-	-	-	-	-	-	not sure what is expected here
Denis Aelbrecht (Electricit\ufffd de France - Hydro Engineering Center)	1	7	29	7	29	-	-	-	"""China also leads \ufffd"" : the extent of China development should be better expressed in terms of ratio index (per capita for instance) to mean the real status of solar development in this country."	Will refine text
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	7	13	7	17	-	-	-	"""National security concerns"", from whom? And: ""demands for a return to biofuels"", from whom? The IPCC report should have global perspective. The statements here reveal perceptions from ""developed, energy consuming and importing countries"" - Climate concerns should be globally harmonized with different other countries☐ concerns. So why should we mixed up things? "	Authors will alter as appropriate
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	7	1	-	-	-	-	-	"☐. Add after ""or can be a low carbon fuel"" if used in a sustainable appropriate way"	Authors will alter as appropriate
Emmanuel Branche (Electricit\ufffd de France (EDF))	1	7	5	7	5	-	-	-	"add ""some"". Proposition: ""impact, notably some large dams and unsustainable use of biomass"""	Authors will alter as appropriate
Essam El-Hinnawi (National Research Centre)	1	7	30	-	-	-	-	-	"Add at the end "" and biogas installations""."	Will include -- but need to reconcile with other comments
Ralph Sims (Massey University)	1	7	9	-	-	-	-	-	"Change ""original"" to ""traditional use of RE"" - use RE throughout rest of chapter rather than "" renewable energy"""	Accepted
Ralph Sims (Massey University)	1	7	5	-	-	-	-	-	"change ""use"" to harvesting"	Authors will alter as appropriate
Graham Pugh (U.S. Department of Energy)	1	7	3	7	5	-	-	-	"Perhaps use simply ""less"" instead of ""very modest"" to describe environmental impacts, given that the comparison is usually not done for the same scale of energy generation. For example, a 1.3 GW nuclear power plant at 90% capacity factor would compare to roughly 1300 2 MW wind turbines at 30% capacity factor. Is the impact of 1300 wind turbines ""very modest"" in comparison? My point is not to disparage RE, but simply to point out that all forms of energy generation have environmental impacts."	Authors will alter as appropriate
Manfred Treber (Germanwatch)	1	7	32	-	-	-	-	-	"Please write ""remain the dominant ☐energy source☐ "" instead of "" ☐form of energy production☐ for heat ☐"""	Will incorporate edit

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	7	33	7	33	-	-	-	"recommended to be ""grow rapidly increasing carbon dioxide emissions (Figure 1.1 and Figure 1.2).""""	Will add emissions
Essam El-Hinnawi (National Research Centre)	1	7	3	-	-	-	-	-	"replace "" technology"" by "" different """"	Authors will alter as appropriate
Patrick Matschoss (WG III TSU)	1	7	6	7	33	-	-	-	"suggest to move to 1.2 & create unified ""history section"" (together with history part from page 14) there"	Authors will alter as appropriate
Steve Sawyer (Global Wind Energy Council)	1	7	26	7	29	-	-	-	"These should be updated with 2009 numbers as soon as available; 'their' should be replaced with 'its'; Brazil has for many years met more than 1/2 of its TPES with RE; Chinese installed capacity of wind energy vastly exceeds its total installed nuclear capacity...see 2009 market numbers for wind at http://www.gwec.net/index.php?id=30&no_cache=1&tx_ttnews[tt_news]=247&tx_ttnews[backPid]=4&cHash=1196e940a0; total installed wind power capacity is >25GW and total installed nuclear capacity is about 10GW see IAEA PRIS database at: http://www.iaea.org/programmes/a2/"	Will update with new data when available; however note that sometimes previous year data is not available till well into the year. Will check reference
□vind Christophersen (Climate and Pollution Agency)	1	7	3	-	-	-	-	-	"We propose that the word ""very"" is deleted."	Authors will alter as appropriate
□vind Christophersen (Climate and Pollution Agency)	1	7	27	-	28	-	-	-	"We question whether the figure for Brazil actually takes aviation fuels and some other non-diesel fuels into account and think that a reference to gasoline substitution would make this sentence more precise and easier to understand. This sentence is not necessarily coherent with line 17-19, page 39 ""Bio ethanol produced from sugar cane in Brazil is currently responsible for about 40% of the spark ignition travel□ "". "	Aviation would not add much. Will double check references and make consistent
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	7	7	-	-	-	-	-	add ... lighting (as use of energy) in caves to cooking and heating.	Authors will alter as appropriate
C□ic Philibert (International Energy Agecy)	1	7	7	-	-	-	-	-	Apart from cooking and heating, one primary reason for using fire was to improve security in keeping wild animals away.	Authors will alter as appropriate
Emmanuel Branche (Electricit□ de France (EDF))	1	7	26	7	30	-	-	-	Countries examples are too restrictive to be representative of the world situation.	This is an introductory chapter. A few, geographically diverse examples are appropriate. Will review for global representation.
Essam El-Hinnawi (National Research Centre)	1	7	33	-	-	-	-	-	Delete (Figure 1.1 and Figure 1.2)	These figures provide useful context
John Kessels (International Energy Agency Clean Coal Centre)	1	7	28	7	30	-	-	-	Five fold from what, what are the acutal numbers, growth rates, etc Yes, excellent that China is doing this but without a number its meaningless	Will provide base
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	7	6	7	25	-	-	-	If this is a historical reminder it is necessary to have a few lines on thermodynamics and how heat could be transfomed into work as a starting point of some of the environmental problems.	Authors will alter as appropriate
John Twidell (AMSET Centre)	1	7	26	-	-	-	-	-	Insert paragraph 'Today modern developments in technology enable renewable energy to be obtained and used far more extensively. Developments in materials, computer aided design, simulation modelling, manufacturing and monitoring etc enable renewable energy to be considered as mainstream energy supplies for our modern and populated societies'.	Authors will alter as appropriate
Manfred Treber (Germanwatch)	1	7	33	-	-	-	-	-	please add 'emissions'... increasing carbon dioxide EMISSIONS	Will add emissions
Aviel Verbruggen (University of Antwerp)	1	7	30	-	-	-	-	-	PR?	These are appropriate references
Laura Cozzi (International Energy Agency)	1	7	31	-	33	-	-	-	Suggest to include a graph covering all wolrd regions (See attached, source IEA)	Will consider adding figure if Chapter length allows
John Twidell (AMSET Centre)	1	7	26	-	-	-	-	-	TAKE CARE. Denmark's electricity is within the Nordic control systemof import and export, there ia also a link to Germany. It is not possible to state that 'Denmark produced 21% of its electriciy from wind power'.. It would be correct to say 'Of the electricity generated in Denmark, 21% is from wind power'. There are anti-wind critics all too ready to jump on imprecise text.	Text edited
Jo□o Pinho (Institut of Tecnology)	1	7	17	-	19	-	-	-	The conversion of wind and hydro energy into mechanical energy was known and used long before Christ, and not only in the past millenium.	Authors will alter as appropriate
Luc Gagnon (Hydro-Quebec)	1	7	26	-	30	-	-	-	The examples are chosen to show large contributions of renewable energy: if this is the purpose, it should be mentioned that Norway produces nearly 100% of its electricity with hydropower. The hydropower contribution of Brazil and China are also more important than the mentioned cases (bioethanol and wind power).	Authors will alter as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	7	11	-	-	-	-	-	The first name of Mr. Diesel, inventor of Diesel engine is Rudolf not Otto.	Authors will alter as appropriate
Jo□o Pinho (Institut of Tecnology)	1	7	11	-	-	-	-	-	The name of Diesel is not Otto Diesel, but Rudolf Christian Karl Diesel. Nikolaus August Otto was the inventer of the otto-motor.	Authors will alter as appropriate
Manfred Treber (Germanwatch)	1	7	11	-	-	-	-	-	There is no person □Otto Diesel□. We know Nikolaus Otto (1832 - 1891) who invented the internal combustion engine (ICE) with externally-supplied ignition and Rudolf Diesel (1858 - 1913) who invented the Diesel engine (self-ignition ICE).	Authors will alter as appropriate
John Kessels (International Energy Agency Clean Coal Centre)	1	7	14	7	17	-	-	-	This sentence is subjective, reference needed, also full stop missing.	Authors will alter as appropriate
Douglas Arent (NREL)	1	7	1	7	6	-	-	-	too general claim against fossil or nuclear. Is there not a body of LCA with various metrics that can be referenced? Also, what about a reference for geopolitical risk?	Authors will alter as appropriate
□vind Christophersen (Climate and Pollution Agency)	1	7	21	-	-	-	-	-	We suppose that the use of passive solar energy for lightning purposes in buildings is not unique to Greek and Roman buildings.	Authors will alter as appropriate
Richard Taylor (International Hydropower Association (IHA))	1	7	17	7	17	1.1.2	-	-	" Delete ""dependent on fossil liquid fuels"". Reason: The later part of the sentence is repetitive and so redundant."	Authors will alter as appropriate
Richard Taylor (International Hydropower Association (IHA))	1	7	16	7	16	1.1.2	-	-	"Add ""and transition to electric vehicles in"" after and delete ""for"" before ""biofuels"" and delete ""which is largely"" after ""transport sector"". Reason: This misses the other drive which is toward electric powered transport. The later part of the sentence is repetitive and so redundant."	Authors will alter as appropriate
Richard Taylor (International Hydropower Association (IHA))	1	7	30	7	30	1.1.2	-	-	"Add ""In 2007, geothermal provided about 66% and hydro 15 % of primary energy in Iceland, with 70% of electricity production coming from hydro and 30% from geothermal power (National Energy Authority of Iceland, 2008). Reason: Geothermal and hydro are missed out from this RE transition - Iceland is a prime exemplar of a country that leads in RE with these technologies. "	Will add -- but is a peer reviewed reference available?
Richard Taylor (International Hydropower Association (IHA))	1	7	4	7	4	1.1.2	-	-	"Delete ""environmental"". Reason: It is biased to present an environmental bottom-line approach here without mentioning the trade-offs approach. It is more balanced to remain neutral. As renewables scale-up, including geothermal, solar and wind they will face similar hard choices between preserving the immediate environment and minising impacts on local communities with the positive benefits for a nation/region (social and economic) and the global environment (climate change)."	Authors will alter as appropriate
Richard Taylor (International Hydropower Association (IHA))	1	7	5	7	5	1.1.2	-	-	"Delete ""impact"" and replace with ""negative effects"" and delete ""large dams"" and add ""water and"" after ""...unsustainable use of"". Reason: It is the unstainable use of water resources balancing the three dimensions of sustainable development (social, economic, environmental) not scale, that is the issue for hydropower as it is for bioenergy."	Authors will alter as appropriate
Dan Bilello (NREL)	1	7	3	7	5	1.1.2	-	-	"Widespread installation of other renewable technologies has the potential to introduce ""substantial environmental impacts"" that we haven't considered before. Resource constraints (e.g., rare earth metals), wind circulation patterns, and a modified albedo could be very harmful. This report should not be so glib in stating that the impacts of renewables are modest compared to fossil and nuclear systems."	Authors will alter as appropriate
Anca-Diana Barbu (European Environment Agency)	1	7	26	7	-	1.1.2	-	-	based on Eurostat data, the contribution of wind in Denmark in 2007 in total gross electricity generation was 18.3%. Wind and biomass together represented some 29% of total electricity. According to the same source, the share of renewables in total final consumption in Denmark was 18.6% in 2007.	Authors will alter as appropriate
Dan Bilello (NREL)	1	7	5	7	5	1.1.2	-	-	Failed to mention the depletion of natural material resources at large penetrations of renewables.	Authors will alter as appropriate
Vicente Schmall (Petrobras S.A.)	1	7	10	7	12	1.1.2	-	-	Missing Reference	Add refs
John Kessels (International Energy Agency Clean Coal Centre)	1	7	3	7	5	1.1.2	-	-	These two sentences contradict each other on one hand there are modest impacts and on the other major impacts, I suggest rewriting the sentence to reflect that depending on the type of RE technology their will be a range of impacts from modest to major.	Authors will alter as appropriate
Dan Bilello (NREL)	1	7	4	7	4	1.1.2	-	-	With regard to climate change (this is the IPCC report), nuclear may have lower lifecycle greenhouse gas emissions than some renewables.	Authors will alter as appropriate
Aviel Verbruggen (University of Antwerp)	1	8	3	8	8	-	-	-	"Kaya is a non-peer reviewed paper and based on Ehrlich-Holdren's IPAT identity; do we not prefer referencing to the original source of ideas?"	Will make original reference to Ehrlich-Holdren. Note Edenhofer reference is peer reviewed
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	8	3	9	24	-	-	-	Cancelled to reach the mean lenght of the chapter	Text sets important context, but will try to shorten text
Essam El-Hinnawi (National Research Centre)	1	8	-	-	-	-	-	-	Delete page	Page provides important context; will refine and reduce text

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Graham Pugh (U.S. Department of Energy)	1	8	3	9	17	-	-	-	I am not sure the Kaya Identity discussion and associated figures (1.3 and 1.4) add much to the chapter. Perhaps shortening the discussion, eliminating the figures, and focusing on the carbon intensity of energy production would help to shorten the chapter without much loss of relevant content.	This provides useful context but will consider expansion
John Kessels (International Energy Agency Clean Coal Centre)	1	8	3	8	7	-	-	-	Kaya identity limits policy to four macro elements perhaps needs to be widened	This provides useful context but will consider expansion
Vicente Schmall (Petrobras S.A.)	1	8	3	9	24	1.1.2	-	-	Could be eliminated	Text sets important context, but will try to shorten text
Antoine Bonduelle (EE Consultant)	1	8	-	-	-	-	1,2	-	This graph does not distinguish thermal and electric usage of gas and coal and thus make it difficult to understand the possible substitution by electric renewables	Graph is meant to be a high level illustration
Antoine Bonduelle (EE Consultant)	1	8	-	-	-	-	1,2	-	This graph puts nuclear beyond renewables, and does not distinguish hydro. This is ambiguous due to the use of primary energy, which nearly triples the contribution of nuclear.	The graph is meant to represent general introduction of major technology innovations. Will add hydro
Patrick Matschoss (WG III TSU)	1	8	-	-	-	-	1.2	-	could be left out in the interest of shortening the chapter	Graph provides useful context
Ladislaus Rybach (Geowatt AG)	1	8	-	-	-	-	1.2	-	Only one Renewable (Bioenergy) comments on the findings of Chapter 10 ☐Mitigation Potential and Costs☐.	Comment not clear. Could TSU obtain clarification from the expert reviewer
Aviel Verbruggen (University of Antwerp)	1	8	-	-	-	-	1.2	-	the icon of a nuclear station (a supply technology) seems at odd with other icons representing energy use technologies	The graph is meant to represent general introduction of major technology innovations.
Steve Sawyer (Global Wind Energy Council)	1	8	-	8	-	-	1.2	-	This figure, as well as being unsourced is out of date as well as at odds with the rest of the chapter which includes biomass as renewable.	Will clean up figure and provide reference
Aviel Verbruggen (University of Antwerp)	1	8	-	-	-	-	1.3	-	"one graph is enough (e.g. Absolute growth); a simple excell line graph of the 5 variables of the identity can convey the message is a simpler and more clear way (See AR4 for example, but they use more than the 5 basic variables). Note: the decomposition experts will want to explain that the graph has addressed the index-number rest-term problem."	Each figures offers different context. Will check AR4 references and refine as appropriate
Ralph Sims (Massey University)	1	8	-	-	-	-	1.3	-	Is % graph needed?	Each figures offers different context.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	8	-	-	-	-	1.3	-	It could be interesting to have additional data on world average value and main countries or regions values (World, European Union, USA, China, India, etc.)	Although this would be interesting, there is not enough room
Anca-Diana Barbu (European Environment Agency)	1	8	7	-	-	1.1.1	1.3	-	it would be good to indicate whether the GDP is in constant prices or ppp	Will make appropriate reference
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	9	26	9	26	-	-	-	"""1.13"" is missing in this section title"	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	9	5	9	16	-	-	-	"Analyzing Figure 1.4 - It should be added comments on the consistent positive effect of natural gas use over the whole period - Therefore not to always include in the same basket (coal, crude oil and natural gas) - Three major gas strategies have definitive positive effects in GHG emissions and should be promoted: (i) Reducing gas flaring in less developed countries, by promoting domestic markets and efficient uses of the gas; (ii) Substituting coal-fired plants by combined cycle gas-fired plants; and (iii) promoting globally direct uses of gas in substitution to electricity where electricity is finally transformed into thermal energy (heat and cool, including air condition)."	Will add an additional sentence making these points
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	9	30	-	-	-	-	-	"Before ""energy efficiency"", include ""reduce energy consumption"". This is a prerequisite (scenari ""Megawatt"")"	Will edit as "in association with reducing energy consumption and enhancing energy efficiency …."
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	9	32	-	-	-	-	-	"editorial, modify ""large"" in ""larger"""	Rejected
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	9	15	9	15	-	-	-	"Hydro is a RES, rewrite the sentence. Proposition: ""technologies (hydro, other renewables, nuclear), an increase"""	Will refine text. Also will not use "carbon free"
Graham Pugh (U.S. Department of Energy)	1	9	30	9	32	-	-	-	"Suggest replacing ""in association with energy efficiency"" with ""like energy efficiency"" unless you really mean that RE can only make a substantial contribution to mitigation if it is done together with efficiency. It needs to be clear whether this is an RE report or an RE+EE report."	Energy efficiency is another mitigation option. This comment is inconsistent with prior comments, which were accepted.
Ralph Sims (Massey University)	1	9	26	-	-	-	-	-	Add ? At end of heading	Will correct
Essam El-Hinnawi (National Research Centre)	1	9	26	-	-	-	-	-	Add number of section (1.1.3)	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Kamal Abed (National Research Centre)	1	9	26	-	-	-	-	-	add: 1.1.3 before Why ☐☐ and ?	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.
Aviel Verbruggen (University of Antwerp)	1	9	16	-	-	-	-	-	as TSU states: CI not defined	Will refine references
Steve Sawyer (Global Wind Energy Council)	1	9	30	9	32	-	-	-	By 2030? Read chapter 10. It says RE could supply, for instance, 39% of global electricity supply by 2020 (Ch. 10, page 5, line 43). I would argue this is 'substantial'. For GWEC's analysis of the mitigation potential of windpower out to 2020 see http://dev6.semaforce.be/index.php?id=30&no_cache=1&tx_ttnews[pointer]=1&tx_ttnews[tt_news]=238&tx_ttnews[backPid]=97&cHash=b62a7cd948.	Will reconcile Chapter 1 with Chapter 10
Essam El-Hinnawi (National Research Centre)	1	9	1	-	24	-	-	-	Delete	Page provides important context; will refine and reduce text
John Twidell (AMSET Centre)	1	9	5	-	-	-	-	-	Mitigate WHAT? 'Mitigation potential' means nothing by itself.	This line makes no reference to mitigate. TSU should seek clarification
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	9	26	-	-	-	-	-	must write as a subtitle 1.1.3 such as the contents of the report page no. 2 line no. 9 .	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.
Douglas Arent (NREL)	1	9	21	9	24	-	-	-	para could be shortened and simply state the need to shift to low cabon energy. RE, fossil with CCS and nuclear and the main options. This report evaluaes the status of Res. Ref other IPCC reports or plans on CCS and Nuclear.	Will refine text
John Twidell (AMSET Centre)	1	9	30	-	-	-	-	-	Renewable energy SUPPLIES ☐ climate change mitigation'. Need to explain HOW. It is the abatement (removal) of fossil fuels that is essential.	New structure will have a clear discussion of mitigation options
Charles Kutscher (National Renewable Energy Laboaratory)	1	9	31	-	-	-	-	-	Saying that efficiency and renewables can make a substantial contribution by 2030 misses the fact that these technologies can START making important contributions today and, in fact, already are. Contrast this with the ten-year lead time to build a new light water reactor, a longer lead time to validate fourth-generation reactors, and at least 20 years (recent Science issue) for carbon capture and storage to be proven. This is a critical point for efficiency and renewables.	Will add these points
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	9	18	9	24	-	-	-	Such a necessity oblige us to recognize the whole of renewables as well as the potential synergies to be explored between renewables and natural gas, which may allow not only the adequate use of gas (reducing global gas flaring), but also positive complementarities to firm renewable energy supplies ... Natural gas + Renewables provide adequate long-term firm energy supply with low intermittence.	Will make appropriate references to lower carbon energy technologies
Patrick Matschoss (WG III TSU)	1	9	23	-	-	-	-	-	The combination with energ efficiency is not the focus of the report, leave that part out	Energy efficiency is an important element of the overall climate impact mitigation strategy and an inherent part of the Chapter's narrative structure
Charles Kutscher (National Renewable Energy Laboaratory)	1	9	31	-	-	-	-	-	The point should be made up front that most energy efficiency measures have a negative cost.	Will make reference as appropriate (and with caveats as this is not always true)
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	9	26	9	33	-	-	-	The same arguments to justify the need of a 'special report on renewable energy' should be adopted to justify the inclusion of an additional chapter in this report focusing on 'synergic strategies between renewable sources of energy and natural gas'. Promoting more intense combined uses of renewables and natural gas will also make a substantial contribution to climate change mitigation as early as 2030, particularly because those combined energy systems will have effects not only on reducing carbon intensity, but also in reducing energy intensity (two side Kaya effects, though), i.e., larger GDP with the same amount of energy and more efficient uses of energy as well.	The focus of the chapter is not natural gas so it should not receive as much attention as RE (which is the focus)
John Kessels (International Energy Agency Clean Coal Centre)	1	9	19	9	22	-	-	-	This is a prescriptive sentence and should be deleted	Will rewrite in less prescriptive manner "nations could …."
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	9	26	-	-	-	-	-	This is a sub-section, but the formating is wrong.	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.
Andries Kruger (South African Weather Service)	1	9	26	10	15	1.1.2	-	-	Maybe this part can be omitted and added to the introductory part of the publication, before the individual chapters.	This is an introductory chapter. Explaining the motivation of the report is important.
Vicente Schmall (Petrobras S.A.)	1	9	30	9	31	1.1.3	-	-	"Should change for; First, in association with energy efficience, renewable energy and carbon sequestration, they can make a substantial...."	Will edit as: First, in association with energy efficiency, renewable energy and carbon sequestration (as appropriate), can make a substantial...

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Vicente Schmall (Petrobras S.A.)	1	9	26	9	26	1.1.3	-	-	It is missing the number 1.1.3	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change.
Manfred Treber (Germanwatch)	1	9	-	-	-	-	1.4	-	As it is that near to present time and this is the Special Report on Renewable Energy it would be worth to mention in the text (e.g. in line 10) some short explanation why the carbon intensity increased (!) in 2007 due to 'other renewables' ?	Will refine and provide explanation
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	9	-	-	-	-	1.4	-	Problem with the title of this figure 1.4	Will fix in SOD
Stan Rosinski (Electric Power Research Institute)	1	9	5	9	16	-	1.4	-	Recommend deleting Figure 1.4 and accompanying text as the figure is misleading. Figure 1.4 leaves the impression that renewables, nuclear and other carbon-free generation havecontributed to increased carbon intensity in recent years (e.g. 2005). The fact is that growth in total energy consumption has outpaced development of renewable, nuclear and other low carbon sources so that they are providing a decreasing share of total energy consumption.	Text and figure provide useful context (note other reviewers found it useful). Will refine text
Steve Sawyer (Global Wind Energy Council)	1	9	-	9	-	-	1.4	-	Some people like these Kaya diagrams. I find them incomprehensible. However, I don't understand why RE is sometimes reduces emissions intensity and sometimes raises it□nor do I understand the significance of the little triangles in the diagram.	Will address in text
Zolt&#65533;n Somogyi (Hungarian Forest Research Institute)	1	9	11	-	-	-	1.4	-	This is a very useful figure, however, another would be even more useful that depicted how much emissions could be saved if renewables were used instead of e.g. fossile fuels.	This is addressed later
Anca-Diana Barbu (European Environment Agency)	1	9	10	-	-	1.1.3?	1.4	-	"it could be useful to explain abnormal trends, e.g. the 1999; it seems that the numbering for section 1.1.3 is missing"	Will put 1.1.3 numbering in right location. However, this section is being restructured so numbering will change. Will discuss changes in trends as space allows.
John Twidell (AMSET Centre)	1	9	-	-	-	-	Fig 1.4	-	This chart needs much explanation and raises many questions not applicable here. Why is recent nuclear increasing CO2? Why also 'other renewables' increase CO2? Is this biomass and forest burning? Much explanation needed. Remove this figure at this stage.	Will provide appropriate explanation or remove figure
Ladislaus Rybach (Geowatt AG)	1	10	4	-	4	-	-	-	-	No comment provided. TSU should check
Ladislaus Rybach (Geowatt AG)	1	10	6	-	6	-	-	-	-	No comment provided. TSU should check
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	10	4	10	4	-	-	-	"""1."" is missing at the beginning"	Will correct
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	10	5	10	5	-	-	-	"""2."" is missing at the beginning"	Will correct
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	10	6	10	6	-	-	-	"""3."" is missing at the beginning"	Will correct
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	10	8	10	8	-	-	-	"""4."" is missing at the beginning"	Will correct
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	10	9	10	9	-	-	-	"""5."" is missing at the beginning"	Will correct
Douglas Arent (NREL)	1	10	1	10	15	-	-	-	"formating lost; numbering or bullet list? "	Will correct
Ladislaus Rybach (Geowatt AG)	1	10	8	-	8	-	-	-	"Shortening the chapters: The only feasible solution would be the to reduce the text in individual paragraphs (=lots of work). Deleting whole sections would cause real loss of value. The current volume of SRREN assembles a wealth of information; it is rather preferable to handle the large number of pages than sticking to a rigid default (total number of pages, strict proportions (%) assigned to the individual renewables)."	Refining text per narrative structure. However, also need to be cognizant of appropriate length to maximize benefit to the reader
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	10	4	10	15	-	-	-	"The additional chapter just suggested should also include 'Natural gas resources by region' 'Estimated (direct and indirect) gas flaring by region and impacts on climate change'; 'Available technologies for combined uses of natural gas and existing renewable resources - Technology and market status, future developments and projected rates of deployment'; 'Mitigation potential of those combined strategies between renewable energy sources and natural gas'; 'Linkages between natural gas and renewable energy growth and co-benefits in achieving sustainable development by region'; 'Impacts of combined strategies on global, regional and national energy security'; 'Options and constraints for integration of combined Rws+NG into the energy supply system and other markets, including energy storage options, but also including positive impacts of combining NG to reduce Rws constraints (including less storage demand)'; 'As well as all the other items but always focusing on the combined options between Rws+NG: Economic and environmental costs, benefits, risks and impacts of deployment; Capacity building, technology transfer and financing in different regions; Policy options, outcomes and conditions for effectiveness; and How accelerated deployment might be achieved in a sustainable manner'."	Some of these topics are picked up in new narrative structure. However, suggested focus on natural gas is not within scope. Nature gas will be mentioned in lower carbon technology discussion

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	10	5	10	10	-	-	-	Add items' numbers	Will correct
Kamal Abed (National Research Centre)	1	10	5	-	-	-	-	-	add: 2 before Mitigation	Will correct
Kamal Abed (National Research Centre)	1	10	6	-	-	-	-	-	add: 3 before Linkages	Will correct
Kamal Abed (National Research Centre)	1	10	8	-	-	-	-	-	add: 4 before Impacts	Will correct
Kamal Abed (National Research Centre)	1	10	9	-	-	-	-	-	add: 5 before Technology	Will correct
Kamal Abed (National Research Centre)	1	10	4	-	-	-	-	-	add:1 before Renewable	Will correct
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	10	4	10	15	-	-	-	Cancelled to reach the mean lenght of the chapter	Will refine in SOD
Ralph Sims (Massey University)	1	10	15	-	-	-	-	-	Check bullets (better than 1, 2, 3 etc)	Will correct
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	10	-	-	-	-	-	-	editorial, first half of the page needs bullet points to identify options.	Will correct
John Twidell (AMSET Centre)	1	10	-	-	-	-	-	-	Emphasize here that renewables are needed to abate the use of fossil fuels. Fossil carbon has to remain underground (state this clearly), nuclear is centralised electricdity only and has many difficulties, so huge increase in renewables and the efficient use of energy is essential.	Agree that these are important points but need to provide a balance view. A number of options are needed.
Ladislaus Rybach (Geowatt AG)	1	10	9	-	9	-	-	-	line 9 should read: 5. Technology and□	Will correct
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	10	10	10	15	-	-	-	line numbers begining with 6 is confusing. numbers 1 to 5 are missing	Will correct
Antoine Bonduelle (EE Consultant)	1	10	8	-	-	-	-	-	Not yet drafted	Comment not clear. Could TSU obtain clarification from the expert reviewer
Essam El-Hinnawi (National Research Centre)	1	10	4	-	9	-	-	-	Number the lines 1 to 5	Accepted
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	10	4	10	9	-	-	-	Numbers of enumeration are missing.	Will correct
Aviel Verbruggen (University of Antwerp)	1	10	-	-	-	-	-	-	text on page needs editing?	Will correct
Ladislaus Rybach (Geowatt AG)	1	10	5	-	5	-	-	-	The header should refer to the individual chapters, not to the entire SRREN.	This is not a header
Joøo Pinho (Institut of Tecnology)	1	10	4	-	9	-	-	-	The itens should be numbered from 1 to 5.	Will correct
Steve Sawyer (Global Wind Energy Council)	1	10	2	10	15	-	-	-	What is this list? Shouldn't it be a list of topics by chapter in the SRREN?	Will revise in SOD
Michael Jack (Scion (New Zealand Forest Research Institute))	1	10	4	10	9	1.1.2	-	-	Numbers 1-5 are missing.	Will correct
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	6	-	-	1.1.3	-	-	3.Linkages between renewable energy growth and co-benefits in achieving sustainable development	Will correct
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	9	-	-	1.1.3	-	-	5.Technology and market status, future developments and projected rates of deployment	Will correct
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	5	-	-	1.1.3	-	-	" 2.Mitigation potential of renewable energy sources;"	Will correct

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	8	-	-	1.1.3	-	-	" 4.Impacts on global, regional and national energy security;"	Will correct
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	7	-	-	1.1.3	-	-	" by region;"	Comment not clear. Could TSU obtain clarification from the expert reviewer
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	10	4	-	-	1.1.3	-	-	"1. Renewable resources by region and impacts of climate change on these resources;"	Will correct
Graham Pugh (U.S. Department of Energy)	1	11	12	11	14	-	-	-	"""All the long-term scenarios"" is too vague. Also, should add something after ""indispensible,"" like ""to avoid increasing CO2 concentrations in the atmosphere"" or ""to avoid the worst effects of climate change.""""	Will clarify
Graham Pugh (U.S. Department of Energy)	1	11	10	11	12	-	-	-	"Change sentence to ""Since it is the services provided by energy and not the energy itself that people need, the use of efficient, low carbon technologies would insure lower energy consumption and decreased CO2 emissions.""""	Will edit
Ralph Sims (Massey University)	1	11	6	-	-	-	-	-	"Change 'slowed"" to slowing"	Will correct
Mark Fulton (Deutsche Bank)	1	11	14	-	-	-	-	-	"DBCCA conducted a study with Columbia university measuring the impacts to emissions reduction if targets, as well as mandates and standards are adhered to. They concluded that a maximum reduction of 10 GT would be achieved in 2020 should these mitigation efforts be undertaken. Source: DBCCA, ""Global Climate Change Policy Tracker,"" see page 5, (www.dbcca.com/research). Note: charts on page 5 have been updated with data through the end of 2009; updated chart attached as well (Report update to be published in 1Q 2010). See SRREN_Draft0_Review_Fulton_Mark_Material_02.pdf and SRREN_Draft0_Review_Fulton_Mark_Material_03.pdf"	Will harmonize with other SRREN material
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	11	24	11	25	-	-	-	"Figure 1.6 is unnecesary. The text in those lines could be as follows: ""A potential framework of options for achieving 'low carbon growth' include □"""	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	11	24	11	24	-	-	-	"Remove ""More constructively"" at the beginning of the sentence. It is also interesting to have the reference of the Figure 1.6"	Will refine text and reference figure if used
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	11	19	11	23	-	-	-	"Remove sentence ""For example, \u00e9 (Robock et al., 2009)"". The example is not the subject of this SR"	The example helps make the point of needing multiple options
Paulo Cesar de Campos Barbosa (Petrobras)	1	11	7	11	8	-	-	-	"Replace ""energy supply"" with ""energy offer"""	Agree using supply twice is awkward, but "offer" is not clear. Will use "availability"
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	11	15	11	15	-	-	-	"Rewrite the sentence in order not to use ""we"""	Will refine
Patrick Matschoss (WG III TSU)	1	11	17	11	19	-	-	-	"statements against specific technologies policy prescripte; delete"	Disagree that this is policy prescriptive
Angel DE LA VEGA NAVARRO (National Autonomous University of Mexico)	1	11	12	11	14	-	-	-	"This objective about zero CO2 emissions and low intensity seems excessively absolute. It needs to be toned down or qualified, taking into account the level of development and the industrial structure of a given developing country or region. Take, for example the case of many Asian countries: from Pakistan, to India and ASEAN countries. Growth of many energy intensive industries doesn□t seem to be interrupted in the near future: cement, steel, electricity. These countries are relatively poor in hydrocarbons and it□s no easy for them to connect with international gas pipelines. Even if they make important efforts to develop nuclear and renewable sources, they won□t have before long time energy sources so abundant and cheap than coal in their subsoil. "	Agree that this is a challenge -- but the idea is to incentivize use of RE and low carbon technologies. Will clarify.
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	11	2	11	2	-	-	-	"What is the reference for ""85%"", and coherence with 18% of RES in the executive summary"	Will clarify/add reference
Graham Pugh (U.S. Department of Energy)	1	11	27	11	29	-	-	-	Again, RE is being coupled with EE. This is an RE report. Any technology will be helped by being coupled with EE, not just RE, so why the insistence on coupling here?	RE has to be discussed in context of other mitigation options
Steve Sawyer (Global Wind Energy Council)	1	11	14	11	14	-	-	-	an energy supply with 'low energy intensity'? What could that possibly mean?	Will clarify
John Kessels (International Energy Agency Clean Coal Centre)	1	11	2	11	5	-	-	-	Assumed by who?? Roughly proportional!! Delete or put in the numbers and who stated this	Will clarify/add reference
Ralph Sims (Massey University)	1	11	15	-	-	-	-	-	Avoid personal pronouns	Will refine
William Kyte (E.ON AG)	1	11	22	11	23	-	-	-	choking' - emotive language	Will refine text

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Graham Pugh (U.S. Department of Energy)	1	11	15	11	23	-	-	-	I'm confused as to why geoengineering is being raised in this RE report. Advertising the sustainable development aspects of RE makes sense, but what does geoengineering have to do with that? I would delete this paragraph.	This is an important point -- but will refine text to streamline and retain core thought of needing multiple solutions
Veronika Rabl (Vision & Results)	1	11	3	-	5	-	-	-	In the US, energy use/GDP has been declining at least since 1950. See EIA data.	Text does note exceptions. Will clarify
Douglas Arent (NREL)	1	11	10	11	14	-	-	-	need to define services. Shorten/simplify thought.	Will provide some examples of services
John Twidell (AMSET Centre)	1	11	27	11	29	-	-	-	Renewable energy□.economic growth'. THIS IS A MOST IMPORTANT SENTENCE THAT SHOULD BE EMPHASIZED FROM THE BEGINNING.	New narrative structure emphasizes this point
Douglas Arent (NREL)	1	11	15	11	23	-	-	-	suggest removing ref to geoeng, but retain core thought that solutions must address broad measures of sustainabiliy, including climate change.	This is an important point -- but will refine text to streamline and retain core thought of needing multiple solutions
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	11	15	-	23	-	-	-	suggest to cut, the argument is outof the scope of the report	This is an important point -- but will refine text to streamline and retain core thought of needing multiple solutions
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	11	9	11	10	-	-	-	the sentence should be □ even those that are suplied by electricity (instead of especially those that are□)	Would change meaning of the sentence -- which is developing countries specially lack services that are supplied by electricity
Douglas Arent (NREL)	1	11	7	11	8	-	-	-	what intensity? World or EU or US? Average?	Will clarify
Steve Sawyer (Global Wind Energy Council)	1	11	15	11	23	-	-	-	While I agree with the general sentiments in this paragraph, I'm not sure it fits here and I think if you're looking for something to cut, a general para on the dangers of geo-engineering would be high on the list	This is an important point -- but will refine text to streamline and retain core thought of needing multiple solutions
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	11	7	-	-	1.1.4	-	-	fig. (SPM - 2) is absent , its correct no. is fig.(1.5)	Will correct
Michael Jack (Scion (New Zealand Forest Research Institute))	1	11	15	11	23	1.1.4	-	-	In this section some of the issues I raised in comment 2 above are spelt out in more detail. I completely agree with what the authors have written here, however, my concern is that the point that is being argued here should rightly reside at the highest level of the IPCC. Is the issue we are adressing climate change or unsustainable development? I feel that it should not be debated in a report like this.	Have developed a new narrative structure that will help refine SOS and address this issue
Vicente Schmall (Petrobras S.A.)	1	11	15	11	26	1.1.4	-	-	Remove geoengeneering solution reference. This mitigation option is not subject of renewable energy.	This is an important point -- but will refine text to streamline and retain core thought of needing multiple solutions
Dan Bilello (NREL)	1	11	2	11	3	1.1.4	-	-	Sentence is missing something.	Will refine
Vicente Schmall (Petrobras S.A.)	1	11	12	11	12	1.1.4	-	-	Should replace low carbon technologies for clean technologies...For example CCS is a clean technology..not a low carbon...	Will need to agree on nomenclature throughout -- low carbon technology is most likely the preferred approach
PA ABDOULIE MANNEH (MINISTRY OF FINANCE AND ECONOMIC AFFAIRS)	1	11	2	26	20	1.1.4	-	-	The Chapter could be shortened from these range without affecting the substance	Will refine this range in SOD
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	11	9	11	10	1.4	-	-	"""In most developing countries, on the other hand, many people lack even basic energy services and especially those""□. that lack access to the electric grid. **It should be noted that often in non-Annex I countries, those villages that are ""electrified"" often only serve a small percentage, as connection fees can be cost prohibitive."	While this is an important point, the length of the chapter cannot accommodate such detail
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	11	22	11	23	1.4	-	-	"""or the choking of cities by the increasing number of motor cars on the road"" is a politically biased statement."	Will refine text
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	11	13	11	14	1.4	-	-	"There is a need to differentiate between 'growth in developing countries' and rural energy demand. As seen with the case of China, energy demand is highest for export manufacturing and cement production (IEA 2007 China and India Insights) that largely serve the export industry for cities and the emerging middle class (who live in cities). While implementing rural technologies have specific end-user benefits mentioned earlier in the report, rural electrification programs will not make up the bulk of expanding energy demands in developing nations (Duke Kammen 2005). "	Good point. Will add.
Veronika Rabl (Vision & Results)	1	11	-	-	-	-	1.6	-	"Explain what is meant by ""market-based measures,"" particularly since they appear to offer the fastest route to GHG reduction."	Will explain

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Aviel Verbruggen (University of Antwerp)	1	11	-	-	-	-	1.6	-	"figure is unclear; the IEA Outlook 2009 uses a better version"	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Patrick Matschoss (WG III TSU)	1	11	-	-	-	-	1.6	-	"figure mixes different categories e.g. generic ipmrpovements with specific instruments (standars); is arbitrary; delete"	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	11	-	11	-	-	1.6	-	According to the previous comment Figure 1.6 could be removed	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Ralph Sims (Massey University)	1	11	-	-	-	-	1.6	-	Put 2005 on to Y axis. Source?	Will refine and reference figure if used
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	11	-	-	-	-	1.6	-	suggest to cut, no need of this figure to illustrate general concepts. Moreover the figure suggests some quantification of the possible impact of options that is not discussed and not referenced.	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Laura Cozzi (International Energy Agency)	1	11	-	-	-	-	1.6	-	This figure could be improved - it is not very clear	Will clarify if figure if used
Graham Pugh (U.S. Department of Energy)	1	11	-	11	-	-	1.6	-	This is an odd schematic figure. While it might be accurate, surely the relative placement of the lines depends on exactly what the technology improvements, standards and market-mechanisms are. I don't think this adds much value without explanation and sourcing.	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Steve Sawyer (Global Wind Energy Council)	1	11	-	-	-	-	1.6	-	What is the source for this? What is the metric on the Y axis? It also contra-indicates most conventional wisdom by showing that efficiency can only make a very small difference between now and 2025, whereas RE on its own gets us to zero carbon growth by 2033 or so...fix it up and source it or dump it.	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Andries Kruger (South African Weather Service)	1	11	31	11	31	1.1.4	1.6	-	A brief discussion of this graph, e.g. examples of standards and marjet-based measures, can be added.	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Vicente Schmall (Petrobras S.A.)	1	11	24	11	31	1.1.4	1.6	-	Could be eliminated	Will decide on use of figure depending on length and ability to refine. Could substitute with text
Aviel Verbruggen (University of Antwerp)	1	12	34	-	-	-	-	-	"""have also been achieved"" replace by ""are projected to be achieved"" (fuel cells haven't done a big job yet)"	Will edit
Emmanuel Branche (Electricit de France (EDF))	1	12	30	12	30	-	-	-	"A point ""."" is missing at the end of the sentence"	Will correct
C☐ic Philibert (International Energy Agecy)	1	12	41	-	-	-	-	-	"Can one write that ""improvements make progress""?"	Will refine text
Ralph Sims (Massey University)	1	12	32	-	-	-	-	-	"Change ""or"" to and"	Will edit
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	12	42	-	-	-	-	-	"Complete the sentence ""However - technology alone can only us so far"""	Will refine text
Graham Pugh (U.S. Department of Energy)	1	12	16	12	40	-	-	-	"I find that the persistent linkage of RE to EE distracts from the focus of the report and actually serves to downplay the potential of RE. The message would seem to be ""unless we use aggressive EE, RE won't work."" I assume the cost allocation to RE would then include the cost of the EE improvements?"	RE needs to be discussed within context of other mitigation strategies like efficiency
Javier Garcia (Renewable Energy Center)	1	12	1	12	12	-	-	-	"May I suggest to add this two responses to climate change in the enumeration with bullets: ""zero or low carbon transpor technologies"" and "" distributed energy and smart grids"""	Text being refined; will include if space allows
Manfred Treber (Germanwatch)	1	12	31	-	-	-	-	-	"please bring one addition: ""... could reduce emissions ☐ APART FROM A SHIFT TO MORE EFFICIENT TRANSPORT MODES - significantly by ..."	Will expand
C☐ic Philibert (International Energy Agecy)	1	12	14	-	-	-	-	-	"Please write ""the report will examine synergies and trade-offs between renewable energy and energy efficiencies"". There are many synergies and few trade-offs - but there are some, which cannot be precluded at this stage."	Will edit
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	12	3	12	12	-	-	-	"Should be included: 'Promoting the adequate use of natural gas and avoiding spoiling natural gas by flaring'; 'Promote the adequate uses of electricity by also reducing electrothermo uses (final transformation of produced electricity into thermal energy (heat or cool) ☐ Less need for electricity means less need to produce it in any kind of plant'; 'Thermal production with electricity can be substituted by direct (and more efficient) uses of natural gas (including cogeneration)'; 'Not allowing that promotion of renewable energy sources, which aims to generate electricity, may end up by inciting electrothermy at the end use (as it has been happening in countries with large share of nuclear power'; 'Diversify the scope for renewable energy sources ☐ no longer just focusing on electricity generation, but also other secondary carriers such as compressed air, which can lead to mechanical energy, including for transportation'."	Text being refined; will include if space allows

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C□ic Philibert (International Energy Agecy)	1	12	42	13	2	-	-	-	"The claim that ""emissions will continue to grow without changes in lifestyle especially in richer countries"" needs to be substantiated or dropped - or alleviated. ""could continue to grow"" would be more acceptable. The stress put on 'the richer countries' is questionable in itself, as the bulk of the expected growth in emissions will come from developing countries. ""Changes in lifestyles"" is very vague, and sound examples should be given. "	Will edit as suggested
Graham Pugh (U.S. Department of Energy)	1	12	14	12	15	-	-	-	"The mention of ""examining the synergies between RE and energy end-use efficiency"" is not a goal of the report at the same level as the role of RE in reducing GHGs, at least as far as I am aware from the Scoping Report. There is a place in Chapter 1 to explore the role of EE trends in the broader energy system (Section 1.3 of the Outline document at: http://www.ipcc.ch/pdf/special-reports/outline-srren.pdf), which I think would be appropriate."	RE needs to be discussed within context of other mitigation strategies like efficiency
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	12	31	12	36	-	-	-	"The transportation sector, by shifting to flex-fuel cars, based on biofuels and fossil fuels, should also promote appropriate technologies and engineering improvements to increase the efficiency in the flex internal combustion engines. The Brazilian tradeoff between using more biofuels and reducing the performance of the cars should be avoided. The concept of hybrid cars should also be extended to embrace non-electric systems. Hybrid cars based on compressed air (from wind power plants or gas-fired cogeneration units) can rapidly converted into commercially competitive experiences. "	Will expand as appropriate but adding a lot of details may not be possible within length constrains
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	12	5	-	-	-	-	-	Add a item: develop carbon sobriety society based on energy sobriety. For example, in the building sector, in addition to high energy performance building, the concern of passive house is in any case better than having a bad insulated house with a lot of PV panels to be considered finally as a positive home.	Text being refined; will include points if space allows. However, energy sobriety is not an appropriate term
Kamal Abed (National Research Centre)	1	12	26	-	-	-	-	-	add: during operation after emissions	Perhaps comment is in wrong place as it does not make sense
Douglas Arent (NREL)	1	12	31	12	33	-	-	-	and more if BOTH.	Will note
□vind Christophersen (Climate and Pollution Agency)	1	12	24	-	25	-	-	-	Avoidance of glass box construction of high-rise buildings might also be relevant for cold countries due to increased demand for heating.	Will note possibility
John Kessels (International Energy Agency Clean Coal Centre)	1	12	26	12	30	-	-	-	Delete this paragraph or rewrite it without biofuels for aviation and put that in a separate paragraph.	Will separate aviation example
Patrick Matschoss (WG III TSU)	1	12	31	12	43	-	-	-	examples appear arbitrary, delete or integrate batter	Will integrate better, but examples were meant to cover a variety of applications - focusing on high GHG producers
Charles Kutscher (National Renewable Energy Laboaratory)	1	12	35	-	-	-	-	-	Fuel cells also have the issue of what carbon emissions occur in the process of producing, transporting, storing, and releasing hydrogen.	Will incorporate point
Douglas Arent (NREL)	1	12	13	12	15	-	-	-	gases are not limited to CO2 and CH4.	Will edit
Steve Sawyer (Global Wind Energy Council)	1	12	26	12	30	-	-	-	I know of no solar rooftoop installations that provide 100% of electrical demand, but perhaps they exist. While the general premise of the para is reasonable, a specific case study would be appropriate here.	Will add reference
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	12	26	12	29	-	-	-	In many countries where the exaggerated uses of electricity are noticed, the electricity demand can be lowered by combined thermal solar / gas systems that will provide heat and cool, and solar PV system might be smaller and more manageable.	Good point but size limitation prevent including every possible example
Steve Sawyer (Global Wind Energy Council)	1	12	18	12	18	-	-	-	LEDs are around 10 times more efficient per lumen than incandescents□but again, is this all really necessary here?	Will refine text in SOD
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	12	-	-	-	-	-	-	List of possible response meausures to mitigate climate change is comprehensive, however it is related to too many different options and out of the scope of the paper. This report should not address mitigation options. The main concept, if I well understood, is the complementarity between Renewables and efficiency, fine, work only on this concept.	RE needs to be discussed within context of other mitigation strategies. Text will be refined.
Patrick Matschoss (WG III TSU)	1	12	16	12	43	-	-	-	many statements that are hardly backed by literature	Will provide appropriate references
John Kessels (International Energy Agency Clean Coal Centre)	1	12	31	12	36	-	-	-	No reference for this paragraph, delete or reference	Will add appropriate reference
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	12	18	12	19	-	-	-	Properly sized and projected absorption cycle refrigerators and air conditioners should also be mentioned since it allowed to produce thermal energy direct from gas rather using the gas to produce electricity in gas-fired power plants and then feed improved efficiency compressors or heat pumps.	Good point but size limitation prevent including every possible example
Ralph Sims (Massey University)	1	12	36	-	-	-	-	-	Reference to Chapter 8	Will include reference to Chapter 8
John Twidell (AMSET Centre)	1	12	29	-	-	-	-	-	Remove example of biofuels for aircraft. Only marginal improvements in fuel efficiency for aircraqft are possible. This is not a good example. Mjuch better to consider small. Lightweight cars.	As noted by other reviewers, this is an important example

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Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	12	37	13	2	-	-	-	Remove these lines	These are important points - will refine text
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	12	41	12	38	-	-	-	Remove these lines	Will refine text but these are important points
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	12	16	12	25	-	-	-	Remove these lines (energy efficiency is not the subject of this SR, refer to my comment on chapter 1 from page 1 to 41)	RE needs to be discussed within context of other mitigation strategies like efficiency
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	12	37	-	-	-	-	-	Sentence is unclear. It should be combines... instead of combined...	Combined is the right word
Paulo Cesar de Campos Barbosa (Petrobras)	1	12	24	12	25	-	-	-	Should also mention natural lightening as a energy efficiency measure for buildings	Assume reviewer means lighting. Will incorporate as space allows
Patrick Matschoss (WG III TSU)	1	12	13	12	15	-	-	-	The combination with energ efficiency is not the focus of the report, leave that part out	RE needs to be discussed within context of other mitigation strategies like efficiency
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	12	31	12	36	-	-	-	The emissions from tarsport sector can be lowered also by modal shifts like increase of public tarnsport systems like metro trains or uses which replace private passenger cars.	Will expand
Achim Woyte (3E sa)	1	12	16	-	36	-	-	-	The GHG mitigation options are listed in the bulleted list above. No need to repeat and discuss them here. Examples of LEDs and passive house are anecdotic. I suggest to delete these three paragraphs.	Examples are important, but text will be refined and shortened
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	12	3	12	12	-	-	-	The list is incomplete. It misses the option of removing CO2 from the atmosphere. There are at least three possiblities. First, biomass is buried under the earth. Second, biomass is used energetically and combined with carbon capture and sequestration. Third, it is removed technically from the atmosphere and sequestered geologically. One may also consider the reduction of economic growth, which is expected to imply significant welfare losses and is at odds with development goals.	Text being refined; will include points if space allows. Some of the points are outside scope
Laura Cozzi (International Energy Agency)	1	12	29	-	30	-	-	-	The sentence for aircraft needs a reference	Will add reference
Luiz A. Horta (Instituto de Recursos Naturais)	1	12	29	-	-	-	-	-	This remark about biofuel use in aircraft is incomplete. Which efficiency is that? In fact, biofuels in air transportation is just beginning, but in vehicular applications is already very important and should be discussed in this report in more detail.	Agree. Will expand on new para as suggested by another reviewer
Laura Cozzi (International Energy Agency)	1	12	16	-	25	-	-	-	This section needs to be completed mentioning the rebound effect and saying that only coupling energy efficiency with appropriate energy pricing can tap the full mitigation potential of energy efficiency measures.	The SOD will contain a narrative structure that addressed these issues
Achim Woyte (3E sa)	1	12	26	-	30	-	-	-	This statement is not proven. From integration point of view, one could argue the opposite. I suggest to ommit this paragraph.	Will add appropriate reference
C\u25a1ic Philibert (International Energy Agecy)	1	12	26	12	30	-	-	-	To the examples of synergies given here you tight want to add one example of trade-offs: heating loads in very well insulated buildings become very small and very much concentrated in a short period of the year with very low solar resource, so that the economics of an active solar heating systems (or even an heat pump) become very bad, at least with current technologies for inter-seasonal storage.	Good point but size limitation prevent including every possible example
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	12	16	12	17	-	-	-	Turning back to the decomposition of Kaya equation, it has already been highlighted the importance of declining energy intensity in more developed countries in promoting GHG emissions mitigation. Reducing the end use energy demand through efficiency measures is definitively an important strategy to be pursued. Yet, reducing the energy intensity is also achieved by increasing total GDP produced by one unit of energy, which requires the adoption of new technologies and the production of higher-valued goods from the same amount of energy. Therefore, the report should also point out the need of examining the synergies between RE and practices to increase productivity and quality of products and services produced from energy uses. In particular, the synergic uses of RE and natural gas have high potential to reduce energy intensity in many leading process.	The SOD will contain a narrative structure that addressed these issues. However specifically singling out natural gas is not within length scope
Douglas Arent (NREL)	1	12	16	12	25	-	-	-	would be btter placed below line 26/27. keep focus on RE, but make the point of more effective in conjunction with EE.	Material in SOD being redrafted/rearranged to follow a more logical narrative structure
Michael Jack (Scion (New Zealand Forest Research Institute))	1	12	1	12	10	1.1.4	-	-	"At least in the bioenergy case the ""Renewable energy technology substituting for fossil fuels"" option is closely related to the ""Forests, soils and grassland sinks to absorb carbon dioxide from the atmosphere"" option. For example, the establishment of a sustainably managed plantation forest for energy feedstocks achieves both goals as only a fraction of the forest is harvested each year. I think it would be good to raise this point here. "	Text being refined; will include if space allows
Anca-Diana Barbu (European Environment Agency)	1	12	43	-	-	1.1.4	-	-	"I suggest deleting ""the pace"" from this sentence"	Will refine text

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Anca-Diana Barbu (European Environment Agency)	1	12	41	-	43	1.1.4	-	-	"It might be interesting to consult available literature on the necessary improvements in technological afficiency in order to reach the 450ppm goal. Some recent work that I am aware of (Tim Jackson - Prosperity without growth and prof. Monitz - MIT Energy Initiative) suggest that the technological efficiency has to increase many fold (compared to historic trends) in order to reach the 450ppm target in 2050; The scale required implies also significant changes in behaviour. "	RE within context of climate change will be discussed
Andries Kruger (South African Weather Service)	1	12	1	12	1	1.1.4	-	-	"Replace ""specific"" with ""possible""."	Will edit
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	12	1	-	2	1.1.4	-	-	missing reference (IPCC AR4, 2007).	Reference is included
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	12	37	-	38	1.1.4	-	-	missing reference (Kasten, 2008).	Will include reference details
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	12	21	-	25	1.1.4	-	-	missing reference (Passivhaus, 2009), selected text should be shortend	Will include appropriate reference and refine text
Anca-Diana Barbu (European Environment Agency)	1	12	34	-	36	1.1.4	-	-	The environmental benefits (e.g. GHG emissions balance) of higher rate of penetration of electric vehicles depends essentially on two things: the carbon intensity of the electricity network and expected improvements in conventional internal combustion engines. The EEA has recently completed a study on these issues that can be accessed at: http://air-climate.eionet.europa.eu/docs/ETCACC_TP_2009_4_electromobility.pdf	Will review reference and incorporate appropriate points
Anca-Diana Barbu (European Environment Agency)	1	12	29	-	30	1.1.4	-	-	The feasibility for the aircraft industry to switch to biofuels is more complex than just a matter of increasing the efficiency of the aircraft engine (albeit increasing efficiency helps). For a good review of the major constraint factors related to the first generation biofules I suggest the recent report from the International Pannel for resource Management http://www.unep.fr/shared/publications/pdf/WEBx0149xPA-AssessingBiofuelsSummary.pdf. For future generation of biofuels, the environmental constraints (e.g. GHG emission balance, air pollutant emissions, soil health, water quantity and quality, biodversity and land-use changes) remain of concern as more often than not it is a matter of trade-offs than complete win-win situation. At the EEA we are also undertaking work to assess the environmental impact of biomass (not just biofuels) with particular emphasis on indirect land-use changes due to simultaneous implenmentation of bioenergy policies around the world. The work should be completed this year and should there be any interest in the findings, please contact Jan Erik Petersen at Jan-Erik.Petersen@eea.europa.eu.	Agree that there are other issues -- this was just one example. Will expand on new para as suggested by another reviewer
Ralph Sims (Massey University)	1	13	32	-	-	-	-	-	we?	Noted.
Luc Gagnon (Hydro-Quebec)	1	13	38	-	38	-	-	-	"""The decentralised nature of renewable energy"" is not obvious: hydro, large wind power projects, CSP, geothermal□ Please change to ""the decentralized nature of some options such as PV""."	Noted.
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	13	19	13	19	-	-	-	"Add ""price"". Proposition: ""price volatility"""	Will be added
Manfred Treber (Germanwatch)	1	13	2	-	-	-	-	-	"for the sake of correctness please add ""... in the richer countries, BUT ALSO FOR THE POPULATION WITH HIGH INCOME IN DEVELOPING COUNTRIES"""	Will refine text
Angel DE LA VEGA NAVARRO (National Autonomous University of Mexico)	1	13	27	13	28	-	-	-	"Given that 50% of the world□s population is still agrarian, the scale up of renewable energy offers 28 significant economic opportunities for rural communities around the world (WIREC 2008). The term 'agrarian' needs to be qualified. This 50% of world population are not related with 'agrarian' activities in an old way. Rural zones have changed deeply. Specialists now talk about 'new rural activities', less related with agriculture and most connected with industrial, tourist or different service activities related with production network in nearby cities. All this changes the way we think about energy and environment in 'new' rural zones as compared with traditional ones. "	Will be considered
Luiz A. Horta (Instituto de Recursos Naturais)	1	13	32	16	37	-	-	-	"In biofuels production, always land potentially used for food (and fiber and fooder) production will be required. Maybe is better to mention that ""biofuel production should not to affect food production or reduce food security"". "	Accepted
Patrick Matschoss (WG III TSU)	1	13	25	14	46	-	-	-	"include into 1.3.5-1.3.7; improved structure needed; several development goals mentioned as well as MDG as separate goal; suggest to put all under umbrella of MDG ""RE instrumental in reaching MDG (access to energy, income generation in rural areas etc)"""	Has been considered to shift
Ralph Sims (Massey University)	1	13	18	-	-	-	-	-	"Needs a ref after ""market drivers""."	Will be provided

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
C□ic Philibert (International Energy Agency)	1	13	35	13	42	-	-	-	"Please reconsider the sentence ""the lack of transmission grids makes conventional energy supply impossible in such locations"". They are also lacking modern renewable energy technologies, but you do not consider impossible to bring them there. Why would it be impossible to develop transmission grids, as developed and many developing countries have done? China and Northern African countries have very high rates of rural electrification. So it is not a black and white opposition; there are choices to be made between grid extensions and local resources, which may depend from a wide range of factors, amongst which population density, distances, expected consumption, etc."	Will be considered
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	13	7	13	10	-	-	-	"Remove sentence ""For example in the \u00e9renewables fuels"". A reference to military is maybe not relevant for this SR ?"	Military breakthroughs have often spurred civil break troughs
Paulo Cesar de Campos Barbosa (Petrobras)	1	13	14	13	16	-	-	-	"Renewable resources have an uneven distribution over the world. Text should mention that countries must explore their ""natural inclination"", regarding resource availability"	Will introduce point
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	13	32	13	32	-	-	-	"Rewrite the sentence in order not to use ""we"""	Accepted
Laura Cozzi (International Energy Agency)	1	13	18	-	-	-	-	-	"You may want to add a reference to ""World Energy Outlook 2009"", International Energy Agency - as it shows clearly increasing oil and gas prices"	Will be provided
Steve Sawyer (Global Wind Energy Council)	1	13	28	13	28	-	-	-	According to researchers at UNC and elsewhere, May 23 2007 marked the day when more than 50% of the global population was urban, not rural□	Will be considered
Douglas Arent (NREL)	1	13	13	13	14	-	-	-	assertion that has NOT been true in past--single sources were fine.	Will introduce as a future option
Paulo Cesar de Campos Barbosa (Petrobras)	1	13	32	13	34	-	-	-	Biofuels production on arable land can be done in a sustainable way, not interfering in food security or even improving food production. Suggest remove the sentence	Will be considered
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	13	32	12	34	-	-	-	Biofuels should also not congest and make even more inefficient the scarce infrastructure logistics in less developed countries, increasing other costs (including food) particularly for poorer people.	will be considered
C□ic Philibert (International Energy Agency)	1	13	43	14	2	-	-	-	Comment 1 applies here as well.	Will be considered
John Kessels (International Energy Agency Clean Coal Centre)	1	13	43	13	45	-	-	-	Could also argue the fossil fuels provide the same services, rewrite sentence	Accepted
Ralph Sims (Massey University)	1	13	3	-	-	-	-	-	Delete words in brackets	Title will be refined
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	13	25	13	29	-	-	-	Development in agricultural production will also be achieved by improved and increased uses of fertilizers, which production can be diversified by promoting gas-based petrochemicals from stranded sources of gas.	Needs discussion
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	13	16	13	18	-	-	-	I may agree with your scenario of continuing rise of the oil prices. Yet such statement requires some references as you are doing along the text.	Will be provided
Graham Pugh (U.S. Department of Energy)	1	13	15	13	15	-	-	-	In practice, domestic biofuel resources have international implications due to indirect land use effects and the global nature of agricultural commodities. Also, biofuel resources vary considerably by country.	Will highlight cross border issues
Ralph Sims (Massey University)	1	13	15	-	-	-	-	-	Is an IEA report 2007 on RE and Security that could be referenced	Will be referenced
William Kyte (E.ON AG)	1	13	35	13	42	-	-	-	key messages are lost in verbiage	Accepted
Paulo Cesar de Campos Barbosa (Petrobras)	1	13	16	13	18	-	-	-	Lack of reference	Will be provided
Ralph Sims (Massey University)	1	13	39	-	-	-	-	-	Not only off-grid - is also grid-connected decentralised	will be considered
Luc Gagnon (Hydro-Quebec)	1	13	8	-	9	-	-	-	Please remove this example which is not appropriate. The major option to increase energy security is kerosene from coal, which is clearly not a renewable option.	That is not the major option as the U.S. is prohibited from buying fuel that does not have lower emissions than kerosene. Will clarify text
Luc Gagnon (Hydro-Quebec)	1	13	13	-	24	-	-	-	Please remove this paragraph. In many cases, more diversity could mean maintaining or developing fossil fuels instead of renewable energy. Examples: more gas fired generation in Norway, Brazil, Canada, instead of renewable hydropower.	Will refine text but diversity is a co-benefit
Graham Pugh (U.S. Department of Energy)	1	13	21	13	22	-	-	-	Reference for biofuel production resulting in billions of dollars in annual savings? Biofuel costs would have to be much lower than petroleum and petroleum displacement quite large for this effect to be significant.	Will be considered
John Kessels (International Energy Agency Clean Coal Centre)	1	13	18	13	24	-	-	-	Reference needed	Will be provided
William Kyte (E.ON AG)	1	13	18	13	24	-	-	-	Reference needed	Will be provided

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Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	13	13	13	15	-	-	-	Securing a reliable, constant and sustainable supply of energy requires a diversified combination of energy sources. RE + gas systems offer promising alternatives for firmly replacing petroleum based products.	Will refine text
Douglas Arent (NREL)	1	13	5	13	12	-	-	-	states that econ is more important than climate. Then adds security. Why not lead with Climate AND they address security and aspects of Econ□..	Title will be refined
Steve Sawyer (Global Wind Energy Council)	1	13	5	13	12	-	-	-	There are more than two primary concerns: energy security, economic development and job creation (esp. in rural areas) are prime movers arguably ahead of environment in the world's largest utiliser of RE (China). The main motivators should be listed as something like: GHG emission reductions, energy security, economic security from fluctuating international commodities markets, pollution reduction, industrial development and job creation.	Text will be refined
Douglas Arent (NREL)	1	13	35	13	42	-	-	-	there is considerable peer literature about the role of Re to improve access.	Other references to be considered
Steve Sawyer (Global Wind Energy Council)	1	13	29	13	31	-	-	-	This sentence is terrible. Try 'RE provides many rural economic development opportunities, ranging from improved energy access to industrial development, i.e., through wind power and biomass manufacturing and production facilities being located primarily in rural areas.	Accepted
Douglas Arent (NREL)	1	13	29	-	-	-	-	-	wirec pub is not peer reviewed. Is there not better literature?	Will use other reference
Richard Taylor (International Hydropower Association (IHA))	1	13	34	13	34	1.1.5	-	-	"Add ""Indeed, as RE technologies accelerate and scale-up a balance will have to be struck between the three dimensions of sustainable development"" after ""...or threaten biodiversity"". Reason: All RE technologies have positive and negative social, economic and environmental impacts."	Accepted
Anca-Diana Barbu (European Environment Agency)	1	13	32	-	34	1.1.5	-	-	It is important to highlight that sustainability has to be observed not just for biofuels but for bioenergy in overall.	will be reflected
Dan Bilello (NREL)	1	13	32	13	34	1.1.5	-	-	It is inappropriate to use bioenergy as the example each time a caution about using renewables sustainably is offered. At large scales, all renewables could have significant environmental impacts.	Will be considered
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	13	13	-	24	1.1.5	-	-	missing reference (German Federal Ministry for Environment. 2008), selected text should be shortend .	Will include reference and refine text
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	13	35	-	42	1.1.5	-	-	missing reference (German Federal Ministry for Environment. 2008), selected text should be shortened .	Reference will be reflected
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	13	43	14	2	1.1.5	-	-	missing reference (UNDP, 2005), selected text should be shortened .	Reference will be added
Anca-Diana Barbu (European Environment Agency)	1	13	13	-	15	1.1.5	-	-	One less talked about aspect is the use of renewable raw materials for the chemical industry as well (hence even more competition for land-use). The EEA has produced a recent paper on this subject. For follow up, please contact Almut.Reichel@eea.europa.eu	Interesting point but outside scope
Anca-Diana Barbu (European Environment Agency)	1	13	43	-	46	1.1.5	-	-	Some good examples on how RES can contribute to MDG are available in the work carried out by the UNEP-facilitated global network on energy for sustainable development. During their last expert meeting on energy, there were discussions on proposing a specific MDG on energy where renewables, in my view, could play an important role.	Will be considered
Anca-Diana Barbu (European Environment Agency)	1	13	8	-	9	1.1.5	-	-	The example given to exemplify the security of supply as a driver for RES promotion is maybe less strong as the EU integrated policy on energy and environment. In addition, the issue of biofuels is a more complex one (please see my comments above).	Military breakthroughs have often spurred civil break troughs
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	13	28	13	29	1.4	-	-	"In the book, ""The promises and challenges of biofuels for the poor in developing countries"" (von Braun Pachauri) write that while it is possible for rent to be captured by poor small-scale farming, farmland (productive versus fallow), agricultural policy, subsidies and farmland management are all significant variables that dictate the success and sustainability of a bio-fuel program. In general, I feel there should be more space allowed for explicit detail in this report regarding what types of policies and procedures of 'sustainable biofuel' programs in developing countries, given the consequences could be severe and work directly against MDGs. Case studies of 'food versus fuel' and the brazil biofuels program (both consequences and successes) should be mentioned."	Will be considered
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	14	24	14	24	-	-	-	"Reference for the figure 1.7 is ""IEA, 2009a"" and not ""IEA, 2009"""	Will be changed
Patrick Matschoss (WG III TSU)	1	14	4	14	21	-	-	-	"suggest to move to 1.2 & create unified ""history section"" (together with history part from page 7) there"	Section to be moved to 1.2
Patrick Matschoss (WG III TSU)	1	14	23	16	2	-	-	-	"suggest to move to 1.2. & create ""status"" section there"	will be moved to 1.2
Virginia Sonntag-O'Brien (REN21)	1	14	22	-	-	-	-	-	8. The International Renewable Energy Agency (IRENA), which was founded in 2009	Noted.
Virginia Sonntag-O'Brien (REN21)	1	14	19	-	-	-	-	-	add: and which called for a global policy network for renewable energy, which became REN21.	Section to be removed

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mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	14	-	-	-	-	-	-	cut the list of UN acts to promote renewables at the beginning of para 1.1.6: it is useless, the same action has different scopes, it has only historical value	Section will be removed
John Kessels (International Energy Agency Clean Coal Centre)	1	14	18	14	21	-	-	-	Delete the list of conferences it does not add anything	Section to be removed
Jo&#65533;o Pinho (Institut of Tecnology)	1	14	4	-	5	-	-	-	From the 1970's until now it should be four decades instead of three decades	Noted.
Achim Woyte (3E sa)	1	14	4	-	21	-	-	-	I suggest to add the launch of the Internat. Renewable Energy Agency (IRENA 2009) as an important international policy event for renewables.	Section will be removed
Steve Sawyer (Global Wind Energy Council)	1	14	4	14	4	-	-	-	more than three decades'	Section to be moved to 1.2
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	14	-	15	-	-	-	-	The potential of RES is evaluated here at 13% of energy consumption, in page 4, line 22 it was 18%. In para 1.3.3.1, pg 21, it is between 13 and 16%. It is confusing, oblivious that numbers refers to different types of energy	will be adjusted
Antoine Bonduelle (EE Consultant)	1	14	9	-	-	-	-	-	This list should include the creation of IRENA, the international Agency on Renewable Energy, in 2009.	Section to be moved to 1.2
Steve Sawyer (Global Wind Energy Council)	1	14	23	15	11	-	-	-	This section generally suffers from measuring everything in terms of TPES, and there it has the numbers wrong, or at least they conflict with a variety of other sources, including whatever source was used to come up with the 18% on p. 4 of this chapter. If you looked at electricity you would have a very different picture. See Figure 16 on p.22 of UNEP/NEF (2009) cited in this chapter. Furthermore, wind energy already produces about 277 Twh/yr, which is approx. 1 exajoule which is . 2%...not the .1% mentioned in combination with solar and marine. And if that includes solar thermal, then the number is even further off. This shows the dangers of only looking at TPES, and not either electricity or final energy consumption. Furthermore, geothermal only has about 10GW installed globally, yet shows more than 4 times as much as wind under this analysis, which is 157GW at the end of 2009. Something wrong with the source, no doubt, but also the metrics.	Figures to be reconciled
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	14	24	-	-	1.1.6	-	-	International Energy Agency (IEA) (2009), not recorded in the list of references .	Will be reflected
Richard Taylor (International Hydropower Association (IHA))	1	14	22	14	22	1.1.6	-	-	"Add ""8. The creation of the International Renewable Energy Agency (IRENA) 2009"". Reason: The timeline misses the establishment of the world's first intergovernmental body solely dedicated to renewables."	Section to be removed
Dan Bilello (NREL)	1	14	23	14	24	1.1.6	-	-	"Global energy demand has not doubled since 1990. EIA states at http://www.eia.doe.gov/oiaf/ieo/world.html that energy consumption in 1990 was 348 Quads (367 EJ). If energy use in2007 was indeed 503 EJ, that's a 37% increase. Citation points to a general set of reports and statistics, and the number given cannot be found in any of them. The conversion from MTOE to EJ not given. Also, IEA's key stats for 2009 do not show a doubling. A near doubling is shown from 1973 to 2007; is that what was meant?"	Will be adjusted
Vicente Schmall (Petrobras S.A.)	1	14	4	14	21	1.1.6	-	-	Could be eliminated	section will be removed
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	14	26	-	-	1.1.6	-	-	the frame around fig. 1.7 must be removed	Noted.
John Twidell (AMSET Centre)	1	14	1	15	-	Sect 1.1.6	-	-	Many more diagrams and figures needed in this section to show the reader visually of the significant growth in renewables and renewables deployment in the last 30 years. Also the growth in obligations for renewables. There is too much rambling text. Show the big picture fast.	Will be considered
Aviel Verbruggen (University of Antwerp)	1	14	-	-	-	-	1.7	-	"the figure includes the IEA misguiding practice of using the steam generation of nuclear plants for mentioning their contribution to primary energy; and compare this with the net power generation of hydro stations; at least somewhere in the SRREN that has to be clearly stated. "	Will be considered
Laura Cozzi (International Energy Agency)	1	14	-	-	-	-	1.7	-	The figure could consist of two pie charts showing the evolution over time (if stick to one pie chart, please add which year it refers to)	Will be considered
Achim Woyte (3E sa)	1	14	-	-	-	-	1.7	-	The total percentage is 101% which seems to originate from rounding. Please make consistent.	Will be adjusted
Hiromi Takeuchi (Advanced Industrial Science and Technology)	1	14	-	-	-	-	14	-	Renewable energy has great potential from Fig.14. On the other hand, the location of the site where we can accumulate energy is quite limited for utilization of it, in the world. Readers will easily make misunderstanding to use renewable energy easy. So, author should write the necessity of additional energy for transportation and conversion of utilizing renewable energy.	Will be considered
Paulo Cesar de Campos Barbosa (Petrobras)	1	15	9	-	-	-	-	-	"""Solar hot water"" should be replaced with ""Solar water heating"""	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Emmanuel Branche (Electricit de France (EDF))	1	15	2	15	2	-	-	-	"""wind"" and ""solar"" are not new technologies !"	Will be considered
Ralph Sims (Massey University)	1	15	20	-	-	-	-	-	"Add ""can"" lead to as not always the case."	Accepted
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	15	1	15	3	-	-	-	"Distribution of 13% RE: Solid biomass (9.6%); large hydro (2.2%); geothermal (0.4%); liquid biomass (0.2%); wind/solar/marine energy (0.1%). "	will be adjusted
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	15	1	15	3	-	-	-	"It would also be interesting to depict the share of each transformation of renewable energy into final useful energy (direct thermal ; electricity ; electrothermal ; mechanical □ including fuel for transportation and compressed air)."	Will be considered
Manfred Treber (Germanwatch)	1	15	5	-	-	-	-	-	"please be clearer what had increased: ""on average, energy delivered from renewables has increased"""	Will be considered
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	15	8	15	9	-	-	-	"recommended to be ""The capacity of utility-scale solar PV plants (up to 200 kilowatts) tripled during 2008, to 3 GW."	Will be considered
Paulo Cesar de Campos Barbosa (Petrobras)	1	15	8	-	-	-	-	-	"The period should include the word average: ""The AVERAGE capacity..."	Will be considered
Luc Gagnon (Hydro-Quebec)	1	15	1	-	11	-	-	-	All energy statistics should be in FINAL energy, which gives the true picture of the energy service of an option. Using primary energy is a practice well adapted to estimating fossil fuel reserves, which is not relevant here.	Will be considered
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	15	5	15	7	-	-	-	Average increase of RE (at global level between 1990-2007) 1.8% per annum ? keeping pace with growth in total primary energy consumption of 1.9% per annum.	Will be considered
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	15	8	15	9	-	-	-	Capacity of utility-scale solar PV plants tripled during 2008, to 3 GW.	Will be considered
Virginia Sonntag-O'Brien (REN21)	1	15	24	-	-	-	-	-	change to: UNEP reports that an additional $15 billion was invested in energy efficiency during the year, bringing total investment in sustainable energy to $155 billion, an increase of 5% from 2007.	Will be considered
Virginia Sonntag-O'Brien (REN21)	1	15	22	15	23	-	-	-	change to: UNEP reports that global investment in new power generation capacity from renewable energy in 2008 was $140 billion and for the first time exceeded that in coal and natural gas (approximately $110 billion).	Will be considered
Douglas Arent (NREL)	1	15	26	-	-	-	-	-	double check fact on China biofuels investments. In error?	Will double check
John Kessels (International Energy Agency Clean Coal Centre)	1	15	28	15	29	-	-	-	I think this sentence needs a reference and also actual numbers In 2008, investment in renewable electric supply exceeded that for coal 29 and natural gas for the first time	Reference will be added and issue considered
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	15	22	15	25	-	-	-	Increasing investment in renewable energy and reducing investments in natural gas in less developed countries must be seen as a concern since ideal combined RE+Gas systems will not be available in those countries. Moreover, available sources of gas will tend to be flared increasing the impacts in GHG emissions.	Will be considered
Antoine Bonduelle (EE Consultant)	1	15	24	-	-	-	-	-	Investment in energy efficiency is not commensurate to other sources, and does not precise which part of the energy efficiency business is taken into account.	Will be considered
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	15	12	15	15	-	-	-	It should be mentioned that modern renewable sources of energy should also focus on improving the much greater traditional and less efficient uses of renewable energy in heat supply, which may include combined solutions based on renewables + gas.	Will be considered
Patrick Matschoss (WG III TSU)	1	15	3	-	-	-	-	-	language	Accepted
Steve Sawyer (Global Wind Energy Council)	1	15	14	15	14	-	-	-	Not sure what this sentence is supposed to say, but according to the WE0 2009 (IEA 2009b) renewables currently account for 18% of global electricity supply (WEO 2009 p. 73)	Will be considered
Achim Woyte (3E sa)	1	15	1	-	3	-	-	-	Please clarify. Are these percentage points from the 13% renewables? The mentioned figures add up to 12.5%. What is the remaining 0.5%?	Will be adjusted
Achim Woyte (3E sa)	1	15	-	-	-	-	-	-	The page is anecdotic. Some figures are listed while others are not. The key message is diluted. I suggest to replace the text by some clear tables or figures, e.g. distribution of renewable energy, growth rates, share of traditional biomass per fuel type/source, country, continent.	Will be done
Douglas Arent (NREL)	1	15	8	15	10	-	-	-	utility scale pv (>200kw)?? □ethanol AND biodiesel?	Will be considered
Steve Sawyer (Global Wind Energy Council)	1	15	7	15	8	-	-	-	Wind was indeed 29%, but definitely not the highest, as solar was 70% or thereabouts as it says in the same sentence	Will be considered
Richard Taylor (International Hydropower Association (IHA))	1	15	1	15	1	1.1.6	-	-	"Delete ""large"". Reason: The figure should be adjusted to include all hydro."	Will be considered
Richard Taylor (International Hydropower Association (IHA))	1	15	11	15	11	1.1.6	-	-	"Delete ""small hydro increased by 8 percent"". Reason: The categorisation of hydro by scale is in dispute between the hydropower sector and REN21. A more valid categorisation of the technology is reservoir, run-of-river, pumped storage and off-grid (as necessary). This is likely to be implemented by IRENA in the near future. See also reason for ""5, 5, 16, 5, 16"" and c.f. comment for ""9, 55, 1, 55, 11, 9.6.3""."	Will be considered

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	15	21	-	-	1.1.6	-	-	Brew-Hammoud, 2008 should be cancelled, not recorded in the list of references .	Reference will be added
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	15	25	-	-	1.1.6	-	-	UNEP, 2009 removed not recorded in the list of references .	Reference to be added
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	15	30	-	-	1.1.6	-	-	UNEP, 2009 removed not recorded in the list of references .	Reference to be added
Andries Kruger (South African Weather Service)	1	15	18	15	21	1.1.6	1.8	-	"As China is part of Asia, ""Asia"" can be replaced with ""Asia, excluding China"""	Noted.
John Twidell (AMSET Centre)	1	15	-	-	-	-	Fig 1.8	-	Europe and North America should be on this plot also. Otherwise the implication is that biomass is only for the poor	Will be added
C□ic Philibert (International Energy Agency)	1	16	14	16	15	-	-	-	"""Over half the capital investment in power sector is in transmission and distribution"" (instead of ""distribution costs""): so what? You seem to suggest that these costs would be avoided with distributed systems, but they would not if these systems are, for energy security reasons, interconnected. So drop or explain what actual consequences you would like the reader to draw from that statement."	Will be considered
Aviel Verbruggen (University of Antwerp)	1	16	3	-	-	-	-	-	"""summary"" or is it ""overview""??"	Need discussion
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	16	15	-	-	-	-	-	"a misprint: replace ""," for ""."" "	Noted.
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	16	11	-	-	-	-	-	"a misprint: replace ""limes"" for ""lines"" "	Accepted
Ralph Sims (Massey University)	1	16	19	-	-	-	-	-	"Change ""biofuels"" to biomass"	Accepted
Ralph Sims (Massey University)	1	16	27	-	-	-	-	-	"Change ""energy"" to electricity"	Accepted
Ruben Guisson (Flemish Institute for Technological Research)	1	16	10	16	14	-	-	-	"Concerning the quote: 'even if these distributed systems are grid connected there is no additional transmission or distribution system required'. This quote seems a little bit strong. The Dispower project supported by the European Comission within the 5th Framework Programme (www.dispower.org) indicates that there is a maximum hosting capacity for distribution and transmission grids, so unlimited distributed production can not always be introduced without increasing the grid capacity. Other references are: *Braun M., Stetz T., Reimann T., Valov B., Arnold G., □Optimal reactive power supply in distribution networks - technological and economic assessment for PV-systems□ in Proc. 24th European Photovoltaic Solar Energy Conference and Exhibition, 2009; *De Brabandere K., Woyte A., Belmans R., Nijs J., □Prevention of inverter voltage tripping in high density PV grids. □in Proc. 19th European Photovoltaic Solar Energy Conference and Exhibition, 2004. "	Will be considered
Javier Garcia (Renewable Energy Center)	1	16	38	16	39	-	-	-	"May I suggest to add ""small and micro hydro power"" to the renewable technology list explained here"	Will be considered
Douglas Arent (NREL)	1	16	7	-	-	-	-	-	"reliability is ill defined relative to Energy Security, as reliability includes stable provision of power, which is not the case for variable generators such as wind, solar. Suggest better choice of words□.""reduced geopolical risk"". Might mention portfolio impacts and diversification ala Awerbach as well."	Will be considered
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	16	11	16	11	-	-	-	"Replace ""distribution limes"" by ""distribution lines"""	Accepted
Emmanuel Branche (Electricit□ de France (EDF))	1	16	11	16	11	-	-	-	"Replace ""limes"" by ""lines"""	Accepted
Emmanuel Branche (Electricit□ de France (EDF))	1	16	25	16	25	-	-	-	"Rewrite the sentence, in order to avoid the use 2 times in the same sentence of ""issue"". In addition, I do not think that it is relevant to oppose large centralised power plants (PP) with small distributed PP in this SR. All RES should be part of the solution !"	Accepted
John SCOWCROFT (EURELECTRIC)	1	16	15	16	17	-	-	-	"The argument is that fuel is ""free"" - however, in many areas, there are costs to generators through water taxes, fees, concessions etc"	Will be considered

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
C□ic Philibert (International Energy Agecy)	1	16	6	16	7	-	-	-	"The claim that renewable energy resources are far more uniformly distributed amongst nations than fossil fuels"" needs to be substantiated or rephrased. It seems wrong for RE resources considered individually. Land-locked countries have zero marine energy, Africa little wind energy, Finland not too much solar capacity, Middle East not much biomass, etc. Meanwhile many countries have some coal if no oil or gas. Please be factual."	Will be considered
Peter de Haan (Ernst Basler + Partner AG)	1	16	12	16	15	-	-	-	"The sentence ""Smart grid advocates including Amory Lovins who was an early proponent, propose utilizing the electricity storage capacity of electric battery vehicles and battery hybrid vehicles to provide interactive storage for solar or wind produced electricity (Moomaw, 1994, RMI, 2008)."" puts too much weight on a solution that possibly will never play an important role. Why use high-performance light-weight high-capacity crash-proof vehicle batteries for a stationary purpose like grid stabilization, why not use old batteries or specially designed low-cost batteries for this purpose? I therefore propose to rephrase as follows: ""Large-scale deployment of RE therefore will need two approaches for grid stabilization, i.e. for matching electricitiy generation and demand: First, hybrid energy systems where electricity production from storable energy carriers (like biomass) can quickly compensate for fluctuations of other, non-storable RE. Second, local energy storages. An example of the latter would be to utilize the electricity storage capacity of electric battery vehicles and battery hybrid vehicles to provide interactive storage for solar or wind produced electricity (Moomaw, 1994, RMI, 2008).""""	Will be considered
Patrick Matschoss (WG III TSU)	1	16	34	16	36	-	-	-	"what is the message? Anecdotal; source? Delete"	Will be considered
C□ic Philibert (International Energy Agency)	1	16	31	-	-	-	-	-	"You probably mean ""mass production"" in this sentence, instead of ""economies of scale"", as the use of the latter tends to destroy the argument made here."	Accepted
William Kyte (E.ON AG)	1	16	-	-	-	-	-	-	`100% share of renewable energy by 2050 in Germany`, http://www.bmu.de/files/english/renewable_energy/downloads/application/pdf/broschuere_ee_zahlen_en.pdf, I read a goal of 50% of final energy consumption of renewable energy in Germany	Will review reference and incorporate appropriate points
Patrick Matschoss (WG III TSU)	1	16	1	16	2	-	-	-	100% was not official Gov't target, delete	Will be checked
Stan Rosinski (Electric Power Research Institute)	1	16	30	-	-	-	-	-	50-60% efficiency is applicable to combined cycle plants. Simple cycle gas turbines have lower efficiencies.	Will be considered
John Kessels (International Energy Agency Clean Coal Centre)	1	16	28	16	43	-	-	-	Delete or add references for the natural gas turbine, manufacturing rates and biofuel discussion	Will be considered
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	16	10	16	19	-	-	-	Distributed Renewable + gas technologies will produce energy that is mostly adequately utilized on site. It is possible to avoid the transformation of site-produced electricity into thermal energy (against the Second Principle of Thermodynamics). Moreover, LPGas combined with site-produced biogass will allow highly reliable energy supply for local communities.	will be considered
alberto roque pedace (school of engineering -Buenos Aires university.& maestria polititica y gestion iencia y tenologia-Buenos aires university)	1	16	4	16	8	-	-	-	energy payback is not considered an important criteria to for the transition,ie energy as scarce resource.	Will be considered
John Kessels (International Energy Agency Clean Coal Centre)	1	16	20	16	23	-	-	-	Enersol is a commercial company and the reference is taken from its website, i suggest deleting the sentence or find another more authorative source	will be considered
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	16	5	16	8	-	-	-	Exactly the same arguments are applicable to the natural gas. Therefore, the promotion of combined solutions between renewable energy and gas is the most adequate solution to be proposed to less developed countries.	Will be considered
Ralph Sims (Massey University)	1	16	30	-	33	-	-	-	First, second, thirdly better as bullets perhaps	Accepted
Luc Gagnon (Hydro-Quebec)	1	16	42	-	43	-	-	-	For 3 energy units of bioethnol from corn (US case), 2 units of fossil fuels are consumed in the life cycle. This is far from a renewable option, which should not be used as an example.	Caution will be added
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	16	1	16	2	-	-	-	Germany: Goal of 100% renewable energy in 2050 (German Federal Ministry, 2009).	Will be checked
Steve Sawyer (Global Wind Energy Council)	1	16	40	16	41	-	-	-	I would argue that the scaling up of wind power production is much faster than that of any conventional generation technology□and solar pv will probably follow□	Will be considered in re-drafting
Ruben Guisson (Flemish Institute for Technological Research)	1	16	15	16	18	-	-	-	In the enumeration on line 16, ('wind, solar, hydro, geothermal and ocean'), biomass is correctly NOT mentioned. Biomass is indeed sensitive to variation in future prices. However the paragraph leeds, due to the long enumeration of RES, to the impression that ALL renewable energy sources are free. I would suggest also giving a connotation that this is not (always) the case for biomass energy sources.	Will be considered
C□ic Philibert (International Energy Agency)	1	16	13	-	-	-	-	-	Interconnected distributed PV systems will incur less transmission losses - not zero loss.	Will be considered

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Patrick Matschoss (WG III TSU)	1	16	20	16	23	-	-	-	overlap with p.17, l 20-3, integrate both into p.22, l 11-20	Needs discussion
John SCOWCROFT (EURELECTRIC)	1	16	2	16	4	-	-	-	Reference to German 100% target in 2050 is not relevant (and not binding in Germany)	Will be checked
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	16	28	16	37	-	-	-	Remove these lines. Not relevant with this SR	Accepted
Steve Sawyer (Global Wind Energy Council)	1	16	16	16	16	-	-	-	replace 'free' with 'zero'	Accepted
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	16	11	16	14	-	-	-	Rooftop solar PV mostly used on site (is this correct?), therefore no additional transmission or distribution system required and no distribution or transmission losses.	Will be considered
John Twidell (AMSET Centre)	1	16	24	-	-	-	-	-	Scalability' is not a recognised word. 'Scaling' is correct.	Accepted
John Twidell (AMSET Centre)	1	16	25	-	-	-	-	-	scaling up' is colloquial. 'The size and capacity of particular technologies is an issue,□.'.	Accepted
Antoine Bonduelle (EE Consultant)	1	16	35	-	-	-	-	-	The example is colloquial. Maybe mention global production of cars ?	Accepted
Luc Gagnon (Hydro-Quebec)	1	16	28	-	37	-	-	-	The natural gas example is not appropriate and not universal. It is specific to the US where a huge distribution network already existed. Using the case of a subsidized fossil fuel to justify renewable development does not seem a good idea.	Will be considered
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	16	25	16	27	-	-	-	The paragraph should be skipped or backed with evidence.	Reference to be provided
Graham Pugh (U.S. Department of Energy)	1	16	34	16	36	-	-	-	The points regarding distributed generation are well taken, but the vehicle analogy doesn't make a lot of sense, given that transportation is inherently distributed, while power generation doesn't have to be.	Will be considered
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	16	10	16	11	-	-	-	The sentence can be rewritten in a more realistic/positive way: long distribution and high voltage lines are constraints for all centralized production units. Big renewable plans are concerned as others.	Accepted
Steve Sawyer (Global Wind Energy Council)	1	16	14	16	15	-	-	-	the work cited (IEA 2009b) in fact says that LESS THAN HALF of the investment is in transmission and distribution (p. 102)	Will be considered
Luiz A. Horta (Instituto de Recursos Naturais)	1	16	28	-	-	-	-	-	This paragraph could be abridged. In many countries the total vehicular engine power is greater than electric power installed capacity, not only in USA.	Will be considered
John Kessels (International Energy Agency Clean Coal Centre)	1	16	25	16	27	-	-	-	What analyses, who are the authors referencing?IEA, IPCC?	Will be considered
Steve Sawyer (Global Wind Energy Council)	1	16	38	16	39	-	-	-	what is a 'conventional manufacturing facility'? What is an 'unconventional manufacturing facility'? Wind, solar and (presumably) wave power components are produced in purpose-built, specialised manufacturing facilities□not sure of the point here□	Will clarify "conventional"
John Twidell (AMSET Centre)	1	16	40	-	-	-	-	-	Wind, solar and biomass are appropriate at a range of scales and capacities. The worldwide rate of manufacture and installation of these technologies has increased year on year for the last 40 years, so now the total capacity installation approaches and sometimes exceeds that of fossil fuel and nuclear technologies (e.g. see report of EWEA Feb 2010)..	Will review reference and incorporate appropriate points
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	16	31	16	2	1.1,6	-	-	missing reference (German Federal Ministryt. 2009) .	Reference will be adds
Vicente Schmall (Petrobras S.A.)	1	16	5	16	6	1.2.1	-	-	Should add in human time...because the same explanation done in line 10 of this file	Will be considered
Anca-Diana Barbu (European Environment Agency)	1	16	10	-	11	1.2.1.1	-	-	"I suggest replacing ""limes"" with ""lines"" which I believe is what was meant. Also, I am not sure about the terminology used, e.g. distant sources, remote wind and hydro, etc so it may be useful to rephrase; usually is large scale renewable projects that need significant grid enforcements and sometimes grid investments but they are not necessarily very distant from the load. "	Noted.
Helena Chum (National Renewable Energy Laboratory)	1	16	43	-	-	1.2.1.2	-	-	"U.S. bioethanol program ""has increased its production fivefold in the period of 2001-2008"", surpassing Brazil as the largest producer in 2006. Text to replace the vague ""significant growth in three years""; in three years the production doubled. What is important is the cumulative production and this has had now 8 doublings of production of experience since 1980. "	Will clarify in re-drafting
Dan Bilello (NREL)	1	16	34	16	36	1.2.1.2	-	-	Citation needed.	Reference will be added
Dan Bilello (NREL)	1	16	42	16	43	1.2.1.2	-	-	Citation needed.	Reference will be provided

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Vicente Schmall (Petrobras S.A.)	1	16	42	16	43	1.2.1.2	-	-	Should add in the end: the U.S bioethanol program has achieved significant growth in the last three years and overcome Brazil as the largest producer, however the energy balance and sustainability of each programme should be compared appropriately .	Will be considered in re-drafting
Ruben Guisson (Flemish Institute for Technological Research)	1	17	4	17	5	-	-	-	Hydro power is categorised under 'inherent energy storage'. This seems true for ocean and tidal hydro power. However for 'river' hydro power this is not always true. Hydro-installations on river systems can be very dependent on precipitation making these systems more variable then inherent. Distinguish between 'tidal/ocean' and 'river' hydro might be appropriate	Will clarify
Charles Kutscher (National Renewable Energy Laboaratory)	1	17	5	-	-	-	-	-	"""Variable sources include solar and wind power."" It is important to draw a distinction early on between PC and concentrating solar power. The latter can utilize thermal storage and be dispatchable."	Will clarify
Graham Pugh (U.S. Department of Energy)	1	17	21	17	23	-	-	-	"Actually, the total cost is quite different in that energy storage has capital costs but no variable (fuel) costs; however, given the current technological maturity of batteries, the lifetime may be shorter than fossil or nuclear and so there may be replacement costs."	Will address in redrafting. However, though there are subtle differences -- difficulties of financing any new project do have commonalities
Ralph Sims (Massey University)	1	17	12	-	-	-	-	-	"Delete ""including Amory Lovins who was an early proponent - or put a reference to Lovins"	Will address in redrafting and include other relevant references
Douglas Arent (NREL)	1	17	16	17	19	-	-	-	"energy density is specific for ""on site"" or simply state 'systems solutions"" may be designed to overcome low energy density, if desired, "	Will consider in redrafting
C□ic Philibert (International Energy Agency)	1	17	2	17	9	-	-	-	"Except maybe for biomass, RE resources have no ""inherent"" storage. Dams are man-made, and some hydro is not on demand - and dams might be empty when energy would be needed. Geothermal heat and solar heat can be stored, in both case this is man-made. Concentrated solar power can be made firm power with heat storage and hybridisation, but this too is man-made. Even solar PV is more predictable than wind power, at least in places. Please rewrite this paragraph avoiding black vs. white incorrect characterisation."	Will consider in re-drafting
Patrick Matschoss (WG III TSU)	1	17	10	17	15	-	-	-	"indirect citation; no real discussion on lit, ignores lots of studies on smart grids; what is described here is demand side management"	Will address in redrafting
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	17	11	17	12	-	-	-	"IPCC: ""□purification or desalination can be provided whenever the energy source is available."" RWEI comment: The principle of reverse osmosis only works under the condition of constant pressure/electricity supply. "	Good point but size limitation prevents including this level of detail
Paulo Cesar de Campos Barbosa (Petrobras)	1	17	10	17	15	-	-	-	"It should be mentioned that one of the advantages of centralized renewable power generation is that the grid can act as a ""energy storage"", reducing costs of installation "	Will consider in redrafting
Patrick Matschoss (WG III TSU)	1	17	16	17	19	-	-	-	"no lit; delete"	Will provide appropriate reference (either reference or specific later section of the report
Patrick Matschoss (WG III TSU)	1	17	10	17	15	-	-	-	"only one indirect citation; one proponent selectively highlighted; it is also about demand side management but term not mentioned, smart grid huge issue but not explained; coherence with ch8 necessary "	Will address in redrafting and include other relevant references. Will harmonize with Chapter 8.
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	17	13	17	14	-	-	-	"recommended to be ""and battery plug-in hybrid vehicles to provide interactive storage for solar or wind produced electricity□"""	Will consider in redrafting
Ralph Sims (Massey University)	1	17	19	-	-	-	-	-	"Reference Chapter 8 rather than ""elsewhere in the report"""	Noted.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	17	20	-	-	-	-	-	"use the term ""conversion"" instead of ""capture"". Same in line 26."	Will address in redrafting
C□ic Philibert (International Energy Agency)	1	17	23	-	-	-	-	-	"Why mention large-scale hydropower here, being introduced by ""other capital intensive investments""? Are they not renewables?"	Will be considered in re-drafting
Ralph Sims (Massey University)	1	17	14	-	-	-	-	-	1994 reference? Delete even if bill is the author	Will review reference -- however older references are appropriate if still relevant
John SCOWCROFT (EURELECTRIC)	1	17	7	-	9	-	-	-	A more relevant example is wind in Denmark, flexible hydro in Norway	Will consider in redrafting
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	17	12	-	-	-	-	-	A single person should not be referenced in that way, espec. As there is no peer-reviewed publication given.	Will address in redrafting and include other relevant references
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	17	5	-	-	-	-	-	Also hydro is a variable source. Currently there is big trouble in Venezuela because a drought reduces the availability of hydro.	Will clarify (as requested by several commenters who made this same point)
Achim Woyte (3E sa)	1	17	20	-	23	-	-	-	Anecdotic and not based on evidence. Meeting the capital requirement becomes of particular importance when renewables are considered to alleviate poverty, for example for village electrification or solar home systems. The problem is not comparable to the financing of a nuclear or coal fired power plant.	Difficulties of financing projects is not anecdotal
Douglas Arent (NREL)	1	17	20	17	23	-	-	-	delete, covered elsewhere and not relative to the subtitle section.	Will address in restructuring report and seeking to eliminate duplication

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Patrick Matschoss (WG III TSU)	1	17	25	17	26	-	-	-	how much greater?	Will attempt to quantify in redrafting - however there are ranges
Steve Sawyer (Global Wind Energy Council)	1	17	3	17	5	-	-	-	inherent energy sources'□the difference that is seeking to be characterised is the difference between a variable resource and one that can be dispatched on demand and that the plant's output can be modulated within its capacity according to demand.	Will consider in re-drafting (within context of other comments in this same section)+Q712
Veronika Rabl (Vision & Results)	1	17	10	-	-	-	-	-	Insulation is generally NOT coincident with air conditioning load.	Insulation not mentioned
Patrick Matschoss (WG III TSU)	1	17	25	17	27	-	-	-	is it possible to say how much greater? Language colloquial, should be changed	Will attempt to quantify in redrafting - however there are ranges. Will refine language
John Twidell (AMSET Centre)	1	17	16	-	-	-	-	-	low energy density' is acceptable with greatly improved efficiency of use and with appropriate control of loads. Be more positive with the use of modern devices and controls.	Will consider in redrafting -- capture subtleties and avoid black/white statement
John Twidell (AMSET Centre)	1	17	2	-	-	-	-	-	Not 'one problem', but 'one challenge'. ALL GENERATION IS INTERMITTENT - rapidly loosing 1 GW is a major difficulty with large centalised plant - say this. No need to be so defensive. Emphasize that load/demand varies too. The control systems can cope.	Will consider in re-drafting (within context of other comments in this same section)+Q712
Paulo Cesar de Campos Barbosa (Petrobras)	1	17	21	17	23	-	-	-	Seems an opinion. Lack reference. Our view: The cost of renewable energy must be addressed in a different way. For big investors, the main issue is not the initial capital investment, but the payback time. For that reason, despite their big initial capital investment, nuclear and coal power plants are more appealing to these investors. I suggest replace this sentence with one that lays emphasis on the importance of governmental incentives, like premium tariffs, for example, to turn renewables economically competitive with other options with higher co2 emissions.	Will address in redrafting. However, note this is the barriers section. The policies to help overcome barriers are discussed later.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	17	13	17	14	-	-	-	Storage in electric battery vehicles can only provide a limited solution of the underlying storage problem - the whole private car fleet would only provide storage for only about 15% of electricity to be stored.	Will consider in redrafting
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	17	7	17	9	-	-	-	The virtual renewable base load power plant utilizing a hybrid set of renewable energy sources and demonstrated by Germany has a capacity of only 1MW!	Will consider in redrafting
Douglas Arent (NREL)	1	17	10	17	15	-	-	-	there is considerable peer reviewed tech lit on smart grid that can be referenced, not Amory Lovins/RMI.	Will address in redrafting and include other relevant references
Ralph Sims (Massey University)	1	17	20	-	23	-	-	-	This para not a resource issue as in heading	Will address in restructuring report and seeking to eliminate duplication
Steve Sawyer (Global Wind Energy Council)	1	17	20	17	23	-	-	-	What is this para trying to say? By energy 'capture' does it mean 'storage'? Of course it's different than financing a nuke□????	Will address in restructuring report and seeking to eliminate duplication
Dan Bilello (NREL)	1	17	21	17	23	1.2.1.2	-	-	"Financing large-scale renewables and energy storage is fundamentally different from financing coal plants; the size of the investment per unit of energy service delivered is substantially larger. Additionally, the distributed nature of renewables makes financing and tax law much different from financing a coal plant."	Will address in redrafting. However, though there are subtle differences -- difficulties of financing any new project do have commonalities
Richard Taylor (International Hydropower Association (IHA))	1	17	12	17	12	1.2.2	-	-	"Delete ""including Amory Lovins who was an early proponent"". Reason: Referring to particular individual figures is inappropriate."	Will address in redrafting and include other relevant references
Anca-Diana Barbu (European Environment Agency)	1	17	1	-	-	1.2.2	-	-	"Maybe a different title can be found for this section. The resource itself can be, from the availability point of view, actually in a better position compared to fossil fuels (for importing countries) as they are available just not 24 hours a day compared to fossil fuels which may not be available at all (in Europe we have experienced this even for a short while but it did result in some countries in significant economic losses). Also, from environmental and distribution point of view, renewable resources score higher compared to fossil fuels. Where challenges begin to occur is when we start harnessing this resource and integrate it into an existing energy system. My understanding is that this section aims to highlight some of these challenges (together with possible solutions). So replacing the word ""resources"" with ""sources"" may be a better way of expressing the main idea of the section. "	Will address when implementing new structure
Andries Kruger (South African Weather Service)	1	17	5	17	5	1.2.2	-	-	Hydropower can also be a variable energy source in some instances, depending on water availability	Will clarify
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	17	14	-	15	1.2.2	-	-	missing references Moomaw, 1994 and RMI, 2008 .	Will include references
Javier Garcia (Renewable Energy Center)	1	17	-	-	-	1.2.2	-	-	One disadvantage that can be added to this analysis is the localization of the resource. Renewable energy is produced where the resource is located, so in some sense it is not flexible to adapt to demand location (except when it is located where there is demand for the energy, but this is not always the case)	Will consider in re-drafting; however, in some cases renewable energy is used at locations other than where it is available/produced
Vicente Schmall (Petrobras S.A.)	1	17	20	17	23	1.2.2	-	-	Should be eliminated or go to other topic...what is written is correct but there is nothing to do with the topic 1.2.2	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Anca-Diana Barbu (European Environment Agency)	1	17	16	-	17	1.2.2	-	-	when discussing the power density of RES it is important to highlight that while it is true that they have lower power density compared to other conventional sources, they allow for multiple use of land (wind mills can exist on agricultural land, solar pannels on buildings, off-shore technologies can become home to marine ecosystems, etc)	Will consider in redrafting -- capture subtleties and avoid black/white statement
Aviel Verbruggen (University of Antwerp)	1	17	-	-	-	-	-	1.1	"suggestion not to insert lines on fossil fuel or uranium in this table - some numbers are very debated, and one would at least require a good assessment of the vast literature; so stop the table after geothermal."	The idea is to compare with fossil fuels. The source of fossil fuel data will be clarified
Jo□o Pinho (Institut of Tecnology)	1	17	-	18	-	-	-	1.1	"Table 1.1 is confusing. The title of the first column should refer only to the ""Source"" (not ""Renewable source""). Also, the lines of this column should only refer to the source (not to ""reserves"" or ""Consumption"" or ""Use""."	Will refine table headings
Jo□o Pinho (Institut of Tecnology)	1	17	-	18	-	-	-	1.1	"The title of the second column (""Annual flux or use"") is also confusing. There is no legend for the *"	Will refine (as per other comments)
□vind Christophersen (Climate and Pollution Agency)	1	17	-	-	-	-	-	1.1	"This figure is insufficiently explained and difficult to understand. Is annual flux (or use??) the theoretical potential? Is ratio ""Theoretical potential compared to current energy use"". This information might be of limited interest since the theoretical potential will be impossible to achieve in practice - preferably this information should be integrated into table 1.2. on technical potential."	Table 1.1 and 1.2 provide different types of information. As this is a scene setting chapter, both are important. The table will be updated with relevant chapter information and legends and titles clarified
Steve Sawyer (Global Wind Energy Council)	1	17	-	18	-	-	-	1.1	Flux' does not appear in the glossary. Does it mean 'technical potential' in the sense of the entire energy in the earth's system or what could technically be achieved. Does it include putting solar panels in the deep oceans and wind turbines on Mt. Everest or what? The single asterisk (*) has no referent.	Will include definition
Charles Kutscher (National Renewable Energy Laboaratory)	1	17	28	-	-	-	-	1.1	I would argue that Table 1.1 isn't very useful. Geothermal seems too large. Is that the total surface heat flux? If so, that can't really be tapped. Table 1.2 is more relevant.	Table 1.1 and 1.2 provide different types of information. As this is a scene setting chapter, both are important
Luc Gagnon (Hydro-Quebec)	1	17	-	-	-	-	-	1.1	The fact that some previous reports have produced such data on potential does not ensure rigorous statistics. At the 2 extremes, the estimate on solar is totally theoretical (not realistic), while the data on hydro is a total of site by site assessments (very realistic). Much more effort is required to produce such a table.	Table will reflect data from the technical chapters
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	17	-	-	-	-	-	1.1	the potential of MSW should be evaluated in this context, because part of it is renewble and it is so presented in chapter 2. Some warning on the unsustenability of high waste society could be added in the text, but this resource exist and it is partially renewable.	Table will be consistent with information in Chapter 2 (and other technology chapters)
Luiz A. Horta (Instituto de Recursos Naturais)	1	17	-	-	-	-	-	1.1	The values of annual flux (in EJ/y) presented for fossil fuel reserve requires an information of exploitation tax or period considered for utilization. The same is required for other kind of non-renewable reserves in this table.	Will include explanatory notes
Ladislaus Rybach (Geowatt AG)	1	17	-	-	-	-	-	1.1	There must be a more recent number for the current global energy use than the value for 2004. The source of one asterisk (*) needs to be identified (World Energy Assessment).	Table will be consistent with latest information in technology chapters; legends will be added
Axel Kleidon (Max-Planck-Institute for Biogeochemistry)	1	17	30	-	-	-	-	1.1	Where do these estimates come from? The estimates of ocean and geothermal renewable energy sources seem much too high. The geothermal rate is 35 times higher than solar energy, which seems simply impossible! I presume this number comes from the number given in chapter 4, page 6, line 10. But this number refers to the heat content within 5km of crust, which is not the same as a possible annual extraction rate. I could not find the number of 7400 EJ/yr for ocean energy from the table anywhere in section 6. It would be very helpful to distinguish in this table between sustainable rates of extraction versus non-sustainable depletion of reservoirs, which is particularly relevant for geothermal and OTEC energy. It seems critical to me to make the origin of these numbers much clearer, i.e. where they come from and what these numbers refer to.	The estimates come from provided references. Each technical chapter will have this data -- and the table will be updated with data from the chapters for consistency
John Twidell (AMSET Centre)	1	17	-	-	-	-	-	Table 1.1	These large numbers mean nothing to the reader. Put as 'per capita' values also for world's population.	The table will use same units as technical chapters
John Twidell (AMSET Centre)	1	17	-	-	-	-	-	Table 1.1	Total reserve of renewables is infinity, not nothing! Reserve is the wrong word, especially as we need to keep fossil fuels underground. Remove this column, unless you write 'effectively infinite' to stress the difference.	Good point. Will refine table and as a minimum adopt the suggestion where appropriate
Manfred Treber (Germanwatch)	1	18	6	-	-	-	-	-	"Please add in ""There is no shortage of renewable energy supply to meet the demand"" the idea ""if the demand for embedded energy and material needs for the energy transformation devices is neglected"""	Will refine
Ladislaus Rybach (Geowatt AG)	1	18	13	-	-	-	-	-	line 13 should read: Source: *IEA, 2009	Will edit
Richard Taylor (International Hydropower Association (IHA))	1	18	2	18	2	1.2.3	-	-	"Add "" It is significant to note that there is a fundamental difference in the way potential is estimated for different RE. This is usually 'top down' in the case of bioenergy, geothermal, wind and solar, and 'bottom up' in the case of hydro. In addition, in terms of potential bioenergy, hydro and wind are derivatives of solar."" at the beginning of the first sentence. Reason: The top down and bottom up approaches to potential estimation make a huge difference in the practical utility of potentials, and the derivative nature of many renewables from solar is often and widely overlooked."	The table will reflect data from technology chapters and will reference the reader to those chapters for the methodologies
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	18	1	-	-	1.2.3	-	-	World Energy Assessment, 2000 and OGJ. 2000 not recorded in the list of references	Will include reference details

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ralph Sims (Massey University)	1	18	-	-	-	-	-	1.1	Change Biofuels to biomass. Check against AR4 Chapter 4 table. Check * ** *** in footnote source	Will ensure these words are used consistently; however in this case biofuels may be the correct term
Veronika Rabl (Vision & Results)	1	18	-	-	-	-	-	1.2	"This table is obviously wrong (see, e.g., solar, vs wind vs hydro); it doesn't belong to this chapter anyway."	X-cutting issue. Will define various resource potentials and get new data from the technology chapters.
□vind Christophersen (Climate and Pollution Agency)	1	18	-	-	-	-	-	1.2	"We think that this table needs some explanation here even if it is a summary of findings from other chapters. For example the main reasons that some technologies have large increasing potential, while others have exactly the same potential for all years should be given. Is ""total renewable production"" actually the potential? The use of decimal points complicates the readability of the table."	X-cutting issue. Will define various resource potentials and get new data from the technology chapters and then add necessary explanation.
Ralph Sims (Massey University)	1	18	-	-	-	-	-	1.2	Biofuels to biomass	Noted.
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	18	2	18	13	-	-	1.2	For all technologies, the definition of technical potential should be same. As also technologies can developed, the potential should increase with time, also for wind and geothermal energy. Please, avoid using too accurate numbers, one or two digits is enough.	The table will reflect data from technology chapters. Expect to provide ranges and will ensure numbers do not reflect unrealistic accuracy
Javier Garcia (Renewable Energy Center)	1	18	-	-	-	-	-	1.2	in the 11th row it is supposed to refer to the 450 ppm scenario? (ppm is missing)	Yes it is ppm -- will include
Leen Gorissen (Flemish Institute for Technological Research)	1	18	-	-	-	-	-	1.2	In this table the authors refer to biofuels instead of bioenergy. The reason why is not clear for the reader. Please include this information.	Will ensure these words are used consistently
Ladislaus Rybach (Geowatt AG)	1	18	3	-	4	-	-	1.2	it is highly questionable why the solar technical potential would increase with time whereas geothermal and wind would remain constant. Geothermal growth numbers are presented in Chapter 4: Table 4.4 for electricity, Figure 4.1 for direct use.	The table will reflect data from technology chapters. Given timelines for producing FOD it was not always possible to reconcile. Will be corrected in SOD
Luc Gagnon (Hydro-Quebec)	1	18	-	-	-	-	-	1.2	Much effort is required again, before publishing such a table. Just by comparing data, it is doubtful that the same methodology was used across the whole table. For example, the large growth in solar and biomass energy potential is possibly due to an assumption of declining costs, relative to other options (an economic assessment). Why is it that there is no evolution for geothermal and wind? These assessments are probably technical, no matter the economic constraints. The hydro potential is clearly limited by the economics of site by site assessments, which is not the case of other options.	X-cutting issue. Will define various resource potentials and get new data from the technology chapters.
Charles Kutscher (National Renewable Energy Laboratory)	1	18	-	-	-	-	-	1.2	Some explanation is needed regarding why the technical POTENTIAL would change from year to year. The ratio between solar and geothermal seems reasonable in the year 2050 numbers but not in the year 2005 numbers.	The table will reflect data from technology chapters. Given timelines for producing FOD it was not always possible to reconcile. Will be corrected in SOD
Helena Chum (National Renewable Energy Laboratory)	1	18	-	-	-	-	-	1.2	Table 1.2. and also table 1.1 only put the liquid biofuels portion. In many cases, like sugarcane in Brazil, both biofuels and electricity will grow together in integrated biorefineries. This point is made elsewhere (see page 39) but the table(s) only shows biofuels. Both are products currently supported by policies in many countries and in the case of Brazil, by necessity of the process used, there is a residual of unconverable materials that have to be combusted (or gasified) and the residue material supplies all heat and power for the process and surplus electricity as an additional product.	Good point. The table reflects the values of Chapter 2. However, this important point of co-products and life cycle GHG is highlighted. Will refine as per info provided
Dr. Ishwar Hegde (Suzlon Energy Ltd)	1	18	10	18	13	-	-	1.2	Technical potential for wind has been shown as constant between 2005 & 2050 i.e 396 EJ, While other RE such as Solar are showing a massive rise. This could lead to misinterpretation of the relative position of the energies. Ch 7 clearly specifies the current assessment of the technical potential are underestimated. Offshore resource potential for the most part including the major markets like USA & India are yet to be assessed properly. Like all minerals and fuels, RE potential is subject to proper technology. Thus if updated technology aids development of wind, there will be all likely a substantial increase in potential. GWEC could be of help in gathering this data.	The table will reflect data from technology chapters. Given timelines for producing FOD it was not always possible to reconcile. Will be corrected in SOD
Wibke Avenhaus (Potsdam Institute for Climate Impact Research (PIK))	1	18	-	-	-	-	-	1.2	The number 1,500 EJ from biofuels in 2050 differs from 400 EJ potential energy from biomass resources in Chapter 2 Page 5 line 26	X-cutting issue. Will discuss with Chapter 2 team.
Jo□o Pinho (Institut of Tecnology)	1	18	-	-	-	-	-	1.2	There is no legend for the *	Table will have a complete legend
Steve Sawyer (Global Wind Energy Council)	1	18	-	18	-	-	-	1.2	This is complete nonsense, technical potential doesn't increase by an order of magnitude in 15 years, even for solar... and the document it cites as a source contains nothing of the sort...	X-cutting issue. Will define various resource potentials and get new data from the technology chapters.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	18	-	-	-	-	-	1.2	This table provides wrong technical potential. Refer to chapter 10, and table 10.3.1 for instance, where numbers are correct and peer reviewed. Also precise that the year 2005 is not a technical potential but an existing value for generation (EJ or TWh)	X-cutting issue. We will discuss with Chapter 10 team.
Marc Londo (Energy research Centre of the Netherlands)	1	18	12	18	13	1.2.3	-	1.2	The 1500 EJ mentioned for bioenergy in this table seem to be at the very high end of all assessments of technical potential, which may a disputable approach. At least, this would need to be done for all renewables in order to maintain consistency, and would need to be mentioned explicitly.	The table will reflect data from technology chapters. Given timelines for producing FOD it was not always possible to reconcile. Will be corrected in SOD
Marc Londo (Energy research Centre of the Netherlands)	1	18	12	18	13	1.2.3	-	1.2	The 'biofuels' word: please make sure that 'biomass', 'biofuels' and 'bioenergy' are used consistently.	Will ensure these words are used consistently
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	18	-	-	-	-	-	1.2.	Cancelled to reach the mean length of the chapter	This table is necessary according to the story line of this chapter.
Aviel Verbruggen (University of Antwerp)	1	19	9	-	-	-	-	-	"""economic sector"" replace by ""end-use sector"""	Will replace "economic sector" with "end-use sector.
Ralph Sims (Massey University)	1	19	27	-	-	-	-	-	"Change ""some"" to ""only a few□"""	Will replace "Some" with "Only a few"
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	19	61	19	61	-	-	-	"Change the explanation terms in order to be coherent with Figure 1.9. Proposition ""secondary energy carrier, energy service demanded, end-use sector""."	Will change the words following the comment.
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	19	8	19	8	-	-	-	"recommended to be ""four different organizing principles: primary energy sources, □"""	Will change the word following the comment.
Ralph Sims (Massey University)	1	19	26	-	-	-	-	-	Examples of relationships□.	Will replace "The relationship" with "Examples of relationship"
Charles Kutscher (National Renewable Energy Laboratory)	1	19	15	-	-	-	-	-	LCA is defined as life-cycle analysis. However, two lines later it is called life-cycle assessment. I believe assessment is used more frequently.	Will replace "analysis" with "assessment"
Anca-Diana Barbu (European Environment Agency)	1	19	7	-	-	1.3.1	-	-	I suggest that attention is paid to terminology. In international energy statistics, electricity can be primary electricity (from hydro, wind, solar PV, ocean, etc) and secondary electricity (produced from geothermal heat, solar thermal systems, biomass and waste). Similarly, for heat we have primary heat (geothermal, solar thermal) and secondary heat (from biomass and waste when it comes to renewables). This is also important when talking about losses in transformation.	Will add some explanation considering the comment.
Dan Bilello (NREL)	1	19	15	19	17	1.3.1	-	-	LCA: first described as life cycle analysis (row 15), then life cycle assessment (row 17). The correct term, according to ISO standards, is life cycle assessment.	Will replace "analysis" with "assessment"
Jo\u00e3o Pinho (Institut of Tecnology)	1	19	-	20	-	-	1.9	-	The legend should follow the figure and not precede it.	Will revise it.
John Twidell (AMSET Centre)	1	19	-	20	-	-	Fig 1.9	-	Biomass box should link with heat. Heat should link with electricity. There are many errors on this muddled figure. Start again. What are the red and blue arrows meant to represent? The caption must explain and needs a different title. Rather useless and potentially misleading figure and too dependent on reading the text with care..	Will change some words and add further explanations.
C□ic Philibert (International Energy Agency)	1	20	15	20	16	-	-	-	"""to meet thermal needs"" would not be done with PV but with solar thermal (please be explicit) and the demand must be sufficiently low□ and sufficiently high as well (see comment 4)"	Will be considered.
Jo\u00e3o Pinho (Institut of Tecnology)	1	20	13	-	16	-	-	-	"The sentence ""Because of the relatively low energy density of renewables such as solar energy, it may only be feasible to supply electricity from solar PVs for efficient lighting, or to meet thermal comfort needs if the demand is sufficiently low."" is not correct."	Will be considered.
C□ic Philibert (International Energy Agency)	1	20	18	20	23	-	-	-	"This paragraph is weird, and the reader may wonder why renewable electricity would be transformed into services more efficiently than non renewable electricity□ What is meant here, I guess, is that primary energy is not necessarily the appropriate indicator to look at for it considers the heat produced in thermal power plant while it considers directly the electricity produced in PV, wind and hydro systems. Please rewrite and be more specific: ""thermal electric conversion systems"" could be electric heaters as well as power plants."	Will put additional explanation.
Ralph Sims (Massey University)	1	20	17	-	-	-	-	-	Is this only in developing countries?	Not only, but especially in developing countries. Will change the place of "especially" to just before "in developing countries"
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	20	18	20	23	-	-	-	The argument is one of setting up a statistic and cannot serve as an argument for the hypothesis of a positive synergy between RES and energy efficiency.	Will put additional explanation.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	20	13	20	16	-	-	-	The statement is at odds with table 1.2, where it is found that there is plenty of RES. The finding could be even the complete opposite: because there is so much RES the issue of energy efficiency is not that important. For instance: modelling exercises generally find that electricity demand needs not be reduced for mitigating climate change, because the decarbonization using RES does not require demand reductions. For the transport sector and the production of liquid fuels the conclusion is usually different because the production of transportation fuels is more difficult to decarbonize.	Energy efficiency is still important even if the technological potential of RE is huge.
Graham Pugh (U.S. Department of Energy)	1	20	18	20	23	-	-	-	This concept requires a fairly sophisticated understanding of how primary energy is defined, which is not provided here. A few more lines of explanation would be helpful to make this point clearer.	Will put additional explanation.
Graham Pugh (U.S. Department of Energy)	1	20	13	20	17	-	-	-	This paragraph provides a better rationale for the discussion of EE than I found in Section 1.1.4.	Accepted
Aviel Verbruggen (University of Antwerp)	1	20	-	-	-	1.3.2	-	-	Verbruggen A. (2006) Electricity intensity backstop level to meet sustainable backstop supply technologies. Energy Policy 34: 1310-1317 suggests the concept of backstop intensity / efficiency related to take-over of energy supply by RE	Will refer to this paper.
Javier Garcia (Renewable Energy Center)	1	20	-	-	-	-	1	-	"May I add ""fisheries"" and ""forestry"" to the End-Use-Sector column"	Will change "Agriculture" to "Agriculture, fishery and forestry.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	20	-	-	-	-	1.9	-	"It may be interesting to add ""water"" in this table ?"	Will show another figure including "water"
Helena Chum (National Renewable Energy Laboratory)	1	20	-	-	-	-	1.9	-	"Same point above; to simplify the diagram only lists biomass energy to liquid fuels when in reality biomass products liquid fuels, hydrogen, carbon gas fuels, it is a solid fuel, and does electricity and heat! The diagram should be redrawn as hydro, ocean and wind are primarily just electricity (bottom) of figure; geothermal and solar do electricity and heat; then Biomass does all of the secondary energy carriers. Other columns are ok."	The comment is true, but this figure shows only a few energy pathways. Will change the title and put additional explanations.
Ladislaus Rybach (Geowatt AG)	1	20	-	-	-	-	1.9	-	although the text mentions (lines 8/9) that □many others (=pathways) are possible but for simplicity are not shown□ key arrows need to be added: from Geothermal energy to Heat and from Heat to Cooling (absorption chiller systems).	The comment is true, but this figure shows only a few energy pathways. Will change the title and put additional explanations.
Jo&#65533;o Pinho (Institut of Tecnology)	1	20	-	-	-	-	1.9	-	Figure 1.9 does not really show the relationships between the sources, carriers, services and uses, but only very few of them.	The comment is true, but this figure shows only a few energy pathways. Will change the title and put additional explanations.
Marc Londo (Energy research Centre of the Netherlands)	1	20	1	20	2	1.3.1	1.9	-	As mentioned in the text, it would be too far-fetched to show all relevant arrows between source, secondary energy carrier, energy service, etc. However, I find the inclusion of a couple of arrows not satisfying either. Furthermore, the meaning of the different colours (continuous vs dashed lines) is unclear to me.	Will change some words and add further explanations.
Aviel Verbruggen (University of Antwerp)	1	20	-	-	-	-	-	1.9	"the scheme is not complete, sometimes unclear; discussion is too standard for a IPCC report"	Will change the title and put additional explanations.
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	21	-	-	-	-	-	-	"Cut the para 1.3.2.1 on rebound effect. It is out of context , no references to other part of the chapter. It is not clear what type of energy consumption may be affected by rebound effect. Reference is to the low prices of fossil fuels o to a ""too high"" efficiency?"	Will merge this subsection into the 1.3.2. Also
Jo&#65533;o Pinho (Institut of Tecnology)	1	21	6	-	8	-	-	-	"The sentence ""One advantage of shifting to renewable energy is that even if one&#65533;s energy consumption increases while utilizing the renewable technology, there is no increase in GHG emissions."" is not correct either."	Will make clearer what we want to say here.
Ralph Sims (Massey University)	1	21	-	-	-	-	-	-	Rebound effect also includes money saved from saving energy being spent on say a flight to a holiday destination consuming more than the energy saved!	Yes,
John SCOWCROFT (EURELECTRIC)	1	21	2	-	8	-	-	-	The market effect of lowering prices which may lead to increased consumption is relevant, but the argument that it is acceptable because it is renewable is flawed as long as fossil fuels remain as part of the total energy mix. However, shifting consumption towards more electricity may reduce emissions because of a higher proportion renewables and better fuel efficiency	Will be considered.
Peter de Haan (Ernst Basler + Partner AG)	1	21	6	21	8	1.3.2.1	-	-	"I strongly object to the statement ""One advantage of shifting to renewable energy is that even if one□s energy consumption increases while utilizing the renewable technology, there is no increase in GHG emissions"". As long as renewable energy supplies are limited, less will be available for other purposes if more is used for given energy services due to rebound effects. I propose to change lines 6-8 to ""As long as total energy demand exceeds the total supply of renewable energy, if one's energy consumption increases while utilizing renewables, this leads to increased GHG emissions as less renewable resources will be left available to substitute fossil energy for other energy services""."	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Anca-Diana Barbu (European Environment Agency)	1	21	1	-	8	1.3.2.1	-	-	My suggestion would be to carefully consider the language of rebound effect. Transport is possibly an easier example to show case the rebound effect and this may be one reason why is used so often. When it comes to energy consumption in buildings for example, the situation is more complex. Usually, to estimate the magnitude of the rebound effect, calculation tools employ (for the baseline calculation) information on standard energy consumption in residential buildings (or commercial), this means indoor mean temperature fixed, internal heat gains standardized, etc. But energy consumption is highly influenced by human behaviour and the quality of the building envelope. In addition there is a certain saturation effect (e.g. it is only so much people would want to heat/cool their homes regardless of the energy price). One other thing is the distinction between direct effects (influence of energy price on consumption behaviour) and indirect effects (the extra income becoming available as a result of energy savings measures is spent on additional ativities or goods that require additional energy consumption). One of the EEA indicators based on the ODYSSEE data base shows that in Europe, the two factors explaining why we could not reap full benefits of increased technological efficiency is higher use of electrical appliances and larger homes (which is not a rebound effect). The indicator will be available soon is needed.	Agree. Although only a simple example can be shown to save a space, some brief explanation about it may be added.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	21	1	-	8	1.3.2.1	-	-	text could remove, where (Sorrell, 2008) absent from the list of the references .	Accepted
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	21	12	-	-	1.3.3.1	-	-	the reference (IPCC AR4 WG3) not record in list of references	Accepted
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	21	10	22	6	1.3.3.1	-	-	As this Chapter as to be shortened, this section could be completely removed, including Fig. 1.10	This figure is showing conversion from primary energy to final energy, and important.
Helena Chum (National Renewable Energy Laboratory)	1	21	9	-	-	1.3.3.1	-	-	This subsection (and perhaps the subsequent one too) could be expanded and serve as an introduction to all of the renewable technologies, their flows and share of electricity, etc. If expanded, it would eliminate the need for each individual technology to show how each technology relates to the worldwide distribution of primary energy and also among other renewables. It would shorten all other chapters significantly. It has a good start on the biomass, which is most complex. This would save probably 10-15 pages of text. Needs coordination with all the info from other chapters.	Noted.
Graham Pugh (U.S. Department of Energy)	1	21	-	22	-	1.3.3.1	1.10	-	"I think it is important to point out that the IEA definition of biomass includes ""traditional biomass"". Given the adverse health and black carbon implications of traditional biomass burning, as well as its often unsustainable use, its inclusion in the renewables category can be misleading."	Good points. Mentioned about that in this chapter.
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	22	16	-	19	-	-	-	"cut from ""in 2007□."" to "" □ therein."" The additional information is in different units and refers to special cases. To me the reader is confused."	Will be revised.
Manfred Treber (Germanwatch)	1	22	10	-	-	-	-	-	"to be more precise please add the year for which 'Renewable sources other than biomass and hydro account for less than 1% of the primary energy supply.' fits: 'In the year X renewable sources other than biomass and hydro have accounted for less than 1% of the primary energy supply.' "	Will add the year also in the sentence.
Ralph Sims (Massey University)	1	22	16	-	18	-	-	-	Cannot understand the sentence.	Will be revised.
Douglas Arent (NREL)	1	22	7	23	20	-	-	-	delete. Covered already in chapter. Any minor points can be incorporated in prior sections.	Will avoid overlapping with other sections in the chapter.
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	22	11	22	20	-	-	-	Please, give also the absolute investment in PV, biofuels and geothermal energy, not only percentages.	Will add absolute value of the total investment.
Aviel Verbruggen (University of Antwerp)	1	22	16	22	18	-	-	-	the numbers are unclear	Will be revised.
□vind Christophersen (Climate and Pollution Agency)	1	22	11	-	20	-	-	-	This chapter is rather complicated to read since it contains a lot of numerical information on both investments, growth rates and shares of electricity and use. We think that use of tables, concentration on main trends in the text and singling out of country specific examples would make the text more readable.	Accepted
□vind Christophersen (Climate and Pollution Agency)	1	22	9	-	10	-	-	-	We think that this sentence should also include information on total renewable share of the primary energy supply.	Accepted
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	22	1	-	2	1.3.3.1	-	-	" the title of figure 1.10. Global energy flows (EJ in 2007) from primary renewable energy through carriers to end-uses and losses drawn with IEA data prefer write under the figure . "	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Richard Taylor (International Hydropower Association (IHA))	1	22	13	22	13	1.3.3.2	-	-	"Delete "",and small hydropower (5 percent). An additional $40-45 billion was invested in large hydropower, which contributes the largest share *86%)."". Reason: The categorisation of hydro by scale is in dispute between the hydropower sector and REN21. A more valid categorisation of the technology is reservoir, run-of-river, pumped storage and off-grid (as necessary). This is likely to be implemented by IRENA in the near future. See also reason for ""5, 5, 16, 5, 16"" and c.f. comment for ""9, 55, 1, 55, 11, 9.6.3""."	Will be considered.
Marc Londo (Energy research Centre of the Netherlands)	1	22	12	22	12	1.3.3.2	-	-	Here 'biofuels' seems to be specifically used for transport biofuels. See comment no 1.	Accepted
Marc Londo (Energy research Centre of the Netherlands)	1	22	8	22	10	1.3.3.2	-	-	It may be relevant here to mention that most use of biomass is 'traditional', which is by definition renewable but partly not sustainable. It is mentioned on page 25 but needs some attention here as well.	Will avoid overlapping with other sections in the chapter.
Ralph Sims (Massey University)	1	22	-	-	-	-	1.10	-	"Electricity arrow needs to go to all sectors - not just hang there. Change ""other sectors"" to ""Buildings and agriculture"" perhaps"	Will revise the figure considering your comment as well as others.
□vind Christophersen (Climate and Pollution Agency)	1	22	-	-	-	-	1.10	-	"This figure needs some explanations to be useful and not misunderstood. In particular issues as regards losses have to be explained - for example are losses related to energy efficiency in sectors included in the ""losses"" bar""? What is the wide arrow from ""CHP/Electricity""?"	Will revise the figure considering your comment as well as others.
Manfred Treber (Germanwatch)	1	22	-	-	-	-	1.10	-	There is no explanation what is the difference between grey (e.g. hydro) and black (e.g. wind) lines in the figure. Is it only because 'condensed grey' is black?	Will revise the figure considering your comment as well as others.
Steve Sawyer (Global Wind Energy Council)	1	22	-	22	-	-	1.10	-	These figures are silly□comparing a bunch of ele ctricity technologies in terms of TPES□they should be in Twh electricity produced□.as should other electricity generating sources when comparing them. And on the whole I'm not sure where in the WEO 2009 one would have found such stuff...	Will revise the figure considering your comment as well as others.
Andries Kruger (South African Weather Service)	1	22	1	22	6	1.3.3.1	1.10	-	For many readers this graph will be difficult to understand. Either the graphics should be improved or the contents better explained.	Accepted
Anca-Diana Barbu (European Environment Agency)	1	22	1	-	3	1.3.3.1	1.10	-	the Figure 1.10 needs further attention in my view	Accepted
Marc Londo (Energy research Centre of the Netherlands)	1	22	1	22	2	1.3.3.2	1.10	-	This figure is not the most compelling of all. Besides, where does the arrow from CHP downwards to go?	Accepted
Jo□o Pinho (Institut of Tecnology)	1	22	1	-	2	-	1.9	-	The legend of figure 1.10 should follow the figure and not precede it. There is no legend for the * in PV.	Accepted
Antoine Bonduelle (EE Consultant)	1	22	-	-	-	-	-	1,10	IAE as an intergovernmental source is credible to compare present figures	Accepted
Ralph Sims (Massey University)	1	22	-	-	-	-	-	1.3	"Add ""in 2007"". Is taken from WEO 2009 I think - not REN21 - unless they quoted WEO data."	It is WEO 2007.
Steve Sawyer (Global Wind Energy Council)	1	22	-	23	-	-	-	1.3	No figures approaching these are to be found in the source cited. Could they be from the 2009 WEO?	It is WEO 2007.
Manfred Treber (Germanwatch)	1	22	-	-	-	-	-	1.3	Please add in the heading the year to which the data refer to (I assume 2007).	Yes 2007. Will add the year in the sentence.
Seth Dunn (GE Energy)	1	22	21	-	-	-	-	1.3	Table does not show renewables % of generation as stated.	Will rearrange the table and sentences.
Luc Gagnon (Hydro-Quebec)	1	22	11	23	-	-	-	1.3	This whole section is confusing because of alternatively using PRIMARY or FINAL energy, alternatively including/excluding large hydro in data, alternatively using absolute numbers or growth rates. Suggestion: Build a new table that includes all options, with titles: current generation, recent growth in absolute number (TWh), recent growth rate, total investments $...	Accepted
Ladislaus Rybach (Geowatt AG)	1	23	11	-	12	-	-	-	replace □geothermal heat pump□ by □geothermal heat pump for heating and cooling□	Will change "heat pump" to
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	23	6	-	-	-	-	-	"Include at the end of the sentence (""from renewable sources""): ""Biofuels 2nd generation and ambitious targets (EU climate energy package) will surely very soon change this situation"""	Will add such kind of sentence.
Patrick Matschoss (WG III TSU)	1	23	10	23	20	-	-	-	"no list with just one bullet; integrate into text/full sentences"	Accepted
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	23	15	23	15	-	-	-	"Replace ""ethanil"" by ""ethanol"""	Accepted
Luiz A. Horta (Instituto de Recursos Naturais)	1	23	21	-	-	-	-	-	"The language adopted seems to be too colloquial and this topic could be condensed. It seems exaggerated to qualify energy storage as ""the"" most important key technology for the future energy systems. "	Will change the expression not to exaggerate the importance of energy storage.
Ralph Sims (Massey University)	1	23	10	-	20	-	-	-	Could delete	May integrate them with other sections in the chapter.
Douglas Arent (NREL)	1	23	21	24	15	-	-	-	doesn't seem to warrant a subsection. Also controversial statement on importance of storage should be changed.	Will change the expression not to exaggerate the importance of energy storage.
Ralph Sims (Massey University)	1	23	28	-	-	-	-	-	No need to define power station types.	Will delete definition of

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	23	13	-	16	-	-	-	the para is not understandable, as point out by TSU.	Will make it clear by integrating them into sentences.
Steve Sawyer (Global Wind Energy Council)	1	23	24	23	25	-	-	-	This sentence is nonsense. Energy 'storage' is NOT required, cf the large scale integration of variable renewables in Denmark, Portugal, Spain, Ireland, and Germany where there is very little or no 'storage' as meant here□there is load management and balancing...	Will revise whole the sentence not to exaggerate the importance of energy storage.
Steve Sawyer (Global Wind Energy Council)	1	23	31	24	2	-	-	-	This whole para is confused. ANY power supply addition of whatever kind incurs costs for integration, for backup, and for grid connection.	Will be considered.
□vind Christophersen (Climate and Pollution Agency)	1	23	24	-	-	-	-	-	We think that reference used here should be deleted, since this information is rather basic.	Accepted
Steve Sawyer (Global Wind Energy Council)	1	23	-	-	-	1.3.3.3	-	-	Buildings, agriculture, industry and the transport sector all use LOTS of ELECTRICITY for things other than lights, such as running machinery, appliances, and in the transport sector for trains, metros, trams, busses and subways□all of the technologies except biomass primarily produce electricity...!	Will make it clear by integrating them into sentences.
Vicente Schmall (Petrobras S.A.)	1	23	11	23	12	1.3.3.3	-	-	It seams not correct to put here geothermal heat pump...	Accepted
Vicente Schmall (Petrobras S.A.)	1	23	14	23	16	1.3.3.3	-	-	Sentence completely unclear	Will make it clear by integrating them into sentences.
Richard Taylor (International Hydropower Association (IHA))	1	23	28	23	28	1.3.4	-	-	"Delete ""large"". Reason: The categorisation of hydro by scale is in dispute between the hydropower sector and REN21. A more valid categorisation of the technology is reservoir, run-of-river, pumped storage and off-grid (as necessary). This is likely to be implemented by IRENA in the near future."	Will delete "large".
Ralph Sims (Massey University)	1	23	-	-	-	1.3.4	-	-	Could just keep first 2 paras - then cross reference rest to Chapter 8	Will refer to Chapter 8.
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	24	20	-	-	-	-	-	"Add ""and incomes generating activities in general"""	Accepted
Charles Kutscher (National Renewable Energy Laboratory)	1	24	24	-	-	-	-	-	"Define ""toe."""	Accepted
Charles Kutscher (National Renewable Energy Laboratory)	1	24	8	-	-	-	-	-	"Remove or replace ""sort of."" It sounds too colloquial."	Accepted
Aviel Verbruggen (University of Antwerp)	1	24	4	-	-	-	-	-	"the purist will object that ""electric power storage"" is physically not possible (you can uphold it in capacitators for short time, but the phenomenon electricity is not storable)"	Can understand the point. Anyway we will revise whole the sentence not to exaggerate the importance of energy storage and to keep balance between the present and future systems.
Veronika Rabl (Vision & Results)	1	24	5	-	-	-	-	-	Add pumped hydro -- the most prevalent grid-level storage option.	Will keep balance between the present and future systems.
Steve Sawyer (Global Wind Energy Council)	1	24	8	24	15	-	-	-	All of this and more is already being done in both Denmark and Spain, among others□	Will revise whole the sentence not to exaggerate the importance of energy storage and to keep balance between the present and future systems.
Veronika Rabl (Vision & Results)	1	24	2	-	-	-	-	-	Back-up capacity is not always required	Accepted
Veronika Rabl (Vision & Results)	1	24	8	-	15	-	-	-	Delete or rewrite in a more coherent, professional manner.	Will revise whole the sentence not to exaggerate the importance of energy storage and to keep balance between the present and future systems.
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	24	3	-	7	-	-	-	Drop the par, the concept is discuss in 8.2.5. The list ere do not refer to existing energy grids but to off grid systems. To be implemented in huge quantities renewables need to be integrated in existing grids. Moreover batteries are listed together with only envisaged applications as superconducting magnetic storage.	Will keep balance between the present and future systems.
Emmanuel Branche (Electricit□ de France (EDF))	1	24	3	24	7	-	-	-	Hydro with reservoirs and pumped-storage power plants (PSPP) are existing technologies that are used at the moment by transmission system operators (TSO) to massively store electricity.	Will keep balance between the present and future systems.
Patrick Matschoss (WG III TSU)	1	24	20	-	-	-	-	-	Is electronics the main development concern? Rather basic services like cooking, lightening, production & income etc	We will take it.
Patrick Matschoss (WG III TSU)	1	24	8	-	-	-	-	-	language	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Steve Sawyer (Global Wind Energy Council)	1	24	3	24	3	-	-	-	This is just not true. Energy 'storage' of the kind envisaged here may be necessary in some systems at very high penetration levels of variable renewables, if interconnection and load balancing opportunities are not sufficient. Much more important is system integration, interconnection, and 'smart' load management. The work cited is more than 10 years old and does not reckon with the experiences in Denmark, Spain, Portugal, Ireland and other countries with double-digit integration of variable renewables in the power supply...none of which have 'storage' of the kind envisaged here...although having hydro and small combined cycle gas on the system certainly helps.	Will revise whole the sentence not to exaggerate the importance of energy storage and to keep balance between the present and future systems.
John SCOWCROFT (EURELECTRIC)	1	24	3	-	7	-	-	-	This section focuses solely on far away technologies, rather than the existing energy storage. Hydro reservoirs and pumped storage need to be included.	Will keep balance between the present and future systems.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	24	3	-	15	1.3.4	-	-	"(Kondoh et al, 2000);(Tsuji et a,l 2009) and Brown, 2008 are missed references thus the text could remove"	Accepted
Richard Taylor (International Hydropower Association (IHA))	1	24	3	24	3	1.3.4	-	-	"Add ""Presently, reservoir and pumped storage hydro are the only RE technologies scaled-up to provide energy storage and other ancillary services."" after ...the future energy systems"". Reason: The energy storage hydro provides is often and widely overlooked."	Will keep balance between the present and future systems.
Vicente Schmall (Petrobras S.A.)	1	24	12	24	12	1.3.4	-	-	What is IT?	Will change it to "information technology".
Marc Londo (Energy research Centre of the Netherlands)	1	24	19	24	19	1.3.5.1	-	-	Electricity supply and energy supply used as synonyms.	Will change the latter to "electricity supply".
Vicente Schmall (Petrobras S.A.)	1	24	26	24	28	1.3.5.1	-	-	Not necessary this comment unless you say about developing countries energy needs but you also say the need of change in developed countries energy use patterns for allowing the development of poor countries.	Your comment is a good point, but this sentence is valuable to compare the energy use between developing countries and developed countries as well.
Ralph Sims (Massey University)	1	24	23	-	28	-	1.11	-	"Not clear is toe/capita/year (even though ""annual"" is in text."	Accepted
Patrick Matschoss (WG III TSU)	1	25	13	-	-	-	-	-	"black carbon, not carbon black; again almost no citations "	Yes, black carbon.
Ruben Guisson (Flemish Institute for Technological Research)	1	25	13	25	14	-	-	-	Concerning the quote ' finding improved energy sources'. Maybe the quote 'introducing improved technologies for the valorisation of the available energy sources' is a more appropriate one. So improving the energy technology rather than improving the energy source.	Will change the expression following your comment.
Ralph Sims (Massey University)	1	25	5	-	15	-	-	-	Could shorten para to 1 sentence and reference Chapter 2.	Will delete the repeated part.
Patrick Matschoss (WG III TSU)	1	25	7	-	-	-	-	-	don't cite indirectly	Accepted
Douglas Arent (NREL)	1	25	1	25	8	-	-	-	duplicative --previously covered in chapter.	Will shorten or delete this part.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	25	8	25	9	-	-	-	I cannot see this from the table and the text is talking about Africa, but the table is about China.	Will change the sentence.
Manfred Treber (Germanwatch)	1	25	13	-	-	-	-	-	major source of carbon black' is this 'black carbon'?	Yes, black carbon.
Achim Woyte (3E sa)	1	25	5	-	15	-	-	-	Redundant, see p. 15	Will delete the repeated part.
Douglas Arent (NREL)	1	25	9	26	17	-	-	-	references?	Will refer to the original source.
John Kessels (International Energy Agency Clean Coal Centre)	1	25	6	25	6	-	-	-	The 49% contradicts an earlier figure of 47% for Africa and biomass, which is it?	Will delete the repeated part.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	25	13	-	-	-	-	-	The reference to carbon black is important, but it is well-known that traditional biomass use is also related to other dust/aerosol emissions that have the opposite effect. The subject is probably to complicated to be discussed here, but the overall issue should be given higher priority in the chapter.	Accepted
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	25	2	-	4	1.3,5,1	-	-	the comment related to figure 1.11.{ 8 toe/capita for USA and Canada, 4 toe/capita for Japan, Korea, Germany, and other European countries, << 2 toe/capita most developing countries (IEA, 2009c)} repeated may be removed.	Will delete the repeated part.
Vicente Schmall (Petrobras S.A.)	1	25	5	25	8	1.3.5.1	-	-	Could be eliminated cause it is repeated	Will delete the repeated part.
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	25	-	-	-	-	1.11	-	Please, use the unit EJ/year/capita (not toe/capita).	Will use EJ.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	25	-	-	-	-	1.11	-	This figure is very interesting. However it could also be important for this SR to have a figure with CO2/capita (CO2 emissions per capita) for those same countries. This information is also available on IEA database	Accepted
Ladislaus Rybach (Geowatt AG)	1	25	-	-	-	-	1.11	-	what is the unit? toe/capita per year?	Will use EJ.

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Steve Sawyer (Global Wind Energy Council)	1	25	-	-	-	-	1.11	-	Why suddenly switch from Exajoules to toe?	Will use EJ.
Tam□s P□lv□lgyi (Budapest University of Technology and Economics)	1	25	-	25	-	-	1.11.	-	It would be useful if the horizontal bars also include the share of renewables in PES/capita (with different color).	Accepted
Aviel Verbruggen (University of Antwerp)	1	25	-	-	-	-	-	1.4	are it kWh or MWh??	Thank you. kWh but 305 kWh and 149 kWh.
Steve Sawyer (Global Wind Energy Council)	1	25	5	25	15	-	-	1.4	Why use china as an example when the para talks primarily about Africa□?	Because there is a good example in China.
Achim Woyte (3E sa)	1	26	8	-	10	-	-	-	"""... can supply electricity at lower cost ..."" Please clarify to what you compare. Depending on what is meant here, the statement may be questionable. Moreover, no reference is provided. The authors may also want to consider deleting this paragraph."	Will try to make the point clear.
Charles Kutscher (National Renewable Energy Laboaratory)	1	26	40	-	-	-	-	-	"""off-grid"" should be hyphenated"	Accepted
Seth Dunn (GE Energy)	1	26	35	26	36	-	-	-	"2009 update: China has now doubled installs for six years; surpassed US and Germany in new installs in 2009; and will probably overtake Germany (but not the US) in installed capacity in 2010. See www.gwec.net and SRREN_Draft1_Review_Dunn_Seth_Material_01.pdf."	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Antoine Bonduelle (EE Consultant)	1	26	11	-	-	-	-	-	"Heat pumps appear at this stage with no prior mention or explanation on how they fit in definitions. At least an example of their contributions or limitations in their integration on RE balances should be given before."	Will define and explain the heat pump referring to Chapter 2.
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	26	6	37	8	-	-	-	"it seems that in this context the term ""smart grids"" is used in non-traditional meaning. Why is ""Smart grids"" spelt with a capital letter"	Will define it in the glossary.
□vind Christophersen (Climate and Pollution Agency)	1	26	23	-	24	-	-	-	"Replace with: ""In some years pending on level of precipitation Norway produces more hydro power that □□"""	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Patrick Matschoss (WG III TSU)	1	26	11	26	17	-	-	-	"select examples; not necessary here; delete"	Need discussion about how much description about heat pump is appropriate for this report.
Patrick Matschoss (WG III TSU)	1	26	4	26	10	-	-	-	all statements must be checked with ch08 and need sources	Will check it.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	26	46	-	-	-	-	-	Arrange regions according to their electrification rate.	Accepted
Jo□o Pinho (Institut of Tecnology)	1	26	22	-	26	-	-	-	Brazil also has more than 70% of its electricity from hydropower.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Steve Sawyer (Global Wind Energy Council)	1	26	26	26	26	-	-	-	Brazil is also famous for having more than 85% of its electricity from RE!	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	26	25	26	28	-	-	-	Brazil is also well-known by its high share of hydro-power electricity to the total electricity (about 75% in install capacity and more than 80% in actual generation), larger than in New Zealand and Canada.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	26	34	26	38	-	-	-	Brazil settles behind in adopting solar PV as well as wind-power electricity. Before promoting those technologies at faster pace, the country must also improve the quality in using its electricity.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Manfred Treber (Germanwatch)	1	26	24	-	-	-	-	-	Don□t be too positive on Norway: □Norway produces more hydropower electricity than it needs and exports its surplus to the rest of Europe.□ We know on plans for a fossil power plant (based on gas) in the central part of Norway (probably with CCS) because increasing electricity demand cannot be satisfied any more with hydro alone.	Rejected
Luiz A. Horta (Instituto de Recursos Naturais)	1	26	5	-	-	-	-	-	For instance, according to IEA, Finland and Sweden forests supply 20% of national energy demand in those countries, contributing to reduce fossil energy use.	Good examples.
Ladislaus Rybach (Geowatt AG)	1	26	16	-	17	-	-	-	Heat pumps (especially geothermal) are strongly growing nowadays in China.	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	26	32	26	34	-	-	-	In Brazil, the growing needs for hot water production and air conditioning have been promoted through electrothemal energy, i.e., having install excess capacity of hydro-power electricity, Brazil has almost abandoned solar thermal panels for hot water production and air conditioning. Today such situation leads to challenging debate regarding the role of electricity in the Brazilian energy mix. Solar + Gas systems should be promoted to substitute electricity in the production of hot water or air conditioning.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	26	27	26	28	-	-	-	Is Malaysian palm-oil a good example for a renewable energy source?	Accepted
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	26	4	26	6	-	-	-	It is true that people, especially in urban centres, have become totally reliant on electricity, and cannot function without it. Yet, as the report is trying to propose a new development model for human beings, including the need to produce such electricity from renewable sources of energy, it is important to highlight the need to improve the efficiency in using the electricity. The report is strong enough proposing the need to combine renewables and efficiency technologies. But the report is still not clear enough to highlight that electricity (high quality energy) usually should not be used to produce thermal energy (lower quality energy). The total reliance on electricity is based on a technology model, which must be questioned.	Will talk about heat from RE as well in appropriate place in this chapter.
Mohammad Rahimi (IRIMO)	1	26	29	26	30	-	-	-	It realizes from this sentence that, Sun Belt areas depend on to the development of a country. We need a distinct definition for SunBelt areas that have been defined geophysically and geographically.	Will define "Sun belt".
Patrick Matschoss (WG III TSU)	1	26	-	-	-	-	-	-	no sources at all except one from IEA, text not founded in lit	Accepted
Ralph Sims (Massey University)	1	26	1	-	3	-	-	-	RE could be a share of meeting demand - needs rewording	Accepted
John Kessels (International Energy Agency Clean Coal Centre)	1	26	21	26	26	-	-	-	Reference needed for the numbers reported	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Ralph Sims (Massey University)	1	26	4	-	10	-	-	-	References?	Will add a reference.
Vicente Schmall (Petrobras S.A.)	1	26	26	-	28	-	-	-	Remove. It is not supported by reference.	Accepted
Ralph Sims (Massey University)	1	26	22	-	24	-	-	-	Repetitive - delete?	Accepted
Luiz A. Horta (Instituto de Recursos Naturais)	1	26	5	-	-	-	-	-	Some remarks should be done about the difference between traditional and inefficient bioenergy systems and modern technologies, able to mitigate GHG emissions. Besides, in many contexts, traditional stoves are efficient and environmentally acceptable.	Will make clear the difference between traditional and modern.
Steve Sawyer (Global Wind Energy Council)	1	26	38	26	38	-	-	-	Suggest that this is a good place to insert Figure 4 on p. 12 from REN21 2009a	Will be considered.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	26	15	26	17	-	-	-	The costs of energy technologies (already mentioned many times along the report that some technologies are too expensive for less developed countries) must be compared to the energy costs themselves. Poorer countries tend to subsidize the energy for people rather than subsidize the access to technology. Then, having no access to the best technologies and having to keep energy costs relatively low, people end up by having poor quality energy supply.	Will coordinate with Chapter 8 and other chapters to ensure coverage and consistency.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	26	13	26	14	-	-	-	The example must be skipped.	Need discussion about how much description about heat pump is appropriate for this report.
Paulo Cesar de Campos Barbosa (Petrobras)	1	26	13	26	14	-	-	-	The sentence refers to a specific commercial system, it should be removed or rephrased.	Will rephrase it.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	26	4	26	10	-	-	-	The subject is already covered by 1.3.4 and is not the matter of the present sub-section.	Will delete the repeated part.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	26	28	26	30	-	-	-	The text is devoted to the utilisation of RES not to the potential to use it.	Yes, it is. The ways of utilization of RE are dependent on potential.
William Kyte (E.ON AG)	1	26	8	26	10	-	-	-	Unsupported assertion	Will try to make the point clear.
Steve Sawyer (Global Wind Energy Council)	1	26	4	26	10	-	-	-	What are 'very large amounts'? 20%? 'Smart grids' as commonly used are cover everything from transmission, interconnection, 'intelligent' distribution', smart metering and pro-active demand management, load shedding etc., and should be defined in the glossary if the phrase is going to be used here.	Will define it in the glossary.
Vicente Schmall (Petrobras S.A.)	1	26	26	26	28	1.3.5.2	-	-	"It would be important to consider the Brazilian leading position on rewables energy, where RE acconts 45,9% of the total domestic energy supply related year 2006-7. EPE, Brazilian Energy Balance, 2010."	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Vicente Schmall (Petrobras S.A.)	1	26	21	26	29	1.3.5.2	-	-	"Missing important reference related biofuels published by World Energy Outlook 2009, EIA, pg 87,""According to preliminary data, supply reached 0.8 mb/d in 2008. Most of the increase in the use of biofules in 2007 and 2008 occurred in the OECD, mainly in the North America and Europe""."	Need brief explanation here. Will select limited number of appropriate examples considering many comments.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ernesto QUILES (Ministerio de Agricultura, Ganaderia y Pesca)	1	26	26	-	-	1.3.5.2	-	-	Brazil is the second world bio-ethanol producer. Renewable Energies are 46,3% of Primary energy matrix (2007). Hydraulicpower is 69% of the total Electric Capacity installed in 2009 and, Hydropower was 84% of the total generation (2005). Source: Balancos Energ□cos Nacionais 2006-2007.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Vicente Schmall (Petrobras S.A.)	1	26	21	26	26	1.3.5.2	-	-	Missing reference related share of geothermal energy in the electricity production. Also this paragraph would consider the Brazilian leading position on renawable energy, in which the domestic energy supply structure in 2006-7acconts 90% of the Brazil□s electricity production and 77% as hidroelectricity. EPE, Brazilian Energy Balance, 2007.	Need brief explanation here. Will select limited number of appropriate examples considering many comments.
Ralph Sims (Massey University)	1	26	-	-	-	1.3.5.2	-	-	Not sure of relevance - could delete section. If not here and surrounding sections have a lack of references to back uo the points being made.	Rejected
Patrick Matschoss (WG III TSU)	1	26	18	26	38	1.3.5.2	-	-	really necessary? Value added? Suggest to delete	Need discussion about how much description about heat pump is appropriate for this report.
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	26	11	26	17	3.5.1	-	-	other methodologies currently explored in California include hydro-storage (pump the water up during non-peak hours) in coordination with wind and solar	Pumped hydro is most commonly used now in many countries. Will mention that together with your new system combined with solar and wind.
Charles Kutscher (National Renewable Energy Laboaratory)	1	27	23	-	-	-	-	-	"""Renewable electricity seems more suitable for distributed applications."" This seems to be a bias that is frequently coming across in the report. Hermann Scheer often makes this argument. While distributed generation is great, to make the very rapid reductions in carbon emissions that are needed, it may be possible to build large concentrating solar power plants in the desert faster than we can get PV on buildings and so tap more of the best resource. This IPCC report should focus on the best ways to address climate change and not get take sides in the often-philosophical central vs. distributed generation debate. We need to deploy both as rapidly as we can."	Both distributed and centralized are important. Will make clear the point in the sentence.
Charles Kutscher (National Renewable Energy Laboratory)	1	27	42	-	-	-	-	-	"""strong direct insulation"" should read ""strong direct insolation"""	Will replace "insulation "with "insolation".
Graham Pugh (U.S. Department of Energy)	1	27	8	27	8	-	-	-	"""tremendous progress"" - please quantify"	Accepted
Graham Pugh (U.S. Department of Energy)	1	27	19	27	19	-	-	-	"""widespread acceptance"" - please quantify"	Rejected
Luiz A. Horta (Instituto de Recursos Naturais)	1	27	39	-	-	-	-	-	"Actually, solar energy can play a limited role in replacing biomass stoves. Solar cookers absolutely are not a ""practical useful"" in a broad sense and there is no place where such technology has been succeeded in significant terms."	Good points. The statement needs to be restructured.
Graham Pugh (U.S. Department of Energy)	1	27	22	27	22	-	-	-	"change ""but appropriate"" to ""and more appropriate"""	Will take it.
Graham Pugh (U.S. Department of Energy)	1	27	33	27	33	-	-	-	"Clarify what is meant by ""external costs"". The carbon externality, other environmental impacts?"	We will make the message of the sentence clear with references.
C□ic Philibert (International Energy Agency)	1	27	43	27	45	-	-	-	"In regions with strong direct insolation (not insulation), CSP provides an electricity that is cheaper than that of PV, and with guaranteed capacities. The electricity can dispatched when required. However, ""hot regions"" are not necessarily with strong direct insolation, notably in tropical areas, and may not be very favourable to CSP."	"hot region" was not appropriate. Will revise the sentence.
Steven Smith (PNNL)	1	27	22	27	36	-	-	-	"is a particularly egregious example of the general comment above. Speculative statements such as ""Solar PV will hopefully follow the wind energy"" should not be in a technical report."	Will revise whole the sentence considering the comments.
Achim Woyte (3E sa)	1	27	44	-	45	-	-	-	"Linking the situation in ""hot regions"" to the use of direct solar is wrong. Concentrated solar requires direct sunlight; however, it does not require heat. E.g., the Antarctic, Siberia or Mongolia have a high direct fractions while subtropical regions don't."	"hot region" was not appropriate. Will revise the sentence.
Patrick Matschoss (WG III TSU)	1	27	4	27	20	-	-	-	"Necessary? Hardly any sources; suggest to delete"	Rejected
Graham Pugh (U.S. Department of Energy)	1	27	41	27	45	-	-	-	"Paragraph confuses role of solar thermal power plants in ""climbing the energy ladder"". These plants require large investment and provide large-scale electricity generation; they are not a replacement for traditional biomass or solar hot water heating."	Will delete it from here.
Graham Pugh (U.S. Department of Energy)	1	27	42	27	42	-	-	-	"Replace ""insulation"" with ""insolation"""	Mistake. Will replace "insulation" with "insolation".
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	27	42	27	42	-	-	-	"replace ""insulation"" with ""insolation""."	Will replace "insulation" with "insolation".
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	27	-	29	-	-	-	-	"The entire para 1.3.6 should be cut or completely rewritten. The text is confused, renewable are put at the low lever of the ""ladder"", so it promote fossil fuels or electricity use. The concept that renewables allow people with no access to grid electricity to climb the energy ladder is in the text but the figures say the opposite."	Will reconsider it.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
□vind Christophersen (Climate and Pollution Agency)	1	27	42	-	-	-	-	-	"The term ""strong direct insulation"" should be explained."	Will replace "insulation "with "insolation".
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	27	9	27	15	-	-	-	All the technologies here mentioned can benefit tremendously from progress to be achieved in combining RE and gas systems. For that, it is important to realize the need to increase globally small scales uses of gas, which means the fast access to gas through alternative technologies such as LPG, Compressed or Liquefied Natural Gas. Notably, such position becomes urgent in countries (like Brazil), where gas availability increased faster than domestic gas markets, which tends to lead to higher gas flaring.	Co-benefit issue. Will mention somewhere in the chapter?
Steve Sawyer (Global Wind Energy Council)	1	27	44	27	45	-	-	-	hot' has nothing to do with it□it has everything to do with insolation which is not the same as 'hot'. In fact, many tropical countries have too much humidity and cloud cover for CSP. As the previous sentence says, they are best suited to deserts, and preferably ones without sandstorms.	"hot region" was not appropriate. Will revise the sentence.
Manfred Treber (Germanwatch)	1	27	28	-	-	-	-	-	I would say that indigenous communities without interactions with modern society don□t 'suffer from extreme poverty, limited freedom of opportunities □' although they don□t have access to electricity. Please don□t make this statement as general as it is now and respect the dignity of indigenous people.	Our message is that RE brings co-benefit for them, not discourage them.
Steve Sawyer (Global Wind Energy Council)	1	27	26	27	28	-	-	-	If they are unmapped how do we know they're there? In fact, they are very well mapped at low resolution, but need more detailed analysis for particular potential evaluation.	Will take it.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	27	34	27	35	-	-	-	IPCC suggestion that solar PV will hopefully follow the wind energy seems to be more than optimistic (wishful thinking!).	Will change the sentence referring to facts of the growth of PV.
Manfred Treber (Germanwatch)	1	27	43	27	44	-	-	-	please add □ than typical solar PV systems AND AT LOWER COSTS THAN PV.	Will refer to Chapter 3 for input and reference.
John SCOWCROFT (EURELECTRIC)	1	27	33	-	34	-	-	-	Referring to externalities should be deleted, as it is not relevant for developers before those externalities are internalised through support schemes, carbon pricing etc	We will make the message of the sentence clear with references.
Seth Dunn (GE Energy)	1	27	23	-	-	-	-	-	Renewable electricity seems more suitable for distributed applications where there is a grid or in remote or rural areas off the grid.' This is not consistent with later discussion of more central, utility-scale RE applications.	Both distributed and centralized are important. Will make clear the point in the sentence.
Douglas Arent (NREL)	1	27	21	28	25	-	-	-	shorten and simplify. Also, literature on explicit measurement of energy/gdp vs gdp/cap exists--hoffert, Jim Brown (scaling and includes human energy for LDCs).	Will revise whole the sentence considering the comments.
Steven Smith (PNNL)	1	27	42	27	45	-	-	-	should be removed. It has little to do with the topic, and is potentially misleading. (Concentrating PV has higher efficiency but higher costs. The total cost is what is important, particularly in a poor region.) This sort of technology choice should be discussed in the relevant section on solar.	Will delete it from here.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	27	23	27	24	-	-	-	The sentence makes no sense. The issue of distributed systems is a hypothesis and there is also the counter-hypothesis that centralized RES systems are an option. The grid is then used for transmitting the electricity over large distances. The IPCC has to provide a balanced view and not a biased perspective.	Both distributed and centralized are important. Will make clear the point in the sentence.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	27	16	27	18	-	-	-	The sentence suggests that RES are replacing fossil systems, but this is at odds with the subject of the subsub-section. Please clarify.	The comment seems in consistent with the message of the sentence.
□vind Christophersen (Climate and Pollution Agency)	1	27	23	-	24	-	-	-	This sentence is unclear - does it imply that renewable electricity is always suitable for distributed applications or that connection to a grid is preferable? In some cases bioenergy may be more suitable in remote places?	Both distributed and centralized are important. Will make clear the point in the sentence.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	27	4	-	15	1.3.5.3	-	-	text explained through the following sections .	Accepted
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	28	18	-	-	-	-	-	"""access to television and film"" could be replaced by ""access to television, computer and internet"""	We will take it.
Patrick Matschoss (WG III TSU)	1	28	20	-	-	-	-	-	"modern mode of transport not necessarily cheaper; source?"	We will make the message of the sentence clear.
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	28	1	28	9	-	-	-	By considering the Figure 1.12, it is weird to consider a symbol of modernity and inevitable pathway from low to high income such growing penetration of inadequate uses of electricity. Demands for electricity due to fast digital inclusion and more uses of IT etc, are already huge. Why should the report indicate (and support) electricity cooking, for example?	ICT is indicated as well.
John Kessels (International Energy Agency Clean Coal Centre)	1	28	15	28	25	-	-	-	Could delete this paragraph	Will shorten this part.
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	28	18	28	18	-	-	-	electric lighting also allows access to the internet, especially in developed countries where wireless internet is growing rapidly in rural areas.	Will add this co-benefit.
Patrick Matschoss (WG III TSU)	1	28	17	28	18	-	-	-	Is Tele and Film the major development success? Basic services as mentioned earlier, merge with 1.1.5 & 1.3.5.3 and put at beginning of 1.5.3	Accepted

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Patrick Matschoss (WG III TSU)	1	28	24	28	25	-	-	-	sentence unclear	We will make the message of the sentence clear.
Luiz A. Horta (Instituto de Recursos Naturais)	1	28	10	28	25	-	-	-	These paragraphs could be shortned.	Will shorten this part.
Fernando Rubiera (Instituto Nacional del Carbon (CSIC))	1	28	10	28	25	-	-	-	To shorten this Chapter, these two paragraphs could be removed	Will shorten this part.
Mary Louise Gifford (The Potsdam Institute for Climate Impact Research)	1	28	16	28	17	3.6.1	-	-	"not necessarily□.in World Bank paper ""Survey of Productive Uses of Electricity in Rural Areas"", the result of various electrifcation programs had mixed results. The paper concluded that "	Will provide reference to support the statement.
Veronika Rabl (Vision & Results)	1	28	-	-	-	-	1.12	-	Add ICT (Information & Communication Technologies?) to dictionary of acronyms	Rejected
Vicente Schmall (Petrobras S.A.)	1	28	7	28	7	1.3.6	1.12	-	Could be eliminated or better explained	Accepted
John Twidell (AMSET Centre)	1	28	-	-	-	-	Fig 1.12	-	"Remove this figure. It implies that developed/rich households do not heat with biomass (e.g. pellet boilers), do not use biofuels for transport (e.g. Brazil), do not have solar water heaters, do not have PV microgeneration etc. The 'high income' column is of past technology. In many countries (e.g. UK), low income households have only electricity and therefore large bills and poor heating. This diagram has implications that this report should reject. Renewables are modern and of high quality service. Do not let the conservative conventions and lack of vision of the IEA spoil this report. Renewables can give a high quality life style; do not imply otherwise."	will retain figure but with more discussion
Luiz A. Horta (Instituto de Recursos Naturais)	1	29	4	-	-	-	-	-	This table is associated to the Energy Ladder and focused basically on household uses. Thus, this sectoral approach should be introduced in the title or a line with information on biofuels is necessary.	Rejected
Achim Woyte (3E sa)	1	29	-	-	-	-	1.5	-	The table would be much stronger if the achievements would be in quantitative terms related to the global energy trends (see p15). E.g., 220 m biomass stoves = substituting x% of primary energy from non-sustainable biomass, etc.	will try to do this
John Kessels (International Energy Agency Clean Coal Centre)	1	29	-	-	-	-	Table 1.5	-	Table has actual numbers and also estimates which should be rewritten to be more accurate or within a range eg, 10-20,000	will try to do this
Jo□o Pinho (Institut of Tecnology)	1	29	-	-	-	-	-	1.5	"The legend should be ""off-grid"" and not ""of grid""."	Accepted
Helena Chum (National Renewable Energy Laboratory)	1	29	-	-	-	-	-	1.5	Intro is very positive about the progress that has been done on small scale grid applications of renewables and this sets a good tone. The other chapters mention but the tone is more negative when this table clearly show that there is demonstrable progress. There is more to do but the worldwide, multilateral, and country efforts have improved the situation of the number of poor people in the world. Numbers vary throughout the chapters. Based on those, the efficiencies calculated for solid biomass use should be improving (mostly a Chapter 2 and integration consideration)	for chapter 2 and ch 8
Luiz A. Horta (Instituto de Recursos Naturais)	1	29	-	-	-	-	-	5.1	"Better than ""cooking and lighting"" would be ""cooking and lighting with biogas"". All data presented in this line is exclusively related to biogas."	Better to add a line for PV lighting systems (as in Kenya (see ch 10)
Antoine Bonduelle (EE Consultant)	1	30	10	-	-	-	-	-	"""Formidable"" players is not a very welcome expression for such a controversial theme. There should be some balance in this paragraph on the fact that land use for biofuls of 1st generation competes with other uses such as natural spaces.See 1.4.2.2 ."	will qualify with land-clearance issue or omit this example
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	30	18	-	-	-	-	-	"a misprint: replace ""e"" for ""E"""	Rejected
Patrick Matschoss (WG III TSU)	1	30	39	30	40	-	-	-	"Gov't claim; delete"	In SOD, this section will introduce and summarise key finding of ch 11
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	30	10	-	-	-	-	-	"IPCC: ""Malaysia and Indonesia are becoming formidable world players in biodiesel. RWEI comment: Is the net effect really CO2-diminishing?"	will qualify with land-clearance issue or omit this example
Patrick Matschoss (WG III TSU)	1	30	18	30	29	-	-	-	"random examples of programmes; delete"	chapter 1 examples illustrative not comprehensive by design
Jo□o Pinho (Institut of Tecnology)	1	30	13	-	-	-	-	-	"The correct name of the Brazilian alcohol program is ""PROALCOOL"" and not ""PROALCOHOL""."	Accepted
John Kessels (International Energy Agency Clean Coal Centre)	1	30	41	31	4	-	-	-	Can delete this paragraph it does not add anything to the chapter	In SOD, this section will introduce and summarise key finding of ch 11
Patrick Matschoss (WG III TSU)	1	30	16	-	-	-	-	-	change language	Seems clear as is
Patrick Matschoss (WG III TSU)	1	30	5	-	-	-	-	-	change language (clear)	will omit that sentence (cf examples from Brazil and Africa)
Patrick Matschoss (WG III TSU)	1	30	10	-	-	-	-	-	change language (formidable)	will qualify with land-clearance issue or omit this example

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Virginia Sonntag-O'Brien (REN21)	1	30	35	30	38	-	-	-	Delete the two sentences, as they are repetition from page 15. Note that UNEP will have produced its investment report for 2009 in July 2010.	In SOD, this section will introduce and summarise key finding of ch 11
Edmilson Moutinho dos Santos (Instituto de Eletrotecnica e Energia - Universidade de Sao Paulo)	1	30	12	30	14	-	-	-	I don't know how much acclaimed by the world should be Brazil's PROALCOHOL programme. The higher penetration of ethanol in Brazil's energy mix was followed by the incapacity of the country to promote relevant reduction in energy intensity. Moreover producing ethanol for exports while ethanol is still so limited used in the country itself (only in transportation substituting gasoline) reveals low compromise with technology. Finally, the PROALCOHOL programme was saved by the growing share of less efficient flex-fuel cars in Brazil`s total fleet. There is a real paradox between promoting ethanol and the efficient uses of energy. Moreover, ethanol is primarily aimed to supply growing fleets in chaotic cities where traffic jams help to reduce the effectiveness of any energy policy.	will refer to ch 2 and ch8 for more on Brazil ethanol
Patrick Matschoss (WG III TSU)	1	30	41	31	4	-	-	-	ignores 30 years of energy economic discussion about Lovin#s scenarios, no other source	In SOD, this section will introduce and summarise key finding of ch 11
Patrick Matschoss (WG III TSU)	1	30	35	30	40	-	-	-	merge with other investment texts into 1.3.2	In SOD, this section will introduce and summarise key finding of ch 11
Steve Sawyer (Global Wind Energy Council)	1	30	10	30	12	-	-	-	Neither Malaysia nor Indonesia appeared in the top 15 producers of biofuels in 2008 - REN21 2009a, Table R6 p 25. There is no evidence presented that they are exporting significant quantities to either the US or EU at present, although that may change.	will qualify with land-clearance issue or omit this example
Douglas Arent (NREL)	1	30	10	30	14	-	-	-	not without controversy over sustainability practices□.	will qualify with land-clearance issue or omit this example
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	30	33	30	34	-	-	-	Please summarize this literature and give references.	In SOD, this section will introduce and summarise key finding of ch 11
□vind Christophersen (Climate and Pollution Agency)	1	30	10	-	14	-	-	-	Possible environmental effects on biodiversity and forests should also be mentioned in this context.	will qualify with land-clearance issue or omit this example
Ralph Sims (Massey University)	1	30	38	-	40	-	-	-	Repeat of p16 lines 1-2	In SOD, this section will introduce and summarise key finding of ch 11
Douglas Arent (NREL)	1	30	1	30	29	-	-	-	section doesn't report on findings from lit relative to use of RE in dev. Countries. Suggest rework, and shorten to a summary from the literature.	Text does match heading and does refer top literature, though possibly could be improved
Graham Pugh (U.S. Department of Energy)	1	30	41	31	4	-	-	-	Singling out a favorable estimate from one source does not add credibility to an overview. You could state the range of credible estimates from Ch. 10, or the mid-point, or the possibilities based on breakthroughs in key technologies like energy storage.	In SOD, this section will introduce and summarise key finding of ch 11
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	30	35	31	4	-	-	-	Text should be cut, it is not referring to developing countries, as requested in para 1.3.7 title.	SOD will re-arrange sec 1.3 to more clearly separate developing country from global
Luiz A. Horta (Instituto de Recursos Naturais)	1	30	6	30	9	-	-	-	The actual experience with small biomass gasifiers in rural areas still is quite reduced to recommend or put forward national plans based in this technology.	Text reports experience, without mentioning national plans
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	30	39	41	40	-	-	-	the fact that Germany has set a goal to of 100 % renewable energy by 2050 has been mentioned quite a number of times through the text. Should be deleted from some chapters.	In SOD, this section will introduce and summarise key finding of ch 11
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	30	39	-	-	-	-	-	The objective is not official as far as I know. The sub-section 1.3.7 is dealing with developing countries, but Germany does not belong to this group of countries. Moreover, a target is not a scenario as is stated in the title of the sub-sub-section.	In SOD, this section will introduce and summarise key finding of ch 11
Paulo Cesar de Campos Barbosa (Petrobras)	1	30	12	30	14	-	-	-	The sentence seems correct but truncated.	Accepted
Virginia Sonntag-O'Brien (REN21)	1	30	41	31	4	-	-	-	There are other more global RE scenarios (IEA, EREC/Greenpeace, IEA RETD) that are not mentioned here. Lovins's scenario is only for the US.	In SOD, this section will introduce and summarise key finding of ch 11
Steven Smith (PNNL)	1	30	30	31	16	-	-	-	This section is seriously incomplete. The selection of scenarios to highlight is biased toward high renewable scenarios. If scenarios results are to be presented, then a more through treatment of the literature is needed (SRES, RCP,EMF, etc.). Probably best to just remove since this is discussed elsewhere in the report.	In SOD, this section will introduce and summarise key finding of ch 10
Ruben Guisson (Flemish Institute for Technological Research)	1	30	10	30	11	-	-	-	This seems a very positive interpretation. Palm oil production has been more than once a hot 'sustainability issue'. The situation is, in the text, presented as a 'success story'. A 'sustainability' remark is necessary at this place to make the combination between 'what is a renewable energy source' and 'has it been produced in a sustainable way' (see also section 1,1,2 of the text)	will qualify with land-clearance issue or omit this example
John Kessels (International Energy Agency Clean Coal Centre)	1	30	10	30	14	-	-	-	Who says Malaysia and Indonesia are formidable, not really scientific language and no references in any of the paragraph or defining the Acronyms, delete or rewrite with references and explanation of acronyms	will qualify with land-clearance issue or omit this example

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ralph Sims (Massey University)	1	30	41	-	-	-	-	-	Year for Lovins reference?	In SOD, this section will introduce and summarise key finding of ch 11
John Kessels (International Energy Agency Clean Coal Centre)	1	30	-	30	-	1.3.7.1	-	-	Could delete this section or reduce to a paragraph	In SOD, this section will introduce and summarise key finding of ch 11
Richard Taylor (International Hydropower Association (IHA))	1	30	41	4	4	1.3.7.2	-	-	Comment: The direct references to Lovins are problematic. This paragraph should be rephrased accordingly. Reason: Referring to particular individual figures is inappropriate.	In SOD, this section will introduce and summarise key finding of ch 11
John Kessels (International Energy Agency Clean Coal Centre)	1	30	-	31	-	1.3.7.2	-	-	Move or delete this section as its repetitive, lines 36-37 have been stated earlier and it is odd while Lovins is said to be within 5% of his prediction it was due to other factors in the text??	In SOD, this section will introduce and summarise key finding of ch 11
Dan Bilello (NREL)	1	30	41	31	4	1.3.7.2	-	-	Perhaps Lovins in not the best resource to rely on for a prediction in the growth of renewable energy? Suggest a literature review and table showing different estimates. EIA, IEA, UNEP, etc. should be included.	In SOD, this section will introduce and summarise key finding of ch 11
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	30	41	31	16	1.3.7.2	-	-	text could be shortened .	In SOD, this section will introduce and summarise key finding of ch 11
Leen Gorissen (Flemish Institute for Technological Research)	1	31	5	31	16	-	-	-	"It would be nice to refer to the theory of transition management. The first step in transition management is to develop a vision and involve society and stakeholders from the beginning. See: Loorbach, D. 2007. Transition Management, New mode of governance for sustainable development. PhD dissertation, Utrecht, the Netherlands; LOORBACH, D., VAN DER BRUGGE, R., TAANMAN, M. (2008) Governance for the energy transition. International Journal of Environmental Technology and Management (IJETM); LOORBACH, D. (2010) Transition Management for Sustainable Development: a Prescriptive, Complexity-Based Governance Framework. Governance, 23, 161-183."	These references would go into ch 10or ch11
Ralph Sims (Massey University)	1	31	3	-	-	-	-	-	"Quantify ""very large"""	In SOD, this section will introduce and summarise key finding of ch 11
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	31	44	31	45	-	-	-	"Remove the sentence ""Others &#65533; 'perfect markets'."". This language is not relevant in this SR"	will amend line 45
Jean-Yves Caneill (Electricit&#65533; de France (EDF-SA))	1	31	17	41	8	-	-	-	"This section addresses barriers and policies and measures suitable fo favour renewables energy emergence. A serie of report published by WBCSD have addressed for the electricity sector these issues including the renewables energy. I provide the references as I think that this piece of work could be quoted in SRREN : The final report of the Electricity Project was published in 2008 and is called : Power to Change : A business contribution to a low-carbon electricity future "	Thanks for this reference
alberto roque pedace (school of engeneeiring -Buenos Aires university.& maestria polititica y gestion iencia y tenologia-Buenos aires university)	1	31	11	31	13	-	-	-	.scenarios depicting full transition,ie 100 renewables by 2050,are not considered, even though it is said that a more : useful approach is to identify alternative futures....□.poliies, prices and other factors can be backcasted to achieve that goals.	In SOD, this section will introduce and summarise key finding of ch 11
John Kessels (International Energy Agency Clean Coal Centre)	1	31	19	31	19	-	-	-	delete blowing and leave just wind	Accepted
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	31	27	31	30	-	-	-	Remove, because too obvious and not relevant	point of para is to distinguish "issues" from "barriers". Will make this clearer
Achim Woyte (3E sa)	1	31	-	36	-	-	-	-	Section is well structured but should be tightened.	thank you!
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	31	24	31	26	-	-	-	The example is too colloquial.	text is clear and precise
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	31	14	31	16	-	-	-	The first sentence of the paragraph is completely confused. Hence it is not possible to understand the meaning of the second sentence.	In SOD, this section will introduce and summarise key finding of ch 11
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	31	27	31	30	-	-	-	The paragraph is redundant.	point of para is to distinguish "issues" from "barriers". Will make this clearer
Douglas Arent (NREL)	1	31	17	31	45	-	-	-	this should quote review articles from the literature, for example CCTP in US, M. Brown, multiple EU review articles on policy/market issues for RETs	will include some such references if they can be clearly identified
□vind Christophersen (Climate and Pollution Agency)	1	31	17	36	36	-	-	-	We think that this chapter is somewhat unbalanced and should deal more detailed with difficult challenges and compromises related to large scale use of renewable energy. This should include other environmental issues in general and the availability of land and raw materials in particular.	IN SOD, This detail will be in chapter 8, and referred to here

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Richard Taylor (International Hydropower Association (IHA))	1	31	12	31	12	1.3.7.2	-	-	"Add ""combine the best of the bottom up and top down scenarios to"" after ""...a useful approach is to"". Reason: Plainly, a mixture of both bottom down and bottom up is the prudent way forward."	In SOD, this section will introduce and summarise key finding of ch 11
John Kessels (International Energy Agency Clean Coal Centre)	1	31	17	31	45	1.4	-	-	This section needs to be rewritten, it could just list the barriers without having to go into any detail which is covered in following sections. Agree with TSU using language such as dream world is unscientific	In SOD, sec 1.4 will be rearranged
John SCOWCROFT (EURELECTRIC)	1	31	-	-	-	1.4.	-	-	Difficult to find a message in this section	see next comment
Manfred Treber (Germanwatch)	1	32	23	-	-	-	-	-	"""The oil price peaks of 1973, 1989 and 2008"": Please add the peak of 1982"	will check data
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	32	3	-	-	-	-	-	"colloquial; language should be improved"	text is clear and precise
Douglas Arent (NREL)	1	32	1	33	11	-	-	-	"each subsection should refer to most recent literature review of subject. The ""low density and variability"" has been mentioned multiple times already!"	Purpose of Sec 1.4 is to set context for related parts of chs 8,9, and 11. Therefore Doesn't require comprehensive literature review in each sub-section.
Patrick Matschoss (WG III TSU)	1	32	1	-	-	-	-	-	"Informational and awareness barriers (according to ""Taxonomy of barriers"" paper (outcome of LA2)"	Rejected
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	32	40	32	41	-	-	-	"Remove the sentence ""Rich owners \u00e9being 'spoilt'."". This language is note relevant in a SR"	Will delete or amend last 2 sentences of page 32
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	32	32	32	34	-	-	-	"To add. Proposition: ""stakeholders consultation is mandatory"""	Rejected
Graham Pugh (U.S. Department of Energy)	1	32	38	33	2	-	-	-	"Very inflammatory and unhelpful language. The issue of sitting for energy projects of all kinds represents a serious barrier to meeting future energy needs, no matter what the energy source. This is not just confined to ""rich people"". Also, ""cachet"" for any form of energy will not be enough to overcome economic and other barriers to wide scale deployment. Please raise the discussion to an appropriate level of scholarly analysis."	Agree siting is an issue for all energy sources. It's not claimed that 'cachet' alone will overcome other barriers.
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	32	23	32	23	-	-	-	1989 is not correct, it should rather be 1979 according to me ?	will check data
John Kessels (International Energy Agency Clean Coal Centre)	1	32	38	32	41	-	-	-	Bias towards developing countries values plus no references. Again language using the word vehemently and assuming that people will object is subjective, delete	may soften p32 line 42
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	32	34	-	-	-	-	-	Biofuels is an obvious example of where clean does not always mean green energy, other examples should be given to make this section more balanced.	No mention of biomass on lines cited
Patrick Matschoss (WG III TSU)	1	32	3	-	-	-	-	-	colloquial	text is clear and precise
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	32	5	-	-	-	-	-	Fuel is not available everywhere and this is reflected in the price for diesel generator. In some cases, economical balance can even be in favor in PV versus diesel.	Comment is true but not applicable in this para, which is about the natural resource not its 'price'
Paulo Cesar de Campos Barbosa (Petrobras)	1	32	41	32	42	-	-	-	Lack reference, therefore I suggest remove this sentence.	Will delete or amend last 2 sentences of page 32
Patrick Matschoss (WG III TSU)	1	32	41	33	1	-	-	-	language	Will delete or amend last 2 sentences of page 32
Ladislaus Rybach (Geowatt AG)	1	32	-	-	-	-	-	-	Section 1.4.1.3: awareness of even professionals is often still insufficient: lacking know-how about renewable solutions keeps e.g. architects to consider conventional heating systems instead of renewable ones.	will include this good example
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	32	29	32	31	-	-	-	This issue seems to be related to the proportions of scale.	perhaps true, but text is true as it is
Ralph Sims (Massey University)	1	32	18	-	-	-	-	-	Why only solar?	Rejected
Ralph Sims (Massey University)	1	32	7	-	-	-	-	-	Why quote 30%? Could be a wide range	will make clearer (e.g. 'may' or 'might' ; '~30%')
Ralph Sims (Massey University)	1	32	-	-	-	1.4.1	-	-	and elsewhere - little comments on heat sector.	Examples are claimed only to be illustrative not comprehensive
Javier Garcia (Renewable Energy Center)	1	32	-	-	-	1.4.1.1	-	-	"May I add this sentence after this section: ""Resource measurement is an additional step for RE projects, not found on fossil fuels ones, and there is a risk associated in the case the resource is not enough to run a project."""	comment is not true for coal mines
Richard Taylor (International Hydropower Association (IHA))	1	32	25	32	25	1.4.1.3	-	-	"Delete ""especially the more 'obvious' forms such as solar, wind and biomass"". Reason: Unclear what 'more obvious' means - it has political overtones."	will delete phrase
Peter de Haan (Ernst Basler + Partner AG)	1	32	38	32	41	1.4.2.1	-	-	language!	may soften p32 line 42

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Leen Gorissen (Flemish Institute for Technological Research)	1	32	-	-	-	1.4.2.1	-	-	See suggestion above about transition management. Also, it would be relevant to refer to theories of change management.	ch 11 (referred to here) has good section on change mgt
Richard Taylor (International Hydropower Association (IHA))	1	32	36	33	2	1.4.2.2	-	-	Comment: This whole section has tone issues inappropriate for an IPCC report.	will amend 'must' on line 11; rest of sec 1.4.2.2 is factual (but may need a ref)
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	33	27	33	27	-	-	-	"Remove ""Unfortunately"", refer to my previous comment (N\u00e954)"	replace "unfortunately" by "whereas"
Charles Kutscher (National Renewable Energy Laboratory)	1	33	21	-	-	-	-	-	"Replace ""dotting"" with ""installing"""	Accepted
Charles Kutscher (National Renewable Energy Laboratory)	1	33	24	-	-	-	-	-	Again I feel you are coming down too strong on the side of distributed vs. centralized renewables. We need both. Centralized allow us to tap into the best resources.	replace "may be" by "is often". Para also gives example of centralised.
Charles Kutscher (National Renewable Energy Laboratory)	1	33	4	33	11	-	-	-	Editing is needed (for example, e.g. must be followed by a comma).	Accepted
Antoine Bonduelle (EE Consultant)	1	33	9	-	-	-	-	-	Maybe give note to the page 30 on biofuel potentials so as to be more neutral	Not clear how comment applies
John Kessels (International Energy Agency Clean Coal Centre)	1	33	4	33	11	-	-	-	No reference for this paragraph, delete or reference	will add refs
Ralph Sims (Massey University)	1	33	15	-	-	-	-	-	Should be W/m SQUARED. Could quote Smil V. for comparisons between technologies.	Unit here is debatable but W/m2 is probably more correct.
Luc Gagnon (Hydro-Quebec)	1	33	6	-	7	-	-	-	The sentence says that hydropower preclude multiple uses. This is not the case when we consider that many hydro reservoirs as designed for multi-purpose uses, such as flood mitigation, irrigation.. Moreover, many reservoirs have the best fishing and recreation in a given region.	will qualify example (footnote?)
William Kyte (E.ON AG)	1	33	40	33	44	-	-	-	Unsupported political message	to check against ch.8 (or find ref)
\u25a1vind Christophersen (Climate and Pollution Agency)	1	33	16	-	-	-	-	-	We think that reference used here should be deleted, since this information is rather basic.	Accepted
Richard Taylor (International Hydropower Association (IHA))	1	33	7	33	7	1.4.2.2	-	-	"Delete ""e.g. a dam for hydropower."". Reason: Very few reservoir hydropower projects are single purpose. Most are multipurpose and used for a variety of purposes (e.g. power generation, irrigation supply, potable water supply, recreation, navigation, etc.). "	will qualify example (footnote?)
Ralph Sims (Massey University)	1	33	-	-	-	1.4.2.2	-	-	lack of refs again. Nothing on 3rd party ownership of technologies by landowners, local communities.	will add refs
Andries Kruger (South African Weather Service)	1	33	4	33	11	1.4.2.2	-	-	References are necessary for the statements made	will add refs
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	33	13	22	-	1.4.3.1	-	-	chapter 3 can cover this section.	Point is much wider than just for solar energy
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	33	23	-	44	1.4.3.2	-	-	chapters 6, 8, 11 can cover this section.	will shorten by x-ref to other chapters
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	34	5	34	8	-	-	-	"Remove the sentence ""In particular, \u00e9to acquire."". This language is note relevant in this SR"	will delete sentence (for brevity!)
Luiz A. Horta (Instituto de Recursos Naturais)	1	34	9	-	-	-	-	-	An important category of economic barrier is the trade barriers (apparently forgotten). They are perverse in two ways: reduce the possibility of efficient RE energy producers export their surpluses and stimulate inefficient RE in other countries.	will include para on trade issues (which come up in ch.2)
Ralph Sims (Massey University)	1	34	38	-	-	-	-	-	But how to estimate the life? This is also uncertain.	IN principle true, but economic [or at least technical] life of most RE technologies is now moderately well known
John Kessels (International Energy Agency Clean Coal Centre)	1	34	1	34	8	-	-	-	No reference for this paragraph, delete or reference	will add refs
Douglas Arent (NREL)	1	34	12	34	48	-	-	-	section should introduce LCOE calculation and references, discuss key terms and include modification for GHG prices for emitting technologies. Should also discuss fixed versus variable, fuel price impacts, etc.	LCOE etc is in Appendix , and referred to (used) in each relevant chapter
John Kessels (International Energy Agency Clean Coal Centre)	1	34	40	35	2	-	-	-	The question unanswered is why do bankers not invest if RE is a sound business proposition? Delete or answer with reference	will say more clearly that global financial; crisis made bankers more cautious

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
John SCOWCROFT (EURELECTRIC)	1	34	32	-	38	-	-	-	The uncertainties of a RE project may well be as large as a fossil plant. When building a hydro power facility, the construction risk can be severe, the investment will be exposed to the power market risk, where the possible fees/costs of operating may vary. The lack of fuel cost is not an argument for lower risk, as the volatility in income may be even higher.	para as written is still correct, but qualification in comment should be added
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	34	24	34	28	-	-	-	These lines are not correct. There are other cheapest ways to compensate the voltage level within an electricity network. Technically it is possible and cheaper than what is presented in this section. TSO are well aware of these technologies	Who are TSO? comment may be true, but it does not invalidate text.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	34	32	34	38	-	-	-	These lines are not very clear. Note that most of RES are subsidized (feed-in-tariff FIT, green certificates, etc.). When building a business-plan this information are known, and it is easier to assess to outset of a RES project.	This is what text says in different words
&#65533;vind Christophersen (Climate and Pollution Agency)	1	34	39	35	27	-	-	-	This chapter deals almost exclusively with aviation and we propose that it is rewritten taking a more general approach.	will shorten and generalise example
Steve Sawyer (Global Wind Energy Council)	1	34	2	34	8	-	-	-	This subject deserves serious treatment or omission. Given that China is the largest producer of both wind turbines and solar pv (and solar thermal) panels at present, the situation has changed dramatically from 1992 when the technology transfer provisions of the UNFCCC were negotiated.	But subject was still on table at Copenhagen (will give ref)
Douglas Arent (NREL)	1	34	39	35	27	-	-	-	too us centric and biofuels centric. Reference literature on capital and costs. See NREL, UNEP publications.	will shorten and generalise example
Antoine Bonduelle (EE Consultant)	1	34	12	-	-	1,4,4,1	-	-	Excellent synthesis presented as a list.	Thank you!
Takashi Hongo (Japan Bank for International Cooperation)	1	34	7	34	8	1.4.3.3	-	-	that are too costly' is seemed be subjected. Why costly should be clearly described. My suggestion is like 'compare to expected return cost for acquisition is expensive or such expression with reliable analysis.	will delete sentence (for brevity!)
Kirsty Hamilton (Chatham House)	1	34	32	34	38	1.4.4.1	-	-	"Recommend reflecting extensive work done by Shimon Awerbuch, whose work examined the matter of using finance portfolio theory to better understand the role of renewable energy in reducing risks associated with fossil fuel price volatility. A series of references can be provided (Shimon Awerbuch was invited to be a Contributing Author to AR4); and an academic book was published by Elsevier Science in 2008 to mark his untimely death: ""Analytical methods for energy diversity and security : portfolio optimization in the energy sector, a tribute to the work of Dr. Shimon Awerbuch / Morgan Bazilian and Fabien Roques, editors. Dr Awerbuch's website and publications remain active: www.awerbuch.com {this reference may also be relevant for Chapter 10]. Also of relevance may be: Gross, R., Heptonstall, P., Blyth, W., Risks, revenues and investment in electricity generation: Why policy needs to look beyond costs, Energy Economics (2009), doi:10.1016/j.eneco.2009.09.017. [A relevant background paper for the report preceding this Energy Economics article: Hamilton, K., November 2006, &#65533;Investment: Risk, Return and the Role of Policy&#65533;, Working Paper for Imperial College, London, commissioned for, and referenced in Annex II of Gross, R. et al UK Energy Research Centre report 'Investing in Electricity Generation: The Role of Costs, Incentives and Risks', May 2007]."	Will add reference and some text as suggested
Virginia Sonntag-O'Brien (REN21)	1	34	12	34	38	1.4.4.1	-	-	The issue of cost is very complex and this section does not summarise the issue adequately. I find the text confusing.	compare previous comment!

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Kirsty Hamilton (Chatham House)	1	34	-	-	-	1.4.4.2	-	-	"This section needs cross referenced with information in Chapter 11. An important factor at the outset is that there are significant and rising capital flows to renewable energy (reference New Energy Finance statistics of overall 2009 investment flows). Financiers will be seeking the most attractive risk-adjusted returns for their investment in the context of alternative uses for that capital, alternative geographic markets (if the capital is mobile) and a range of sub-sectors of renewable energy with different perceived technology risks. Different financial institutions will be involved in different parts of the technology chain from venture capitalists at the earlier stages of techology development to banks and private equity funds, and institutional investors at the mature technology end of the market (linked to scaling up deployment in the energy mix). In the latter category, newer technologies with perceived higher risks, or high capital costs will find it harder to get finance; but the policy context is also a critical factor in where capital is going - see Chapter 11. The issues arising from the financial crisis were not uniquely linked to the characteristics of reneawble energyy, but reflected more the availibility of debt and over what timeframe; and the level of risk banks were prepared to take. There are a variety of grey literature references linked to finance sector views of the financial crisis and its impact on renewable energy. These include: UNEP, SEFI, New Energy Finance, Frankfurt School of Finance and Management: 'The Global Financial Crisis and its Impact on Renewable Energy Investment, April 2009. Sections on the financial crisis in: 'Private Finance of Renewable Energy - A Guide for Policymakers', Chatham House, Bloomberg New Energy Finance and UNEP, December 2009. Hamilton, K., 'Unlocking Finance for Clean Energy: the Need for Investment Grade Policy', Chatham House Programme Paper, December 2009. "	will check against ch 11 and x-ref
Virginia Sonntag-O'Brien (REN21)	1	34	-	35	-	1.4.4.2	-	-	This section should be re-written or deleted. It is not all correct, and the focus on biofuels for aviation in a section on capital and financial risk is misplaced	will shorten and generalise example
Graham Pugh (U.S. Department of Energy)	1	35	32	35	33	-	-	-	"""appreciable spending"" is qualitative. The point may be valid, but would be made stronger in a more factual context. Indicate percentage of total energy R&D spending or similar metric."	Will cite ref; it's in FOD fig 10.5.5
Charles Kutscher (National Renewable Energy Laboratory)	1	35	23	-	-	-	-	-	"""bio fuel"" should be ""biofuel."" Clearly this section needs a fair amount of grammatical editing."	Accepted
Charles Kutscher (National Renewable Energy Laboratory)	1	35	13	-	-	-	-	-	"""cost plus"" should be ""cost-plus"""	Accepted
Aviel Verbruggen (University of Antwerp)	1	35	1	-	-	-	-	-	"""even sound business propositions""; for whom sound? Sound by what from what point of view? This is an example of involved science. When the market rejects, it may be unsound for some reason!"	will clarify
Charles Kutscher (National Renewable Energy Laboratory)	1	35	7	-	-	-	-	-	"""loosing"" should be ""losing."""	Accepted
Patrick Matschoss (WG III TSU)	1	35	3	35	4	-	-	-	"language; no lit in whole para"	will shorten and generalise example
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	35	15	46	23	-	-	-	"the abstract should be either deleted or rephrased; too many details that are not related to the subject "	Does not correspond to page numbering of chapter 1
Graham Pugh (U.S. Department of Energy)	1	35	3	35	22	-	-	-	"These paragraphs appear to be referring to a specific situation, i.e. ""the problem was□"", but no context is provided. This specific situation may be relevant, but should be put in the context of a more general discussion of the barrier being considered."	will shorten and generalise example
Aviel Verbruggen (University of Antwerp)	1	35	3	-	27	-	-	-	"this long story looks like a specific policy advice (not allowable in IPCC); the barriers aspects are not very evident"	will shorten and generalise example
Seth Dunn (GE Energy)	1	35	3	35	27	-	-	-	Aviation financing example seems long, could be tightened with main points preserved (and the remainder moved to a box in the financing chapter). Also, it could be read to suggest that financing for renewable electricity was not affected by the 2009-10 financial crisis (which it certainly was).	will shorten and generalise example
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	35	15	35	19	-	-	-	Explain acronyms DOE, DOD and USDA	will shorten and generalise example
Ralph Sims (Massey University)	1	35	3	-	14	-	-	-	Is this para just an example? Needs Refs.	will shorten and generalise example
Stan Rosinski (Electric Power Research Institute)	1	35	33	35	35	-	-	-	Note that recent trends have shifted toward widespread adoption of tax incentives for renewable energy.	will mention this trend, but heavy tax bias for oil etc remains

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	35	45	35	45	-	-	-	One more time, I do not think it is relevant to compete within RES (centralised vs. distributed) all RES technologies, whatever their size, and if developed in a sustainable way, should be part of the solution for curbing climate change	will generalise beyond decentralised
Stan Rosinski (Electric Power Research Institute)	1	35	30	35	32	-	-	-	Provide reference for nuclear R&D spending and comparison of renewable energy R&D spending.	Will cite ref; it's in FOD fig 10.5.4
Douglas Arent (NREL)	1	35	39	36	6	-	-	-	should also discuss regulated vs unregulated markets. Role of PUCs,	regulation is mentioned in next para. Will refer to ch 8 for institutional detail
Antoine Bonduelle (EE Consultant)	1	35	3	35	27	-	-	-	This is a local example from one country with lots of acronyms (USDA, DOE, DOD) and rather local explanations. This could be synthetized in one paragraph understandable for outsiders☐	will shorten and generalise example
Helena Chum (National Renewable Energy Laboratory)	1	35	3	-	27	-	-	-	This text should be cited in the integration chapter and elsewhere relative to availability of capital and financial risk.	will point out this text to ch 8 and ch 11
John Kessels (International Energy Agency Clean Coal Centre)	1	35	3	35	27	-	-	-	Who said all this where are the references for the numbers quoted, might want to mention that Air New Zealand is operating a test on the use of biofuel on one of their planes	will shorten and generalise example
Kirsty Hamilton (Chatham House)	1	35	3	35	27	1.4.4.2	-	-	I think the example of developing biofuels for aviation as an example of 'Availability of Capital and Financial Risk' needs set in context as it is referring to a early stage of technology/fuel development i.e. linked to the R&D part of the equation and may be better placed in 1.5.1 in this Chapter. Also there are issues that the biofuels market faces that are particular: the non-correlation between feedstock and fuel end of the markets, and as is pointed out, a set of complex risks and where those can be allocated. This means this is not necessarily the best or easiest example to use for the previous very general points about availability of capital and how risks may interact with that. There is an illustration box on the biofuels production market in 'Unlocking Finance for Clean Energy: the Need for 'Investment Grade' Policy', Chatham House Programme Paper, December 2009.	will shorten and generalise example
Ralph Sims (Massey University)	1	35	-	-	-	1.4.4.3	-	-	Is a useful IEA graph from 1970 to 2008 of R&D investments in energy for OECD countries.	this graph is Fig. 10.5.4 of FOD and will be referred to from chaper1
Virginia Sonntag-O'Brien (REN21)	1	35	-	-	-	1.4.4.3	-	-	This section should mention the stimulus packages and their contribution to renewables.	will do; USA is big example, also Korea and China
Javier Garcia (Renewable Energy Center)	1	35	-	-	-	1.4.5.1	-	-	"May I add this sentence as barrier related to Industrial structures: In some developing countries, the lack of an ancillary industry of RE, such as specialized consulting, engineering and procurement, maintenance, etc; implies higher costs for project's development and is an additional barrier for their deployment, "	will insert this in sec 1.4.5.1 or 1.4.5.2
Veronika Rabl (Vision & Results)	1	35	-	36	-	1.4.5.1	-	-	While there is some substance behind the statements, the wording is unnecessarily negative.	will re-consider wording
Douglas Arent (NREL)	1	36	23	36	36	-	-	-	"text does not address opportunities, but repeats the ""barriers"" discussion of earlier. "	Discussion at lead authors mtg has suggested some new ideas (not least about link to adaptation) to put in to replace current rather weak text
John Kessels (International Energy Agency Clean Coal Centre)	1	36	1	36	6	-	-	-	Belittle RE? I know of companies that see RE as a key element of their energy mix, I think you need to mention that some companies are also heavily reliant on RE such as Brazil, NZ, Norway and show both sides of the discussion	will re-consider wording
Seth Dunn (GE Energy)	1	36	2	36	5	-	-	-	Energy businesses are among the largest in any country, industrialised or developing. They have billions of dollars tied up in the existing infrastructure. Many executives of these large concerns belittle the potential contribution of RE to the national energy mix and have the economic clout to lobby ☐ often successfully ☐ against any moves that might threaten their entrenched position, e.g., by adding effective competition from RE. Hamilton (2007) graphically describes such efforts in Australia.' This is a rather extreme generalization of corporate behavior related to RE and ignores the considerable investments made by large companies in RE, particularly over the past 5 years. Better to point out incumbent behavior in the energy industry that may slow RE deployment while noting changes in such behavior in recent years.	This comment suggests a good balance
Patrick Matschoss (WG III TSU)	1	36	8	36	11	-	-	-	move to 1.4.1.2	will re-consider what goes in 1.4.1.2 and what in 1.4.5.2
Patrick Matschoss (WG III TSU)	1	36	12	36	18	-	-	-	move to 1.4.4.2	This para is about (micro-)finance. May need to rename sec 1.4.5.2 to match
Patrick Matschoss (WG III TSU)	1	36	1	36	6	-	-	-	prescriptive language	will re-consider wording
Stan Rosinski (Electric Power Research Institute)	1	36	2	36	3	-	-	-	Recommend softening language as major energy companies have begun to promote adoption of renewables.	will re-consider wording

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ralph Sims (Massey University)	1	36	23	-	28	-	-	-	Repetition	Discussion at lead authors mtg has suggested some new ideas (not least about link to adaptation) to put in to replace current rather weak text
Douglas Arent (NREL)	1	36	8	36	21	-	-	-	should focus on institutional issues to be consistent. Here, role of businesses, SMEs, NGO's, etc,.	will re-consider what goes in 1.4.1.2 and what in 1.4.5.2
John SCOWCROFT (EURELECTRIC)	1	36	1	-	6	-	-	-	The description seems biased and not representative of the current situation	will re-consider wording
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	36	5	-	6	-	-	-	The last sentence should be deleted, the given information is irrelevant	will re-consider wording
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	36	1	36	5	-	-	-	To be removed. Not relevant in this SR	will re-consider wording
Aviel Verbruggen (University of Antwerp)	1	36	5	-	6	-	-	-	unclear?	previous comments suggest it is all too clear, though fact is disputed.
Ralph Sims (Massey University)	1	36	19	-	21	-	-	-	Why only PV quoted?	This is just one illustrative example (and it has a reference!)
Vicente Schmall (Petrobras S.A.)	1	36	1	36	6	1.4.5.1	-	-	It should removed due to an inappropriate comments. It sounds like politics comments.	will re-consider wording
Leen Gorissen (Flemish Institute for Technological Research)	1	36	-	-	-	1.5	-	-	It would be more comprehensive if the text referred to literature about adaptive governance and transition management. For references, see above and below	Some such text is now in ch.8, but could be referred to here
Aviel Verbruggen (University of Antwerp)	1	37	21	-	-	-	-	-	"""Market barriers"": how is this defined, not in section 1.5; where else?"	market barriers also defined in intro to sec 1.4 and in chapter 11; these will be reconciled in SOD
Aviel Verbruggen (University of Antwerp)	1	37	6	-	-	-	-	-	"it is not a ""European"" feed-in but ""German"" (or another country)"	Accepted
Ladislaus Rybach (Geowatt AG)	1	37	-	-	-	-	-	-	"Section 1.5.1: Besides R&D, pilot and demonstration (P&D) facilities are also important; they are indispensable for market acceptance."	Accepted
Seth Dunn (GE Energy)	1	37	4	-	-	-	-	-	""Tax concessions' is not accurate□suggest ""tax credits.""""	use both terms (usage differs between countries)
Ralph Sims (Massey University)	1	37	26	-	-	-	-	-	Could add comment on IP and technology transfer risks.	maybe in sec 1.4.3.3 - presumably comment refers to risk to IP holder
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	37	7	37	7	-	-	-	FIT is not the only solution for an effective development of RES, e.g. Spain has another one which as lead to an important deployment of RES technologies (wind and solar for instance)	but point is more about need for long term policy FIT is one example
Ralph Sims (Massey University)	1	37	1	-	7	-	-	-	Heale G. Economics of RE. National Bureau of Economic Research, Working Paper 15081 has a good figure on this.	useful reference,- will include
Graham Pugh (U.S. Department of Energy)	1	37	6	37	7	-	-	-	Important to note that long-term subsidies must take economic impacts into account. If the subsidies are not sustainable in the long term, the boom and bust cycle will happen anyway - witness the employment situation in the RE sector in Spain.	This point made in previous lines of para
Helena Chum (National Renewable Energy Laboratory)	1	37	18	-	21	-	-	-	US is actually co-funding first-of-a-kind commercial developments (e.g., 4 cellulosic ethanol and other fuels) and other technologies as well as further deployment with loans.	This exception noted
Takashi Hongo (Japan Bank for International Cooperation)	1	37	3	37	7	1.5	-	-	Another example of 'switch on and off' is roof-top-PV in Japan. Once stop subsidies, then install volume dropped. For this purpose, it is better to use historical data by IEA(table 3 on page 6 http://www.iea-pvps.org/products/download/rep1_18.pdf)	useful reference,- will include
John Twidell (AMSET Centre)	1	37	34	-	-	1.5.2	-	-	"This section needs to be much more instructive about the large range of institutional support mechanisms used for renewables (and other technologies). Grants, tax relief, obligations, certificate trading and FEED-IN TARIFFS etc. A table is needed showing the options. Perhaps these are covered elsewhere; if so refer to those sections. Institutional support for renewables is vital, as indeed for any new beneficial technology. "	Will refer here explicitly to chapter 11 (which treats theses issues in detail)
Aviel Verbruggen (University of Antwerp)	1	37	-	-	-	1.5.3	-	-	pleasant to read but not IPCC ASSESSMENT standard	will add more refs or x-refs to ch11
Seth Dunn (GE Energy)	1	38	40	-	-	-	-	-	"Note that Japan has resumed its solar subsidy program (though in different form). Perhaps rephrase ""After dropping□Japan fell□"""	Will edit
Patrick Matschoss (WG III TSU)	1	38	21	38	44	-	-	-	"value added?; suggest to delete"	Will supply references of specific policies

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Steve Sawyer (Global Wind Energy Council)	1	38	37	38	40	-	-	-	China is now by far the largest producer of both wind turbines and PV panels.	Agreed. This will be rewritten t clarify this point.
Ralph Sims (Massey University)	1	38	36	-	44	-	-	-	Could quote IEA Deploying RE report 2008. Also WEO 2008 quoted $300bn/yr for FF subsidies.	Thank you for references
Patrick Matschoss (WG III TSU)	1	38	11	38	12	-	-	-	create□ unclear	Will clarify in SOD
John Kessels (International Energy Agency Clean Coal Centre)	1	38	21	38	44	-	-	-	Need to reference some of these claims	Will provide reference in SOD
Patrick Matschoss (WG III TSU)	1	38	1	38	44	-	-	-	no sources, text needs to be based on sources	Will supply reference
Patrick Matschoss (WG III TSU)	1	38	1	38	44	-	-	-	not a single source	Will supply reference
Emmanuel Branche (Electricit□ de France (EDF))	1	38	42	38	42	-	-	-	Please note that there is no incentive for nuclear development in European Union for instance. This sentence is not correct. To be removed	Will clarify that there are major subsidies in Asia and North America
Patrick Matschoss (WG III TSU)	1	38	21	38	44	-	-	-	select examples/ narrative necessary? Suggest to delete	Will supply references of specific policies
Patrick Matschoss (WG III TSU)	1	38	1	38	12	-	-	-	sentence unclear	Will clarify in SOD
Patrick Matschoss (WG III TSU)	1	38	1	38	2	-	-	-	sentence unclear	Will rewrite this sentence to clarify
Patrick Matschoss (WG III TSU)	1	38	10	38	2	-	-	-	sentence unclear	Will rewrite this sentence to clarify
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	38	36	38	44	-	-	-	The entire paragraph is misplaced because it is not contributing to the subject of the sub-section.	It is showing a combination of successful and failed policies
□vind Christophersen (Climate and Pollution Agency)	1	38	34	38	35	-	-	-	This sentence is unclear - does it refer to California or is at a general advice on alternative policy?	Will clarify and put in reference
Ralph Sims (Massey University)	1	38	1	-	8	-	-	-	Where? Could note that deployment i9s usually slow - e.g. steam engines, ICE engines took decades too.	Accepted
Kirsty Hamilton (Chatham House)	1	38	3	38	8	1.5.2	-	-	"This needs teased out, if retained. Are the oil price shocks those of the 2007-2008 period i.e. high and rising prices? If it was recent high prices (as opposed to price shocks at the end of the 1970s) then it would probably not be correct to say that interested faded. In what market/country is the tax advantage being referred to in line 8; if it is one country (which I expect) is it true that the market collapsed? In the case of solar hot water, as a 'technology ready for the market' - I assume this means mature (already commercially tested?) in which case this does not belong in this section but the next one, as this section is specifically dealing with the valley of death, rather than scaling up deployment."	This needs clarification, and we will be more clearly written in SOD
Vicente Schmall (Petrobras S.A.)	1	38	38	38	40	1.5.3	-	-	"The phrase initiated by the word ""China"" and end by the expression ""PV Tecnology"" should be removed to avoid repetition."	Will edit
John SCOWCROFT (EURELECTRIC)	1	38	-	-	-	1.5.3.	-	-	Surprised to see that the very comprehensive and binding renewable targets of the EU are not covered here.	Will add
Graham Pugh (U.S. Department of Energy)	1	38	9	39	21	1.5.3	1.5.4	-	These sections are devoid of references and seem largely anecdotal. Policy options need to be clearly stated and pros/cons outlined.	References will be supplied
Ralph Sims (Massey University)	1	39	30	-	-	-	-	-	"2004 is ""recent""?"	Will review and decide
Luiz A. Horta (Instituto de Recursos Naturais)	1	39	-	-	-	-	-	-	"For instance, from the last RFS report (EPA, 2010): ""The expanded use of renewable fuels is expected to reduce greenhouse gas emissions by 138 million metric tons when the program is fully implemented in 2022."" "	What line number?
Paulo Cesar de Campos Barbosa (Petrobras)	1	39	29	39	30	-	-	-	"Lack of reference for this affirmation. There are important oil enterprises investing in renewable energy with interest in the development of these markets. This information are available in the web sites of the companies, some examples are: http://www.bp.com/sectiongenericarticle.do?categoryId=9027822&contentId=7050727, http://www.chevronenergy.com/pdf/ces_brochure.pdf http://www2.petrobras.com.br/ri/port/ConhecaPetrobras/EstrategiaCorporativa/pdf/PN_2009-2013_Port.pdf"	will address this conflict
Peter de Haan (Ernst Basler + Partner AG)	1	39	10	39	12	-	-	-	"Please delete ""hybrid electric vehicles"" from this list, as the strength of HEV is being NOT dependent on new-to-be-build infrastructure. Also one should not put PHEV instead of HEV here, as also PHEV are not dependent on such new infrastructure being put in place in full."	Certainly true for introduction. Will supply references for later discussion
Emmanuel Branche (Electricit□ de France (EDF))	1	39	4	39	4	-	-	-	"Rewrite the sentence in order not to use ""we"""	Will make the change

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Helena Chum (National Renewable Energy Laboratory)	1	39	19	-	21	-	-	-	"The text: □bagasse, which is otherwise wasted, is gasified and used to operate gas turbines for electricity production while the waste heat is used in the sugar to bioethanol refining process. The actual technology currently used is still combustion and gas turbines are not in frequent use because of their cost. The impact is quite correct -- Brazil is taking advantage of this electricity production to supply electricity in the summer and period when the hydro is at its lowest. This hybrid combination of renewable resources is avoiding additional construction of hydro in Brazil. About 3000 MW average were produced in Brazil 2009/2010 from bagasse surplus or with mechanization, bagasse and crop residues, will provide even greater surplus. UNICA projection is about 8000 MW for 2012 (1 ton of sugar cane produces 250 kg of bagasse, 204 kg de straw, 1 ton of cane (only bagasse) generates 85,6 KWh for exporting, 1 ton of cane (bagasse + straw) generates 199,9 KWh for exporting, the straw lower heating value = 1,7 bagasse lower heating value, capacity factor = 0,5. Note: ave.MW = MW firm capacity"	This is very informative information. Can one get a reference to these data?
John Kessels (International Energy Agency Clean Coal Centre)	1	39	30	39	30	-	-	-	2004 is not recent, delete recent and just say two studies	Will review and decide
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	39	-	-	40	-	-	-	Arguably direct and indirect effects can potentially occur with any large change in land use, e.g. CSP, hydropower, etc. not just biofuels.	Will review and decide
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	39	9	-	-	-	-	-	Building codes are of the utmost importance for RES integration both in existing and new buildings. Thermal performances' expectation will allow encouraging RES integration and energy demand reduction through appropriate insulation.	Agreed. This will be rewritten to clarify this point.
Patrick Matschoss (WG III TSU)	1	39	4	-	-	-	-	-	language	Will correct
Luiz A. Horta (Instituto de Recursos Naturais)	1	39	34	-	-	-	-	-	Life cycle analysis is too important to be present so superficially, without any numbers or values, essential to inform about real RE energy.	Will review and decide
Ralph Sims (Massey University)	1	39	20	-	-	-	-	-	Most is combusted - not gasified. Refer to Chap 2.	will check and clarify
Luiz A. Horta (Instituto de Recursos Naturais)	1	39	19	-	-	-	-	-	So far I am informed, currently there is any plant gasifing bagasse in Brazil to produce power. There are just few experimental units.	Data supports the original statement
Patrick Matschoss (WG III TSU)	1	39	29	-	-	-	-	-	suggest new para	Will review and decide
Luiz A. Horta (Instituto de Recursos Naturais)	1	39	-	-	-	-	-	-	The above reduction would be equivalent to taking about 27 million vehicles off the road (EPA, 2010).	What line number?
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	39	29	39	33	-	-	-	This is not an external effect. It a re-allocation of economic resources that might have negative impacts, but it is not an externality.	Will review and decide
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	39	26	-	-	-	-	-	What does the term option value say?	The difference between the intrinsic value of an option and its actual value
Ralph Sims (Massey University)	1	39	4	-	-	-	-	-	Why not heat too?	Will mention heat and transport
Vicente Schmall (Petrobras S.A.)	1	39	21	39	21	1.5.4	-	-	"Should ad at the end this paragraph that ""Brazil Opens Word□s First Ethanol-Fired Power Plant in Brazil"", January 2010, a 87 megawatt power plant, operating a GE turbine. According to GE there are 770 turbine like that one which could fire ethanol. The Petrobras-GE development would be opening a new market to ethanol use. See: www.chem.inf/News/2010/International-News-Brasil-Opens-First--Ethanol-Fire-Power-Plant "	Useful information. Will probably be in Chapter 2.
Kirsty Hamilton (Chatham House)	1	39	2	39	3	1.5.4	-	-	I would add water, and trade policy as well, consider food security as well.	Gold suggestion; we will add
Aviel Verbruggen (University of Antwerp)	1	40	24	-	-	-	-	-	"""all"" versus ""many""?"	Will clarify differences in current system use versus creating new systems
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	40	15	40	18	-	-	-	"""The technical capacity is available (□), so it is an question of political will (□). The costs are acceptable (□)"" RWEI comment: Really?"	Comment unclear. TSU should clarify with expert reviewer
Emmanuel Branche (Electricit□ de France (EDF))	1	40	14	40	15	-	-	-	"The political announcement of Germany to reach 100% of RES in 2050 is very important and good. However regarding the technical feasibility of this solution is another aspect. Even the first project ""ISET renewable combi-plant"", see chapter 8 of this SR, is not fully realistic. Indeed, Germany will require electricity imports from its neighbouring countries, and that electricity should not be 100% RES based ... it is not possible to conclude regarding this sole study"	Will refine in SOD
Ralph Sims (Massey University)	1	40	11	-	-	-	-	-	But at what cost - See IEA Deploying RE report.	Will check costs in cited articles to explain this
Ruben Guisson (Flemish Institute for Technological Research)	1	40	24	-	-	-	-	-	Concerning the quote 'all RE forms must function within the current system'. This quote does not immediately indicate the concept of 'energy transition management'. The text sets the precondition that 'all RE forms must function within the current system'. However from the viewpoint of 'energy transition management' and the question 'how/what must our energy supply system look like in 2050' the currently existing grid system can be questioned as such.	Will clarify differences in current system use versus creating new systems

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Graham Pugh (U.S. Department of Energy)	1	40	14	40	22	-	-	-	Government goals and statements from Ministers are not assessments of science. Please focus on data and analysis in the peer-reviewed literature.	References being refined. However, in assessing potential and policies regarding renewable energy, it is sometimes necessary to refer to govt. reports
Javier Garcia (Renewable Energy Center)	1	40	8	40	12	-	-	-	It is not said in the sentence, in what feed-in-tariff has been more effective than RPS. It should be important to complement the sentence with the specific features that have had a bigger growth (or whatever) with FIT.	We will define a bit more clearly the comparison in these regions regarding FITs and RPSs
Paulo Cesar de Campos Barbosa (Petrobras)	1	40	9	-	-	-	-	-	Please check reference (Sawin, 204 a, or b?)	OK
Veronika Rabl (Vision & Results)	1	40	26	41	1	-	-	-	The sentence is not clear.	Will refine in SOD
□vind Christophersen (Climate and Pollution Agency)	1	40	14	40	15	-	-	-	This has already been mentioned twice in this chapter (line 1-2 on page 16, line 39-40 on page 30).	Will refine in SOD
Leen Gorissen (Flemish Institute for Technological Research)	1	40	24	-	-	-	-	-	This statement is not balanced and possibly endangers the nuanced objective of the report. Why do all renewable energy forms have to function within the current system? I understand that it would be favourable this way, yet a perspective like this one might be one of the greatest barriers to evolve towards genuine sustainable energy systems. How can you reconcile such a statement with passive houses, with electric mobility etc? A large number of scientific papers have already been published stating that drastic change is the only way out of the current unsustainable and undesirable practices and habits. A complete overview would require to include such viewpoints as well. References can be found in the comments below.	Will clarify differences in current system use versus creating new systems
□vind Christophersen (Climate and Pollution Agency)	1	40	9	40	12	-	-	-	What is meant by more effective in this sentence (economic efficiency? or implementation?) and is it going to last with a higher share of renewables. It seems that some countries need to adjust their foreign policy over time.	will define what it is affective in
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	40	-	-	-	1.5.3.	-	-	should be deleted', the information given in sub-section 1.5.3. is irrelevant	Section 1.5.3 is not on page 40. Unclear what section the expert reviewer refers to. TSU should check with expert reviewer.
Aviel Verbruggen (University of Antwerp)	1	40	-	-	-	1.5.6	-	-	section showcases several weaknesses of REFERENCING (as the whole chapter does)	References being refined.
John SCOWCROFT (EURELECTRIC)	1	40	-	-	-	1.5.6.	-	-	Very many references to Germany in chapter 1, also in this section	References being refined.
Aviel Verbruggen (University of Antwerp)	1	41	1	-	2	-	-	-	"""Most countries have found ..."""; how does a country finds? In many countries it has been / still is a fierce and tricky debate between incumbents and independents, etc.... REFERENCES!"	Will refine text and reference as appropriate
Daniel Kammen (University of California, Berkeley)	1	41	-	-	-	-	-	-	"Property Assessed clean energy (PACE) financing is not discussed in the text. It is an important and new financing mechanism that is growing rapidly in use. A website devoted to this mechanism is http://rael.berkeley.edu/financing A set of references on this is: Fuller, M, Portis, S. and Kammen, D. M. (2009) 'Towards a low-carbon economy: municipal financing for energy efficiency and solar power', Environment, 51 (1), 22 □ 32; Fuller, M., Kunkel, C., and Kammen, D. M. (2009) Guide to Energy Efficiency and Renewable Energy Financing Districts for Local Governments (The City of Berkeley, CA and the University of California, Berkeley); Kammen, D. M. (2009) 'Financing energy efficiency', Earth 3.0 (Scientific American), 21. "	Will review references and include materials as appropriate
Mauricio Sauerbrey (Energ□Renovable (ENERSIA))	1	41	7	41	8	-	-	-	"recommended to be ""Where these issues have been addressed with firm and decisive government involvement the penetration of renewable energy has been greatest.""""	Will refine sentence in SOD
Ralph Sims (Massey University)	1	41	-	61	-	-	-	-	Are all these refs actually in the text? Suspect not.	References being refined in SOD
Daniel Kammen (University of California, Berkeley)	1	-	-	-	-	-	-	-	"Added attention is needed on the job creation potenital of not only renewable energy, but also energy efficiency and investments in the new/smart(er) grid. Some references and data sources include: Wei, M., Patadia, S. and Kammen, D. M. (2010) ""Putting renewables and energy efficiency to work: How many jobs can the clean energy industry generate in the U. S.?"" Energy Policy, 38, 919 - 931 AND Engel, Detlev and Kammen, Daniel M., with Wei, Max, Patadia, Shana, and Januario, Cassia S. (2009) Green Jobs and the Clean Energy Economy Copenhagen Climate Council □ Thought Leadership Series Report #8 (Copenhagen, Denmark)."	Being addressed in co-benefits. Will review references

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Jean-Yves Caneill (Electricit&#65533; de France (EDF-SA))	1	-	-	-	-	-	-	-	"As a general remark in this chapter, there should not be discrimination between large vs. small RES, or also between centralised vs. decentralised. All RES should be part of the solution and the appropriate balance between centralised vs. decentralised will depend strongly among other factors from the national circumstances. The technical potential are not consistent within the whole report and the table present in this chapter sets some wrong values whereas the one present in the chapter 10 has potential values correct. Consistency is necessary all along the report At last hydropower with reservoirs and pumped strorage power plants can be considered as a major source of energy storage I think that a study that was made in France in the last three years could be valuably quoted in this report either in Chapter 1 or 10 . It is called ""Scenarios for transition tpwards a low carbon world in 2050 : What's at stake for heavy industries ?"". In particular two scenarios of mitigation to lower by 2 the global emissions are presented one called ""mimetic"" that reproduces the habits of the past and one ""non mimetic"" where more renewable energy is introduced at the decentralised level, together with transport and towns infrastructure looked at appropriately. The study was done by a consortium composed by : IDDRI, EPE and industrial companies. The reports can be found at : http://www.iddri.org/L'iddri/Fondation/Programme-de-recherche-Scenarios-sous-contrainte-carbone and a publication is in course of writing. "	The Chapter does distinguish and explain large vs. small -- it does not discriminate. Agree that potential values need to be reconciled with latest information (the technical chapters and chapter 10 were written concurrently with Chapter 1 -- leading to some difficulty in version control). Will fix in SOD. Will review the reference.
C&#65533;ic Philibert (International Energy Agecy)	1	-	-	-	-	-	-	-	"Chapter 1 is somewhat dissapointing for it both exagerate some of the virtues of renewable energy while possibly missing some important points in the nexus climate change and renewable energy. The first would be to state that, although climate change is mainly driven by the burning of fossil fuels, it does results from an increased capacity of the Earth-Atmosphere system to trap a little more of the solar energy that hits our planet. In itseflt his is an eloquent demonstration of the abundance of solar energy available to us. The second point relates to costs. While section 1.1.5 makes an eloquent argument that deployment of RE reduces long term costs of energy, one should also recognise that in the short term RE is often a costlier option, making the claim that RE is ""central"" to achieving the Millenium Development Goals far-fetched. Many economists believe that one should price CO2 and let the market select the cheapest emission reductions. However, cost-effectiveness should be looked at in a dynamic perspective. All normative models showing long term GHG emission reductions embark a growing share of renewable over time, and the current greater costs of many of these technologies, whether compared to other options for proving energy (e.g. fossils) or to other options for reducing emissions (e.g. energy savings) overlook the need to reduce long term costs of RE through a combination of R&D efforts and learning processes, themselves occuring if some early deployment is taking place (more on section 1.1.5 in comment 50)"	Agree that cost of RE is a critical barrier. This will be highlighted in barriers and policy discussions.
Veronika Rabl (Vision & Results)	1	-	-	-	-	-	-	-	"Discuss the terms ""renewable"" vs ""sustainable.""""	Being addressed in SOD
Arthur Lee Lee (unknown)	1	-	-	-	-	-	-	-	"I talked to Bill Moomaw about this at the IPCC Expert Review meeting in February in DC. I am suggesting that Chapter 1 is a good place in the report to include brief description of methodologies and issues in estimating the resource potential of each renewable energy source. This would be a very useful function for Chapter 1 to be able to highlight any cross-cutting issues about clarity of defining ""resource potential,"" ""technical potential,"" and ""economic potential."" The most controversial ""mitigation potential"" would be scenario-dependent and may be best described in detail in Chapter 10."	A new narrative structure is being applied to chapter to provide an introduction and summary information on potentials.
Javier Garcia (Renewable Energy Center)	1	-	-	-	-	-	-	-	"It would be valuable to include a table with energy equivalences (J; Btu; cal, kWh; Toe; etc) and energy prefixes (kilo, mega, giga, tera, etc). It should be valuable also to include, in each chapter, a table with acronyms."	Could include in annexes. Note IPCC policy is to use SI units
Haroon Kheshgi (ExxonMobil Research and Engineering Company)	1	-	-	-	-	-	-	-	"Many sections of this introductory chapter do not assess any identified literature yet make conclusions. Suggest that all of these sections either be deleted or that they assess a balanced and comprehensive set of literature. "	Being addressed in SOD

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Steve Sawyer (Global Wind Energy Council)	1	-	-	-	-	-	-	-	"The chapter could be shortened by spending less time on a) climate science and rehashing the AR4; b) less time on efficiency details□the main point is made early on but is revisited several times; and c) less time talking in vague terms about the MDGs□if the latter is a specific mandate of the report, then it should be a more detailed connection with individual MDGs, and this should occur mostly in Chapter 9. Furthermore, as so many of the references are vague or missing, it is difficult to assess some parts. Furthermore, it doesn't seem to draw as much as it should from the main chapters of the report...perhaps that will come in the next iteration...?"	The chapter sets the scene for using RE to mitigate climate impacts. As such some summary of AR4 is important. The summary is very brief but will be refined. The other suggestions are being addressed as part of refining narrative structure.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	-	"The chapter is called ""renewable energy and climate change"". The content is very much biased towards the renewable energy part. Additionally, the issue of energy efficiency is put forward, which is not the primary matter of neither the chapter nor the entire report. The content to be expected from the the title could be distinguished in two major parts. First, what is the effect of climate change on renewable energy sources (RES)? Second, what is the contribution of RES to climate change mitigation? The first question is not addressed. The second question is addressed in a biased way. The general line of argumentation in the chapter is that applying RES is a objective in its own, and that positive synergies exist of which climate change mitigation is just one. The relationship between RES and climate change is only in one direction: application of RES implies climate change mitigation. This hypothesis is not questioned! There is - however - a lifely debate on this subject; see attachement SRREN_Draft1_REVIEW_Bauer_Nico_Material2.pdf. The main line of critique is that investments in RES (or other low carbon options like energy efficiency) are not reducing CO2 emissions because the utilization of fossil fuels is not replaced. This leads to the conclusion that the mitigation of climate change requires policies related to CO2 emissions. In turn, the policy alters prices and improves the competitiveness of RES investments. Hence, climate change mitigation implies RES investments. The argumentation in the chapter is: RES investments imply climate change mitigation. The problem simply is that RES investments are not sufficient for mitigating emissions because using fossil fuels and emit the CO2 into the atmosphere is not controlled. Moreover, RES investments are not indispensable for climate change mitigation because there are other mitigation options. This point has also do be seen in the context of the overall report. The scenarios in Chapter 10 apply in some way constraints or taxes on emissions and ask for the deployment and utilization of RES. The scenarios are not setting policies for RES deployment and ask for the level of climate change mitigation; see especially Ch.10.2.2, Fig. 10.2.4, Fig. 10.2.5, Fig. 10.2.6, Fig. 10.2.9. Chapter 1 must coordinate its statements with Chapter 10. "	Chapter 1 is coordinating statements with Chapter 10. Note that focus of the report is on RE -- so that aspect of the Chapter makes sense. The new narrative structure does address other issues.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	-	"The introductory chapter to a report is usually devoted to the general framing of the issue at hand to a particular audiance that has a certain interest in reading the text. It should introduce the reader into the overall problem, the major sub-problems and its relation to other major challenges. It should be general, comprehensive and direct the attention of the reader to essential points. An introductory chapter can introduce the most important results of the report. Hence, close colaboration is necessary with other chapters. What an introductory chapter should not aim at is to tackle problems on its own that are the special subject of subsequent chapters because this results in a report within the report. Unfortunately, the chapter in its current status tries to do that. This gets especially problematic as some ""truths"" are repeated over and over again that are at best supported by examples of technical solution approaches and not by scientific evidence at the system level. There are four major points that can be identified in this direction. First, renewable energy investments contribute to climate change mitigation. This hypothesis is not questioned. There is no automatic mechanism that avoids the utilization of fossil fuels only because more renewables are deployed. Second, the positive synergy between energy efficiency and renewable energy technologies. It is not clear that there is a undeniable relationship between both. The authors should pose this an open question and refer to scientific evidence in the one or the other direction. Third, renewable energy technologies are decentral by nature and netword infrastructure investments (that are a characteristic of fossil power plants) are obsolete. Also this hypothesis is not questioned. There is ample evidence that the opposite can be expected. For example, the DESERTEC project of producing renewable energy in North Africa and building-up transmission lines to export part of the electricity to Europe. The transmission lines are also considered to balance wind energy variability between North Africa and Europe that is known to be negatively correletad at the seasonal level. Fourth, renewable energy deployment supports development goals. Also this claim is not justified to be true without exception. It would be interesting to know, which conditions are most crucial in order to generate a positive synergy between both. A final point about the audiance and the relationship to the authors. The IPCC is an international scientific body that is supposed to provide a scientific assessment to policy makers so that they agree on a common scientific basis that gets very important for international negotiations. The chapter in its current form misses this point. I cannot see the value added for a policy maker who needs preparation for international negotiations. The chapter contains dozens of examples that are important, if you like to build a house, but this is not essential for international negotiations about climate change, technology cooperation and so forth."	These are important points that are being addressed with new narrative structure and SOD. The chapter is constrained by length. Re: policy relevant information -- the Summary for Policy Makers addressed this.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Leen Gorissen (Flemish Institute for Technological Research)	1	-	-	-	-	-	-	-	"The shift from fossil-based to renewable energy sources may provide an opportunity to revise our current economic system towards a more sustainable state as well. To be comprehensive, next to the tradtional economical approach that forms the basis of the SRREN report, we would suggest to include innovative new approaches relevant for bioenergy. E.g. Costanza 2009. Towards a new sustainable economy. Real-world economics review 49; Tukker A., et al. 2008. System innovation for sustainability. Perspectives on radical changes to sustainable consumption and production. Greeleaf Publishing, Sheffield, UK, 470pp; Beddoe et al. Overcoming systemic roadbloaks to sustainability: The evolutionary redesign of worldviews, institutions and technologies. PNAS 2009, 106: 2483-2489; Costanza R., et al 2000. Managing our environmental portfolio. Bioscience 50: 149-155. "	New narrative structure highlights these co-benefits. Will review the suggested references.
Aviel Verbruggen (University of Antwerp)	1	-	-	-	-	-	-	-	"The text reads smoothly, at occasions it is almost as good as story-telling. While it is pleasant at the start of a scientifc report to read a well-written, easy text, the approach has more drawbacks than advantages, e.g.: it announces a biased impression of the other coming up chapters that will be / should be tedious scientific assessments. ASSESSMENT is the crucial term in IPCC reports: authors are expected to review the PEER-REVIEWED LITERATURE as comprehensively and as inetnsively as may expected of top experts familiar with the field and with the topics they cover. On this point chapter 1 does not meet the expectations. There is a 20 page long list of references, but only few are used in the text; this is in conflict with the basic rule of publishing: every reference in the text should be in the lts, and vice versa. In addition, the text has many cases that shows preference for ""soft"" sources, secondary sources (describing or summarizing ideas from others), for non PR (Peer-Reviewed) publications, own-referencing, ... This is what at the moment is heavily charged on the IPCC as a whole. The attack may come from dubious sources, but that is irrelevant. IPCC authors must avoid and double-check every weaknesses in referencing, being the first-hand metrics of true assessment."	Referencing being addressed in 2OD
Zolt&#65533;n Somogyi (Hungarian Forest Research Institute)	1	-	-	-	-	-	-	-	"The use of energy from any source must not only be analysed energetically, but also concerning the net GHG balance of the system based on the source, and by comparing this balance with that of other systems. This seems especially justified as GHG emissions are blamed for causing climate change. The chapter only marginally mentions ""life cycle analysis"", and exludes the explicit and quantitative consideration of lack of knowledge as a barrier to take sound and informed decisions on energy alternatives. IPCC could and should discuss, at least by demonstrating, a comparison between various systems using GHG data to make it clear that much research in this area must be undertaken, and that energy alone cannot be a justification for the application of, or suggesting, any type of renewable source of energy. This topic is dealt with as a sub-sub-chapter within e.g. in Chapter 2, however, if a separate chapter (Ch. 10) is devoted to the mitigation potential and costs, at least a separate section should be devoted to preliminary results, issues to be dealt with, and potential pitfalls of not knowing the complete GHG balance of the optional energy systems on the GHG balance. Alternatively, the concept of ""potential"" maximum/minimum impact of renewables in terms of possible reduction of GHG emissions as opposed to other energy systems could be explored."	Agree that overall GHG emissions is critical. Will highlight as issue/need for research. Chapter 10 should also pick up this theme.
Dr. Ishwar Hegde (Suzlon Energy Ltd)	1	-	-	-	-	-	-	-	"This chapter is too long and the key message is not coming out clearly. While it looks like the assimilation of the facts given in the other chapters, there is enough scope for condensing this to a key message. The key storyline could be woven around a) Challenge of meeting the growing energy needs, b) unsustainable fuel mix and the need for change & c) how RE can not only have a large potential to supply energy while playing a significant role in achieving climate change mitigation and meeting millennium development goals. While the executive summary covers some of the above messages, the overall chapter fails to cover all the points in a structured way. Ideally, I feel IEA energy technology perspective can be a good base document for this purpose. The overall message should drive towards the fact that RE/ wind cannot be considered as a discretionary investment item but is turning into a basic necessity to enable growth while ensuring survival of the planet."	Low carbon future being addressed in new narrative structure. Coordination occurring with other Chapters in SOD
Angel DE LA VEGA NAVARRO (National Autonomous University of Mexico)	1	-	-	-	-	-	-	-	"This chapter needs to be fully revised or rewritten. The global crisis is at the heart of many processes related with energy and climate, but it is mentioned only a few times without deepening in the analysis. For example: 'Despite the worldwide economic recession of 2008-2009' (page 13, line 16). Some lines could be a starting point in order to rebuild this chapter in a historical perspective, putting the present crisis at the center of the analysis: 'The international community□s role in advancing renewable energy goes back three decades to the fuel crisis of the 1970s, when many countries began exploring alternative energy sources' (page 14, lines 4 and 5). In the present crisis have emerged many ideas that convey the need of deep changes in production that require innovative energy industries in order to contribute to the growth of economy as a whole, at the same time that they lead to a new energy-environmental paradigm for which the scientific, technological and industrial knowledge already exists. However, in the present crisis what we are seeing is a sharp fall in investment both in renewable and non renewable energy sources. Apart from other effects, decreasing investment may also have an impact on climate change, by possible escalating the amount of GHG emissions as a result of a drop in fossil fuels prices and also on the development of clean energy technologies."	Agree these are important issues. New narrative structure is structured to highlight. SOD will reflect this

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
William Kyte (E.ON AG)	1	-	-	-	-	-	-	-	"This chapter needs to set out a holistic view putting renewables into the context of the various drivers, climate change, security of energy supply, poverty eradication, development, etc as well as the context of renewables with other energy sources particularly low-carbon technologies & energy efficiency "	A new narrative structure is being applied to chapter to provide an introduction addressing these issues
Veronika Rabl (Vision & Results)	1	-	-	-	-	-	-	-	"This chapter should be rewritten as an introduction to the report; it should not be summary of the results from other parts of the report."	A new narrative structure is being applied to chapter to provide an introduction.
Denis Aelbrecht (Electricit&#65533; de France - Hydro Engineering Center)	1	-	-	-	-	-	-	-	A general comment for Chapter 1 : avoid giving absolute numbers but rather indexes raltive to MWh generated or per capita that will better reflect a real leading position in a specific technology development, or impact limitation, or other kind of assessment.	The values noted in Chapter 1 are those provided by technical Chapters -- sometimes as absolute numbers and sometimes with ranges. The SOD will contain refined data.
Laura Cozzi (International Energy Agency)	1	-	-	-	-	-	-	-	A lot of references are to the German Federal Ministry - It would be beneficial to draw from a variety of more sources	Consulting other references
Luiz A. Horta (Instituto de Recursos Naturais)	1	-	-	-	-	-	-	-	Bioenergy is a very broad and complex subject, it is a real challenge to cover it properly in a just few paragraphs. More attention should be addressed to biofuels, effectively able to mitigate GHG emissions.	Agree. That is why there is a whole Chapter (Chapter 2) on bioenergy. Chapter 1 provides an introduction to the whole report and cannot devote more than a few paragraphs to biofuels
mario contaldi (ISPRA, Institute for Environmental Protection and Research)	1	-	-	-	-	-	-	-	chapter is well done , however it is written by many different hands and it has to be harmonized. I suggest also some cuts, see details.	Refining in SOD
Laura Cozzi (International Energy Agency)	1	-	-	-	-	-	-	-	Chapter title = consider renaming as the link climate change/renewables takes only pages 5 to 8 (3 pages out of 42). Overview of renewable energy seems more appropriate	Chapter titles agreed to by plenary
Daniel Kammen (University of California, Berkeley)	1	-	-	-	-	-	-	-	Chapter: ALL. In terms of the report structure, several key things need to be reflected in all the chapters. First, the chapters need to relegte and remove sufficient detail to permit an expanded focus on the big-picture messages of the entire report, namely that a low-carbon future is possible (in both indistrialized and developing nations), but that a co-evolution of technology (innovation) and market design and support is needed to get there. 'Technical potential' need not be discused at lenght, and arguably not beyoind some comparison material in Chapter 1 and as the lead in to Ch 2 - 7, because far more important is the 'how' of this sustained market expansion. There is too much focus on what amounts to technical deep details that is most suitable for academic collegage talking to each other, and too little focus on how this material can be used to support market development. This significant cutting is NOT simply a process of responding to individual comments (as will come in on Februay 8, but is instead higher-level message that chapters need to become more coherent and to trade depth on speciic technologies for the space to examine (in the technical chapters) opportuniteis and roadblocks that the status of technologies presents and (in the integrative and policy chapters) an exploration of what can be done to remove these barreirs. As a result, it is vital that when the CLAs and LAs receive the detailed line-by-line comments after February 8 that at the same time they also receive this 'meta-colmment' on starting from what they have, that they re-do their chapters to reflect the wider policy audience, not writings for their academic colleagues.	Agree these are important issues. New narrative structure is structured to highlight. SOD will reflect this
Daniel Kammen (University of California, Berkeley)	1	-	-	-	-	-	-	-	Chapter: ALL. The report needs to use some of the space made available by the cuts in the comment above to focus/re-focus on a low-carbon future, not simply a high-renewables one.	Low carbon future being addressed in new narrative structure
Leen Gorissen (Flemish Institute for Technological Research)	1	-	-	-	-	-	-	-	Firstly, I want to congratulate the authors for their effort in the challenging task of shaping a comprehensive and profound picture on the topic of renewable energy. My comments and suggestions are on the first two chapters only. These first two draft chapters paint a nice picture of the complexity of the topic and most relevant issues are already presented. To improve completeness, I suggest to include a few more perspectives in the general remarks below. My suggestions are not intended to make the whole more complex or difficult. On the contrary, the shift from fossil to renewable resources should be regarded as an oppportunity to rethink, redesign and reorient all relevant viewpoints, regimes, institutions and practices towards more sustainable systems of the future. A transition of such magnitude involves the whole of civil society. Also, the biophysical constraints and bounderies of our planet should be given due respect. Hence to improve comprehensiveness, I would advise to include the following perspectives: environmental economics, transition management and change management.	Rejected
Daniel Kammen (University of California, Berkeley)	1	-	-	-	-	-	-	-	Fuller, M, Portis, S. and Kammen, D. M. (2009) "Towards a low-carbon economy: municipal financing for energy efficiency and solar power", Environment, 51 (1), 22 &#65533; 32.	Will review reference
Antoine Bonduelle (EE Consultant)	1	-	-	-	-	-	-	-	General : The introduction includes 9 IEA references with no reference to other important reports such as EWEA (Wind) or EPIA (PV), who have been much more accurate in recent years.	Will include additional references

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
John Kessels (International Energy Agency Clean Coal Centre)	1	-	-	-	-	-	-	-	General Comments the chapter could end a bit more on a positive note with examples of successes as well as barriers, there is a lot of subjective language in the chapter	Language being refined in SOD. However, ending on a positive note may not always appropriate and is subjective in itself.
John Kessels (International Energy Agency Clean Coal Centre)	1	-	-	-	-	-	-	-	General comments there needs to be more referencing and some sections such as barriers could be shortened considrably.Someone needs to go through the list of references at the end of the chapter and delete references not used this could reduce the 20 pages of references considerably	Refining in SOD and reviewing references
Virginia Sonntag-O'Brien (REN21)	1	-	-	-	-	-	-	-	In general: this chapter needs to be tightened up. It should mention and summarise the topics, which will be discussed more in detail in the respective chapters. Instead, it goes into too much detail (often not pertinent).	A new narrative structure is being applied to chapter to provide an introduction.
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	-	-	-	-	-	-	-	In order to reduce the chapter, maybe some general items can be deleted or reduced (e.g: p.7 line 6 to 12 or 13 to 25□). In addition, a lot of figures/technical informations can be switched in technical sectorial chapters. Some informations regarding potential and uses in developing countries can be switched in chapter 9 (e.g: paragraph 1.3.6)	Agree that chapter needs refinement -- addressing in SOD. However, it is important to highlight the potentials early on -- so these tables are important
Steven Smith (PNNL)	1	-	-	-	-	-	-	-	Is overly verbose with many general statements that add little to the technical content of the report (these should be deleted), colloquial language and a lack of appropriate references. There is little structure to most of the sections and the discussion tends to ramble.	Refining in SOD
Ralph Sims (Massey University)	1	-	-	-	-	-	-	-	Missing I think is description of report structure especially role of the 4 integrative chapters - as outlined in Oslo during cross-cutting sessions.	Will include in SOD
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	-	-	-	-	-	-	-	parts that can be removed are below	Noted.
Miquel Muøoz (Pardee Center, Boston University)	1	-	-	-	-	-	-	-	Stick to Ar4 findings on climate change. No need to speculate or bring in new science on climate change unless specifically related to a renewable energy point that cannot be made with AR4 findings. Examples p4 17-18, p5 13-15.	Considering how to best address the state of climate science using the latest peer reviewed literature
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	-	The chapter is in a terrible state. It must be completely revised. It has no mission. It provides a biased, not a balanced view. It contains normative statements. It refers to endless lists of technical examples and does not provide scientific evidence. The text is unorganized and uncoordinated. The text and the headers are frequently not matching each other. The style is colloquial.	A new narrative structure is being applied to chapter to provide an introduction addressing these issues
Achim Woyte (3E sa)	1	-	-	-	-	-	-	-	The chapter is often unfocussed and anecdotic. In particular, not all statements can be based on references, or the references are not fully representative. See subsequent specific comments on Chapter 1. The key messages from the chapter would come out more clearly if it was tightened up and everything that is not directly relevant and proven would be deleted.	References are being refined in SOD. However, some common knowledge introductory items need not be referenced.
Essam El-Hinnawi (National Research Centre)	1	-	-	-	-	-	-	-	The Chapter should be re-written and shortened to focus on the importance of developing renewable sources of energy for mitigation of climate change and for promotion of sustainable development.	Agree these are important issues. New narrative structure is structured to highlight. SOD will reflect this
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	-	-	The chapter's focus is not quite clear, it should set the scene and give a short overview of the chapter i.e. it needs to be well-founded in the main text	Agree these are important issues. New narrative structure is structured to highlight. SOD will reflect this
Leen Gorissen (Flemish Institute for Technological Research)	1	-	-	-	-	-	-	-	The importance of Transition Management is lacking in this chapter. The controversy of the sustainability of biofuels, the 'not in my back yard' attitude of society towards wind turbines etc all imply that a successful shift towards renewables is in need of a new approach of management and governance. A few sentences on this topic might have adding value to the completeness of the report. E.g. see Loorbach, D. 2007. Transition Management, New mode of governance for sustainable development. PhD dissertation, Utrecht, the Netherlands.	Will address in barriers and review the suggested references
Ilkka Savolainen (VTT Technical Research Centre of Finland)	1	-	-	-	-	-	-	-	The intruduction chapter could give a picture on how policy measures for renewable energy is only a part of the development policies. Many other policies can have much higher weight in the national decision making and utilization of human capacities. This picture can be presented ee.g. when referring to Millenium Development Goals.	Policy section being refined in SOD. However, information relevant for policy makers will generally be included in the Summary for Policy Makers
Taishi Sugiyama (CRIEPI)	1	-	-	-	-	-	-	-	The report needs a sistemic description of heat pumps. I suggest ch1 introduce heatpumps, ch8 discuss integration with energy systems, and ch 10 and 11 discuss mitigation and policy aspect of heatpumps.	Heat pumps are in the geothermal and integration chapters. Heat pumps are too specific to be included in Chapter 1
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	-	The text is oftenly not well structured. The frequent use of examples underlines this. On page 31 line 32-33 the reader finds the sentence that throughout the chapter the examples are illustrative and not comprehensive. It cannot be the task of the introductory chapter to a special report of the IPCC to provide a list of examples. The chapter has the aim of summaizing a report, framing the overall issue and to give a comprehensive overview. Examples and technical details are the domain of the technology chapters.	Text is being refined using a restructured narrative structure. Examples do help with understanding -- but we will carefully assess the examples used.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
William Kyte (E.ON AG)	1	-	-	-	-	-	-	-	There is a need to take a holistic view and put the SR into context - this chapter MUST set the scene and context for the whole report and give key messages. It must not just be a summary of the rest of the report	A new narrative structure is being applied to chapter to provide an introduction.
Marc Darras (GDF SUEZ)	1	-	-	-	-	-	-	-	This chapter could be streamlined and offer a better insight for the following chapter by the following: The section on climate change should not recall the conclusions to policy maker of 4AR which are for another forum: it should concentrate on the evolution of GHG emission, the part bound with energy. A second part should re-install the energy paradigm: the role of energy in development, its linkage with development, and from AR4 WG III the main orientation for remediation and the energy mix. Then recall the criteria for an evaluation of a □good□ energy system: accessibility, affordability, acceptability, security of supply while taking into account limitation of resources, capital resources, and environmental constrains. The energy mix should be expressed in term of efficiency, renewable and conventional. This is quite important to underline these elements which are missing in the report concentrated on RE. However, in many cases the system, taking into account its criteria the energy system needs a co-development of RE and conventional energy, the proportion of the three will make the success in term of remediation for an energy system which deliver the needed energy. A place should be given to the various situations: the developed countries which have to reorganise the demand and the energy system, the emerging economies which are developing their energy system with more or less the means to do it, the developing countries which have scarce resource in capital and need to develop value out of energy use. Presenting these situations leads to different approach in national policies.	The chapter sets the scene for using RE to mitigate climate impacts. As such some summary of AR4 is important. The summary is very brief. The suggestions on narrative structure for RE will be taken into account in redrafting 2OD
Luiz A. Horta (Instituto de Recursos Naturais)	1	-	-	-	-	-	-	-	This chapter doesn't balance properly the RE sources, focusing too much PV solar and wind, presenting concerns on electricity production and dispersed energy systems, almost without mentions to modern bioenergy.	The Chapter does discuss bioenergy. Given that it is an introductory chapter -- each area cannot receive lengthy treatment. Electricity is an important contributor to GHGs so the references are appropriate. Bioenergy is extensively discussed as it applies to transportation (another major GHG emitter) for example.
Paulo Cesar de Campos Barbosa (Petrobras)	1	-	-	-	-	-	-	-	This chapter seems to value distributed higher than centralized generation of renewable energy. Although the first is important to sustainability of developing countries, the latter has a bigger potential to reduce GHG emissions, as larger amounts of energy are produced at a lower cost. This fact should be mentioned in the report	Agree both should be highlighted. Narrative restructure addresses this. Will refine in SOD
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	-	-	Throughout the whole chapter citations are missing, many statements are not backed by sources	Addressing in SOD
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	-	-	-	-	-	-	-	Throughout the whole publication, little attention has been paid to managing the environmental impacts of renewable energy options. While this is not a reason to puruse renewable energy options, it means that strategic environmental assessments should be conducted when considering widespread RE investments, accompanied by EIAs on a relevant scale.	Agree -- Chapter does note that it is important to do overall environmental assessments. Will make sure point t is clearly highlighted
Mark Fulton (Deutsche Bank)	1	-	-	-	-	-	-	-	While the main focus is climate change for renewable deployment, complimentary benefits from energy security and job creation are crucial for policy makers and should be strongly emphasized in terms of energy services in a wider sense.	New narrative structure highlights these co-benefits
John Kessels (International Energy Agency Clean Coal Centre)	1	-	-	-	-	-	-	-	Would help the chapter to discuss the use of biomass with coal and co-firing with some examples, eg DRAX in the UK	This type of detail is not appropriate for Chapter 1. We will add one sentence mentioning. Chapter 2 should address
Marc Darras (GDF SUEZ)	1	-	-	-	-	-	-	-	You may find useful to use the following graph I developed for explanatory purpose: see material darras_marc_picture_1.gif	Will review and consider figure within context of all comments received.
Tam$\bar{\text{a}}$s P$\bar{\text{a}}$lv$\bar{\text{a}}$lgyi (Budapest University of Technology and Economics)	1	-	-	-	-	1	-	-	On of the important element of the complex issue of CC-RES context is the role and effectivity of Kyoto mechanism. I suggest to include a brief assessment on the existing experiences in CDM by renewables utilization projects.	Though interesting, outside of scope
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.1.1	-	-	"This section attempts to give an update of the main results of the AR4 and hardly provides any sources; it must closely stick to AR4 facts; it i.e. beyond the scope of the section"	Section being refined per new narrative structure -- will highlight main climate impact issues and relevant points from AR4
William Kyte (E.ON AG)	1	-	-	-	-	1.1.2	-	-	Definition needs to consider how 'semi-renewables' fit in (energy from waste, etc)	Energy from waste is being considered under biomass

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Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.1.2	-	-	The content of the section is partially redundant and partially it is beyond the scope of the sub-section's title. The historical overview of early biomass use in internal combustion engines is interesting for academic reasons, but it is not leading to a point that is important for climate change mitigation. Moreover, the decomposition analysis in Fig. 1.3 und Fig. 1.4 is beyond the scope of the sub-section because the decomposition sheds light on the historic development of emissions and highlights the role of the carbon intensity in relation to the other components. It should be clarified, why these two issues are contained in this sub-section. The section does not contain a clear and comprehensive statement about RES and climate change mitigation as is suggested by the sub-section's title. Fig. 10.2.4 contains exactly this kind of information.	Early sections being refined per new narrative structure. Use of figures being re-evaluated
Miquel Mu�oz (Pardee Center, Boston University)	1	-	-	-	-	1.1.2	-	-	This section need work and being more to the point. The use of fire and animals references misleads and distracts from the purpose of SRREN. After all, if use of animals is renewable, then walking in the sunlight or eating are also renewable�	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.1.3	-	-	The sub-section provides information about procedural issues that initiated the process for compiling the SRREN. I am not sure whether this is necessary here. Moreover, the enumeration on page 10 is not summarized by any conclusion or implication. What is the purpose of this list?	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Narrative list will be revised/shortened.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.1.4	-	-	"The sub-section requires a major revision. First, the sub-section starts with an historical reference that is not the subject here. Second, in the next paragraph it criticizes a mitigation option and provides then a list of other mitigation options. The critique appears selective and poses a strong normative statement (page. 11, line 15) starts with ""We caution against ..."". This is not in accordance with IPCC standards! After the list of mitigation options, it is highlighted that the present report deals with RES. Now there is a strange switch. The next paragraph deals with one other option (energy efficiency) and gives some examples that appear selective. Also a certain bias can be observed; see page 12, line 24. Next, the text claims that energy efficiency and RES have positive synergies. This is selective because other options also have synergies. Moreover, the hypothesis is in its generallity not backed by scientific evidence. The text refers to some examples, but this is not enough here. Moreover, the relationship of the mitigation option RES with other mitigation options is a general issue. In this perspective the emphasis on RES and energy efficiency appears selective. In addition Sec. 1.3.2.1 states that the potentially increasing energy consumption from efficiency gains (rebound effects) are acceptable as long as RES supply the increasing energy demand. At this point, the Chapter is uncoordinated and the statements are not properly backed with scientific evidence. "	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. There will be a clear transition from a general discussion of mitigation options to RE.
Seth Dunn (GE Energy)	1	-	-	-	-	1.1.4	-	-	I would recommend shortening or removing the Kaya discussion.	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Kaya discussion will be refined.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.1.4	-	-	This part should be merged with 1.1.2 and options should be structured along the Kaya components	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN
Seth Dunn (GE Energy)	1	-	-	-	-	1.1.5	-	-	"The role of RE in employment creation (mentioned here and in the Executive Summary) is an important one. Somewhere in this report (perhaps here or in Chapter 9) I think it would be of enormous value to baseline current estimates of the jobs supported by the RE industry today--or to highlight the fact that such data are lacking. For example, the 1/31/10 NYT article ""China Leads Race to Create Clean Energy"" mentions that the RE industry supports 1.1 million jobs in China."	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Co-benefits will be addressed
C□ic Philibert (International Energy Agency)	1	-	-	-	-	1.1.5	-	-	"The section 1.1.5 makes an eloquent argument that deployment of RE reduces long term costs of energy, one should also recognise that in the short term RE is often a costlier option, making the claim that RE is ""central"" to achieving the Millenium Development Goals far-fetched. Many economists believe that one should price CO2 and let the market select the cheapest emission reductions. However, cost-effectiveness should be looked at in a dynamic perspective. All normative models showing long term GHG emission reductions embark a growing share of renewable over time, and the current greater costs of many of these technologies, whether compared to other options for proving energy (e.g. fossils) or to other options for reducing emissions (e.g. energy savings) overlook the need to reduce long term costs of RE through a combination of R&D efforts and learning processes, themselves occuring if some early deployment is taking place. Indeed, far from suggesting that RE are already cheap options, one could see a virtue in their higher cost, as these costs may drive energy saving behaviour. If you only deploy energy intensity improvements today, there is a risk that the so-called ""rebound effect"" eats a a part of the benefits in inducing more energy-consuming behaviour - and this not only because each behaviour becomes less energy-intensive but also because the global price of energy is reduced. If in the same time some relatively costly deployment of RE is undertaken to start decarbonising the energy mix, this will help control the rebound effect. "	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. These points will be captured as appropriate

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	-	-	-	-	1.1.5	-	-	Environmental considerations should go beyond just climate change. Every energy option, bar energy efficiency, can have some impact on the environment. These risks need to be recognised and managed to avoid slowing the transition to more sustainable energy futures.	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Co-issues will be addressed
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.1.5	-	-	Put development-relevant parts into 1.3	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Some text will be moved to appropriate sections.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.1.5	-	-	section hardly based on literature and few sources not pee-reviewed	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. References will be refined.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.1.5	-	-	The sub-section requires major revision because it is poorly structured and many statements are not backed with scientific evidence and they are not discussed from the various angles provided in the scientific literature. The writing style is too colloquial and several terms are wrongly used (e.g. rural instead of agrarian on page 13, line 28). The sub-section generally proposes that RES have positive synergies to other issues of public concern that are in turn taken as axiomatics. However, the issue is not that simple. Energy security, the first area for co-benefits, is a very difficult issue and it is highly debated in the scientific literature whether this objective makes any sense for public policy (see SRREN_Draft1_REVIEW_Bauer_Nico_Material1.pdf for a recent article in Energy Journal). The issue of employment - like energy security it is highly debateable - is not addressed at all. The relation to MDG and sustainable development requires colse coordination with Chapter 9.	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. References will be refined. Co-benefits discussion will be coordinated with Chapter 9. Terms will be consistently used.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.1.6	-	-	"The sub-section is supposed to deal with ""trends in renewable energy"". It starts with a list of international conferences in the past. It is not really clear to me what the purpose of this list is, because directly afterwards the focus shifts to total energy consumption. The two graphs that are used for illustration are snapshots of single years and do not give insight into trends. The same holds for most numbers in the text. Only part of the text is devoted to the development of RES and related investments. The emphasis on energy efficiency investments (page 15, line 24) is misplaced because the sub-section is about RES. The use of traditional biomass is not related to trends and the reference to negative health effects (page 15, line 19-21) appears misplaced here. The sub-section does not give reasons that induced the investments. The support of public policy should be mentioned. "	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. The list of conferences will be removed. Will consider using graphs with future ranges.
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	-	-	-	-	1.1.6	-	-	The most important trend is not that RE represent 13% primary energy demand now - worryingly the IEA predict it to still represent only 13% by 2030. Change graphic 1.7 to one that tracks % composition up to 2030 (IEA must have one, or make your own!)	Will consider showing future ranges
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.2	-	-	"suggest new structure: ""history"" incl relevant parts from 1.1.2 and second half 1.1.6; ""features"" incl 1.2., 1.3.2, 1.3.4"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN.
Finn Gunnar Nielsen (Statoil)	1	-	-	-	-	1.2	-	-	Check all energy units: Most of the data should be energy/ year.	Will use consistent units throughout in coordination with other chapters.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.2.1	-	-	"The sub-section is supposed to give an overview on ""resource advantages of renewable energy"" and it needs a major revision. The thoughts about certainty on capital cost only hold, if the investors finance the investments with credits of equal length, otherwise they are faced with uncertainty of interest rate changes. The issue of distribution is strange. I guess that the original intention was to highlight the large-scale geographical distribution of RES, but the text elaborates on the issue of physical transmission and distribution of energy in the sense of transportation. Please clarify. There is also a sentence that is badly written (page 16, line 18-19). For the issue of scalability the main part of the text deals with gas turbines. This makes no sense. The statements on RES technologies are not backed with scientific evidence."	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN.
William Kyte (E.ON AG)	1	-	-	-	-	1.2.1.2	-	-	Even though renewables can be modular in application, manufacture will still need scale	Will be considered in re-drafting
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.2.1.2	-	-	no single source in whole section	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will include appropriate references.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.2.2	-	-	The sub-section is supposed to give an overview on the disadvantages of RES, but the main body of the text elaborates the solutions. This is beyond the subject of this very subsection.	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. The disadvantages/barriers will be covered in appropriate section
STEPHANE POUFFARY (ADEME - French Environment and Energy Management Agency)	1	-	-	-	-	1.2.2	-	-	This section do not include the recent work and results achieved so far on the productivity prediction. This is the crucial aspect regarding wind in particular.	Will be considered in re-drafting
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3	-	-	"section should lay out status and flow of energy and the role of RE within it as laid out in comment on 1.3.1; then section on energy & development; integrate the development-relevant parts of 1.1.5 here"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Emmanuel Branche (Electricit\u00e9 de France (EDF))	1	-	-	-	-	1.3	-	-	In this section (and whole chapter) it has been decided to refer to energy service needs. Therefore final energy should be used rather than primary energy in order to be more consistent with this approach	Energy services will be primary focus -- transition from primary energy will be clear
William Kyte (E.ON AG)	1	-	-	-	-	1.3	-	-	storage is a key message and needs proper discussion	Will consider in re-drafting
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.1	-	-	"merge with 1.3.3 and relevant parts from 1.1.6, show status incl. Investments from p.16 l 20-3 & p.17, l20-3; try to combine fig. 1.9. & 1.10, show ""real"" energy flow, chart of all energies and losses along the chain, show where RE come into play; more coherent story"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.1	-	-	"The sub-section is supposed to introduce to the reader ""energy path ways from source to end use"" and it needs major revision. The sub-section is not relying on scientific findings and the level of elaboration is low. First, the diagram in Fig. 1.9 is too scetchy. Second, the text claims that the diagram itself in combination with LCA and cost assessments would be sufficient to allow conclusions on the most attractive energy path ways. It is generally known that this is not the case. In particular, even if biomass would be the least cost option for electricity and heat production (superior to wind, solar, etc.) it could still be optimal to use biomass for the production of liquid fuels because it there is no alternative low-carbon option for this purpose. This is the basic argument for solving the problem of energy pathways using energy system modelling because these models take into account the relative advantages of various options leading to least cost solutions of the overall system. I recommend to structure the sub-section along the following lines. First, identify the main end-use energy services. Match RES with those that appear most attractive. Coordinate with other chapters in this evaluation step. Especially Chapter 10 should provide information on that issue. Ask which of these RES/end-use combination have the highest impact to reduce GHG emissions and give reasons why some of the cominations may not be attractive. I recommend not to elaborate the four categories proposed currently in such a small sub-section because this is too lengthy. "	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will discuss pathways appropriately
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.2	-	-	"integrate into new section ""status & features"" under 1.2"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.2	-	-	"move to new section ""features"" of 1.2"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.2.1	-	-	"there is a 30 year discussion in literature on rebound not reflected here at all; delete section"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will address rebound and include appropriate references.
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	-	-	-	-	1.3.3.1	-	-	Cancelled to reach the mean length of the chapter	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections. There are points that need to be made so the whole section cannot be "cancelled".
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.3.2	-	-	The dynamic aspect of the subsub-section is not reflected in the table.	Table will be refined, reflecting technology chapters

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Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.3.3	-	-	The content of this subsub-section would fit into 1.3.1. The list here is somehow completely unmotivated.	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.3.3.	-	-	no sources at all, not founded in lit	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will include appropriate references.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.4	-	-	"merge into new ""feature"" part of 1.2, there into 1.2.2; all statements need to be closely coordinated with ch08"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections. Will coordinate with Chapter 8.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.4	-	-	"The subsection only deals with electricity. Is this on purpose? Also bio-fuel blending and mixing of natural gas with biomass derived synthetic natural gases requires some energy system management"". Is the sub-section coordinated with Chapter 8?"	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will ensure balanced coverage. Will coordinate with Chapter 8.
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	-	-	-	-	1.3.4	-	-	Cancelled to reach the mean length of the chapter	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections. There are points that need to be made so the whole section cannot be "cancelled".
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.4	-	-	with 1.2.2., merge there	Section being refined per new narrative structure clearly focused on the remit of the IPCC plenary for the SRREN. Will integrate appropriate sections.
Essam El-Hinnawi (National Research Centre)	1	-	-	-	-	1.3.5	-	-	Delete the whole section	It is essential to address developing country needs
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.5.3	-	-	redundant with relevant parts of 1.1.5, merge & put to beginning of 1.3.5	Will rewrite and locate this material appropriately. Yes, these two sections should be merged.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.6	-	-	"The sub-section lacks scientific quality and the content is misplaced. It is not clear what the discussion of distributed systems and infrastructure has to do with the issue of energy ladders. Moreover, the text is biased. The sentence on page 27, line 25-26 is not scientific and the notion of ""western style"" lacks any scientific standard. I recommend to ask the question ""What is the energy ladder about?"" Give a formal definition. Fig. 1.12 offers a good starting point: it is about final energy carriers and the services that they fuel. There is no point about the production and generation of them. I recommend to search for income elasticities of final energy carriers. Also Shoalin Pachauri wrote a thesis about residential energy use in India. There should be also additional references to be found. Moreover, the IEA's world energy outlook regularly refers to the high share of monetary income that is devoted to energy in developing countries and that the same number is much lower for developed countries that are at higher levels of the energy ladder. This means that those with low income pay relatively more for poor quality eneregy carriers, than the richer who consume higher value energy carriers. The discussion of distribution systems makes no sense here. "	Will address in SOD. These are useful points.
Essam El-Hinnawi (National Research Centre)	1	-	-	-	-	1.3.6	-	-	Delete the whole section	The discussion of developing country needs is an important part of this report.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.6	-	-	no source!	Will supply resources
Paulo Cesar de Campos Barbosa (Petrobras)	1	-	-	-	-	1.3.6	-	-	The economic aspects of renewable energy are better addressed in section 1.4. The section should be removed in order to fit the maximum length allocated to this chapter	Will consider location. Will not delete as it is important.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	-	-	-	-	1.3.6	-	-	Why is the heat pump not mentioned?	This is discussed in the geothermal chapter
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.7	-	-	"The sub-section refers to ""Current status and future potential of developing countries to utilize RE"". The ""status"" is not reflected in the following. "	Will address in SOD

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Essam El-Hinnawi (National Research Centre)	1	-	-	-	-	1.3.7	-	-	Delete the whole section	Rejected
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.7	-	-	Why exclusive focus on developing countries? Section should describe different challenges for developed and developing Countries: the former must transform their existing infrastructure, the latter need to build it up for development in the first pace but needs to be low carbon right away	The discussion in this section is about developing countries. However, other sections are about developed countries. This will be better framed elsewhere.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.7.1	-	-	The section lacks an accessible definition of renewable energy leapfrogging and what is the implication on GHG emissions as well as their mitigation. What is the relationship to the energy ladder? Is there scientific evidence of the phenomenon? The second paragraph referring to the exports of biofuels makes no sense to me, because the RE leapfrogging - as I understand the term - refers to the conversion and use of energy within a country. The issue of technology choice and access to finance should be elaborated more and should be backed with more literature, if available. Is literature available on the issue of technology transfer and financial assistance?	Leapfrogging will be discussed and better referenced. It refers to moving to a new technology without going through the intermediate steps. It is not constrained to a single country as is demonstrated by the development of biofuels in Brazil, which are now exported.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.3.7.2	-	-	"superficial; this section needs strong coordination with ch10, hardly any sources and no peer-reviewed"	The coordination will happen in SOD
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.3.7.2	-	-	The subsubsection lacks scientific excellence. The second paragraph must be skipped because it is about recent trends and not about scenarios. The third paragraph refers to a single author but there is much more literature available on the subject. The fourth paragraph, lacks references and seems to mix findings of top-down and bottom-up models regarding the costs of renewable energy deployment and climate change mitigation costs, which are two very different issues.	Will address in SOD
Nadine McCormick (International Union for Conservation of Nature (IUCN))	1	-	-	-	-	1.4	-	-	"Recommend an additional section, ""Environmental barriers"". This is different to the land use section under Socio-cultural issues. One section should be biodiversity and ecosystems: factors include impacts on birds/mammals, watershed effects (e.g. reduced flow), marine biodiversity (in the case of offshore), protected areas (in the case of transmission lines), etc. All of these can reduce the level of acceptance, unless adequate risk and impact assessments are taken to anticipate and reduce the risk of these. Second section should be ""Climate change"" - RE can only help communities adapt to climate change, if the technology itself also reduces its vulnerabilities to climate change. An obvious example is hydropower, but other energy services depend on water flows, bioenergy depends on soil formation, etc. Wind depends on predictability of storm systems. See work by (IUCN, 2009) and Helio (2010)."	Will include these environmental factors and the public's reaction to them.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4	-	-	"There is a lot of narrative to explain the barriers and - again - almost no sources/citations; could be shortened considerable, or even the ""taxonomy of barriers"" list agreed in LA2 and thereafter could be copied here; some subheadings do not seem to match ""taxonomy of barriers"" paper, is it up-to-date? The Taxonomy-paper itself should be discussed as it may be structured differently: suggest to put land-use under structural barriers, include external effects under ""economic and regulatory barriers"""	Will conform to Taxonomy paper
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	-	-	-	-	1.4	-	-	Main reason/barrier is the price! It is more expensive to produce a kw by solar or wind compared to a diesel generator!	Price is only one of many barriers. It is important, but not always determinant. New cost table will illustrate this.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4	-	-	needs to be closely coordinated with barrier part of ch11 (11.4) as well as with policies (1.5)	Yes, this is being done for SOD
Wibke Avenhaus (Potsdam Institute for Climate Impact Research (PIK))	1	-	-	-	-	1.4	-	-	What about ecological barriers?	This will be mentioned.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.1	-	-	"sub-categories in here do not seem to match ""taxonomy of barrier"" paper"	This text will be revised in SOD to comply with the structure of taxonomy paper
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.4.1.1	-	-	"Please refer to the availability of data supplied by geological surveys and the like; e.g. wind atlas is available for many countries. The text is too colloquial. Specify the most important gaps of knowledge. Is there scientific evidence?"	Will cite atlases and other sources, but detailed micro regional data are still important to have and often lacking.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.4.1.2	-	-	Is there scientific evidence? For example surveys.	Will provide a reference
William Kyte (E.ON AG)	1	-	-	-	-	1.4.1.2	-	-	Key message	Useful feedback
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.4.1.3	-	-	Is there scientific evidence? For example surveys.	Will provide a reference
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.2.2	-	-	"listed as technical & structural barrier in ""taxonomy of barriers"" "	Will be moved, it is in the wrong location.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	-	-	-	-	1.4.3	-	-	"The reference that has been chosen is ""energy intensity"", but it is expressed in W/m2 and not Wh/m2. To be changed or replace ""energy density"" by ""power density"". Furthermore as energy services has been chosen, it is another reason to choose Wh/m2 as a better indicator than W/m2"	Thank you for spotting this error
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	-	-	-	-	1.4.3	-	-	In this section large centralised RES is criticized. I do not think that it is relevant to discriminate large centralised RES vs. small distributed RES in this SR. Decisions in the past could not be changed, it has been decided in the past, for economical reasons, to build large scale centralised energy with associated transmission networks, rather than distributed energy.	This is not a criticism of central power only a statement about some of its disadvantages relative to distributed systems. RE will likely involve both large central and smaller distributed systems as it is being developed today.
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	-	-	-	-	1.4.3.2	-	-	Information provided is not fair, and lines 41 to 44 of page 33 are not peer-reviewed, but only reflect the authors' position	Will provide reference.
William Kyte (E.ON AG)	1	-	-	-	-	1.4.3.3	-	-	Loaded political message	Will examine
William Kyte (E.ON AG)	1	-	-	-	-	1.4.4	-	-	External costs of RE not discussed	Will use estimates in literature
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.4.1	-	-	"To compare different renewables the assessment should go beyond project appraisal and include overall economic costs, pls refer to Edenhofer, Lessmann et al 2006; Pizer & Kopp 2004"	Will examine
William Kyte (E.ON AG)	1	-	-	-	-	1.4.4.2	-	-	Why only aviation?	Aviation is just an example
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.4.3	-	-	"""R&D-Policy"" more appropriate heading"	Will modify
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.5.1	-	-	belongs to 1.4.3.2	Will reexamine
William Kyte (E.ON AG)	1	-	-	-	-	1.4.5.1	-	-	Loaded political value judgment	Will reexamine
Emmanuel Branche (Electricit&#65533; de France (EDF))	1	-	-	-	-	1.4.5.2	-	-	"Proposition to add: ""Capacity building is very important for an efficient deployment/development of RES in developing countries"""	Will add comment.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.4.5.2	-	-	split apart and move to other sections	Will consult with chapter team and see how this fits into restructured SOD
Aviel Verbruggen (University of Antwerp)	1	-	-	-	-	1.4.6	-	-	as TSU states: quite a lot of repetition	Agree will modify for SOD
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.4&1.5	-	-	In both sections there is no subsection to climate policies that target emissions from fossil fuels. Only on page 37, line 35 there is statement about carbon pricing policies. Unfortunately, the main subject of the sentence is R&D and in the WITCH model R&D is affecting energy efficiency and not renewables! Hence, skip this reference here.	This should not be about mitigation of fossil fuel emissions. Will replace reference
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.5	-	-	"section appears unstructured; should either correspond with structure of barriers (1.4) or (better) should develop taxonomy of criteria for the use of instruments: largest (neg) externality is GHG emissions, internalize to level playing field; positive externalities and risks specific to R&D require R&D & commercialization policies; furthermore, additional market failures & lock-in effects in electricity markets may require additional deployment polices"	Will restructure in SOD
Charles Kutscher (National Renewable Energy Laboratory)	1	-	-	-	-	1.5	-	-	This section seems to imply that new technologies must be developed to deploy renewables. R&D will help but we already have most of the technologies we need to deploy renewables on a large scale. R&D will help to lower costs as well as develop new things. The report should emphasize that deployment of what we already have is key. And that deployment will lead to economies of scale and learning curve cost reductions.	This message was not intended. Will modify for SOD
BORIS REUTOV (FEDERAL AGENCY FOR SCIENCE AND INNOVATION (RUSSIA))	1	-	-	-	-	1.5.	-	-	the sub-section into which the section is split are too minute, that are too many repetitions	Will restructure in SOD
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.5.1	-	-	The scientific debae about R&D is much richer than provided in the sub-section. There is also a literature on the so-called two factor learning curve where R&D expenditures are related to the investment costs of technologies. This concept has been introduced into energy system models to assess the effect of these investments. The heavy emphasis on the burden of R&D expenditures is not justified. It must also become clear, what the effect of R&D is. The two factor learning curve provides empirical evidence about this.	Will explore two factor learning curve

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Kirsty Hamilton (Chatham House)	1	-	-	-	-	1.5.2	-	-	The opening lines of this section are confusing. It would be better to outline factually the matters from lines 1 to 3 of page 38, and then move on to academic analysis of overcoming valley of death, although it might be better to reference grey finance-focused literature (as it is largely a gap in the 'finance continuum' that is being recognised). A useful reference in this area is O□Brien, V.S. and Usher, E., 2004, □Mobilising Finance for Renewable Energies: Thematic Background Paper□, prepared for the International Conference for Renewable Energies, Bonn. Available from: http://www.renewables2004.de.	Will explore options for thi8s section
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	1.5.2	-	-	The subject of the sub-section should be contained in the previous sub-section that is devoted to R&D. Commercialization means to bring technologies to the market. Consequently, subsection 1.5.2 must be written.	Will restructure in SOD
Kirsty Hamilton (Chatham House)	1	-	-	-	-	1.5.3	-	-	Along with a clearer introductory sentence, as above academic jargon needs explained, as linked to Ch11 on policies, we need much more precision in the way we establish policies if it is to successfully reduce the perception of policy/regulatory risk and attract investors. For example what is meant by a 'command and control' regulation - nearly all markets (even renewable energy certificate trading markets) are regulated to create rules (and usually with a command in the form of an obligation or a portfolio standard). The reference to the US using govt R&D subsidies to the end of that paragraph moves between R&D policies and those for 'deployment' - the problem with the PTC (production tax credit) - Federal policy - has been the lack of stability of the policy, and then during the financial crisis the drying up of tax equity. In the third paragraph it starts with a reference to RPS (being 'moderately successful' which would be useful to explain) and then a sentence on China supporting RE 'directly' which would benefit from also being explained. There are references on the Chinese policy situation (I will assume that Chinese academics, experts and the Chinese Renewable Energy Industries Association - via review will provide references and information here).	Will clarify
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.5.3	-	-	Headline unclear: Deployment policies or deployment of policies?	Will change to Implementation of policies.
Kirsty Hamilton (Chatham House)	1	-	-	-	-	1.5.3	-	-	This needs an introductory sentence explaining what is meant by deployment [presume deployment of renewable energy rather than deployment of policy?] ie that the rolling out of commerically proven technologies to increase the contribution of renewable energy in the energy mix. I also think it would be useful to explain what is meant by supply push and demand pull as this is jargon, and I would consider deleting it, particulalry as in the second paragraph the term 'market pull' (line 26) is used, and it is important to clearly explain academic jargon for policymakers to ensure we understand what is being referred to. If it is not referring to deployment of RE but experience from implementing a range of policies, then it would be useful to say that, and it might then be useful to consider whether/where a short section on Policies for deployment of RE (in the energy mix) as this would be rather missing.	Will clarify
Kirsty Hamilton (Chatham House)	1	-	-	-	-	1.5.4, 1.5.6	-	-	"Given the importance of system integration and timeframes, given the lead time and consequence of infrastructure decisions (usefully given as an example in lines 10-12, page 39), it would be further helped by providing an indicative timeframe for building infrastructure if high levels of implementation is to be secured (i.e. common lead times for planning and construction of transmission e.g. offshore; plug in points etc). This is linked to an overarching comment for the SR that an overriding theme for the SR could be to provide for policymakers a stronger sense of the decisions and timeframes for delivering significant RE penetration (linked to scenarios in Chapter 10), within which infrastructure decisions will be critical and may be very near-term."	Useful suggestion will be implemented.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	1.5.5	-	-	"The fundamental statement one would expect here is that the fossil fuel based system owes the external effect of altering the climate due to GHG-Emissions; suggested structure of this para: 1) The fundamental problem of fossil based energy system is that it alters climate due to GHG-emissions; this is external effect bec neg impacts from climate change not reflected in prices 2) policies to internalize this external effect aim at attaching these external costs to fossils (cap-and-trade or taxes) thereby increasing competitiveness of non/low-carbon fuels 3) non/low-carbon fuels may have negative externalities as well (cost/risk of nuclear proliforation and nuclear waste disposal, (non-)permannence of CCS-storage, land-use degradation of bio-fuels 4) life-cycle analysis necessary in order to catch all externalities (don't go into details of different kinds of LCA here)"	Useful suggestion will be implemented.
Tam□s P□lv□lgyi (Budapest University of Technology and Economics)	1	-	-	-	-	1.5.5.	-	-	It should be important to consider the implications for sustainable development. Chapter 1.5.5 (Policies to avoid negative externalities) does not properly reflects these implications.	Will include this in SOD
John SCOWCROFT (EURELECTRIC)	1	-	-	-	-	1.5.7.	-	-	The description seems biased and not representative of the current situation	Will provide reference.
Tam□s P□lv□lgyi (Budapest University of Technology and Economics)	1	-	-	-	-	1.5.7.	-	-	The role of feed-in tariffs should be mentioned.	A new section will direct readers to the full discussion on other chapters
Antoine Bonduelle (EE Consultant)	1	-	-	-	-	-	1,7	-	The graph should precise the unit or equivalence principle (GJ?)	The amount is stated in the text. The figure shows percentages.
Essam El-Hinnawi (National Research Centre)	1	-	-	-	-	-	1.1	-	"Check Figure. Left co-ordinate should read "" GHG Emissions (GtC/y)"". Left co-ordinate should read "" 3-5 degrees C""."	Will fix

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Gian-Kasper Plattner (University of Bern)	1	-	-	-	-	-	1.1	-	"Figure caption ""e"" missing from emissions"	Will fix
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	-	-	-	-	-	1.1	-	"horizontal coordinate axial of the figure nameless it must be named "" year "" ."	Will add year
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.1	-	"The figure and the caption is misleading. First, the caption states that temperature may increase to 3-5□C, but the figure only contains a reference to 3□C. It is also unclear whether the number refers to the temperature in 2100 or to the long-term steady state value. Second, there are error bars and it is unclear what they indicate. Third, there is some kind of purple colored things in the graph and it is not clear what it is. Fourth, the caption states something about ""charts"", but I do not understand what this is. Fifth, the 3GtC for the sinks appear quite high to me. Please check!"	Working to clarify figure for SOD
Graham Pugh (U.S. Department of Energy)	1	-	-	-	-	-	1.1	-	Is this actually fossil fuel emissions, or is it CO2 emissions (fossil fuels and cement) or is it multi-gas (CO2 equivalent)?	Will clarify sources of CO2.
Gian-Kasper Plattner (University of Bern)	1	-	-	-	-	-	1.1	-	Need to indicate what scenario is used	Will fix
Gian-Kasper Plattner (University of Bern)	1	-	-	-	-	-	1.1	-	Not obvious how this figure has been adapted. Better to create a new figure.	Will fix
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.10	-	"The purpose of the figure is unclear and the numbers are wrong. First, there is an item CHP/Electricity and the value is ""15."". The combination of the two terms CHP and Electricity makes no sense because CHP refers to a group of conversion technologies and electricity is an energy carrier. Moreover, there is an arrow leaving the entity and it is unclear where it ends. Additionally, the number 15. is not coinciding with the sum of arrows that are contributing to it. Second, why are there black and grey arrows? Third, what is the quantity for the arrow from CHP/electricity to losses? Fourth, I think the entity losses should be skipped. Fifth, the sector Other sectors should be termed residential and services. "	Will clarify figure. The numbers do add up.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	1.10	-	combine with fig 1.9	Will decide how to address this concern in SOD
Finn Gunnar Nielsen (Statoil)	1	-	-	-	-	-	1.10	-	Explain the CHP / Electricity and the downward arrow	Will clarify
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.11	-	The content of the figure makes no sense in the sub-section. The figure is about total primary energy per capita, but the sub-section is on the use of RES depending on the level of development.	Will explain why figure is here to show the range in energy per capita and then how that might be met by RE.
Aviel Verbruggen (University of Antwerp)	1	-	-	-	-	-	1.13	-	"figure unclear without far more text; how relevant here? The text (36: 44) refers to aviation??"	Will change text to reflect this figure.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	1.13	-	"not necessary here; delete"	Find the figure to useful.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.13	-	the figure is not related to the text, where is stated that the figure is dealing with aviation (p. 39, line 44).	Will change text to reflect this figure.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	-	-	-	-	-	1.2	-	"also horizontal coordinate axial of the figure nameless it must be named "" year "" ."	Will add year
Ruben Guisson (Flemish Institute for Technological Research)	1	-	-	-	-	-	1.2	-	Biomass and renewable are indicated separately in the figure. This tends to indicate that biomass is not (or a different kind of) a renewable energy source.	Biomass is large compared to all other renewables
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.2	-	The inventions shown in the graph are not discussed in the text and it remains an enigma to me what they are supposed to indicate. Please skip them.	Figures simply show technological progress. Considering an alternative figure for SOD.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.2&1.4	-	The two figures must be checked for consistency. If we take a close look on the development of coal (Fig. 1.2) and the contribution of the coal CI to emission changes (Fig. 1.4) there is reason to doubt, whether the data sources are consistent. From 1970 to 1990 Fig. 1.2 exhibits a huge and continuous increase in coal consumption, but the coal CI in Fig. 1.4 shows only little effect. Then after 1990 in Fig. 1.2 growth of coal consumption decreases before it gains pace again after 2000. The decline in growth is not mirrored in the coal CI in Fig. 1.4 as it is for the coal renaissance of recent years. The renewables show a similar disharmony for the recent past. Fig. 1.2 indicates growing contribution of biomass and Renewables, but Fig.1.4 suggests the opposite. Both figures should rely on the same data basis in order to avoid confusion.	Will check for consistency. Same data set was used in both. Carbon intensity is the CO2/total primary energy supply. This can fluctuate depending upon the fuel choice.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	-	-	-	-	-	1.3	-	"key of the figure preferred write inside the outline , also horizontal coordinate axial of part (a) and part (b) of the figure nameless ,it must be named "" year "" ."	Key will remain where it is. Year will be added to axis

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Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.3	-	There is a little peak of the population component in the year 2006. Please check correctness. A first shot is that a population rich country entered the statistics and therefore emissions are making a little jump.	Will check with original source.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.4	-	"It would be useful to rearrange the components. Biomass should be taken out from the aggregate ""other Renewables"" to highlight the different contribution of traditional biomass and modern rnewables like wind and SPV in recent years. Hydro instead should be put into the ""Other Renewables"" category, because its contribution is too little to be visible. "	These are the data as published It is not possible to disaggregate them.
Prof. Dr. Mohamed Kadry Abd El-Wahab (Collage of Agriculture - Zagazig University)	1	-	-	-	-	-	1.4	-	"key of the figure preferred write inside the outline , title of vertical coordinate axial should modify to less also horizontal coordinate axial of the figure nameless ,it must be named "" year "" ."	Key will remain where it is. Year will be added to horizontal axis
Finn Gunnar Nielsen (Statoil)	1	-	-	-	-	-	1.4	-	Should distinguish between emission due to investing in (Building) new capacity versus production of energy	Will point out that this is all energy consumption and not investing.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	1.6	-	The figure and the corresponding text must be skipped. It is at odds with all scientific standards.	Plan to replace with new figure in SOD.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	-	-	-	-	-	1.7	-	Global energy consumption (in 2007) 503 EJ, share of RE is 13.0%.	Will drop the zero.
Prof. Dr. Fritz Vahrenholt (RWE Innogy GmbH)	1	-	-	-	-	-	1.9	-	RE connected to mobility not shown.	Will add transport connection
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	1.9	-	too stylized, not iconic, combine with fig. 1.10, better fig needed	Will improve figure by adding other sources
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	1.9	-	too stylized, use real energy flow chart	Will expand to make it more relevant
Antoine Bonduelle (EE Consultant)	1	-	-	-	-	-	-	1,2	Quoting the IEA in this very global table is not enough, because this organism has a constant record of underestimating the potentials of renewable energy. The table should be crossed with other studies.	Other studies are referred to in the text of the report. Note that IEA estimates for renewable energy has been climbing in their recent reports.
Paulo Cesar de Campos Barbosa (Petrobras)	1	-	-	-	-	-	-	1.1	"Source marked with "" * "" was not found"	Will provide reference
C□ic Philibert (International Energy Agency)	1	-	-	-	-	-	-	1.1	"Table hard to read. Column two mixes ""annual flux or use"", so it's unclear in some case (e.g. hydro) what the figure expresses. Third column presents the ratio of ""annual flux or resource"" over ""annual demand"": it is unclear how ""annual flux or resource"" relates to the second column ""annual flux or use"" or to the fourth ""total reserve"". Finally, while one can only assume that ""annual demand"" is the global demand and not the demand for each source, the value retained seems to vary. To get the 104 years one has to take the 448 EJ of global demand not taking conventional biomass in account - but then why take this and not the 396 EJ of conventional fossil fuels? Data relative to unconventional fossil fuels seem particularly outdated, whether in annual demand or total reserves. At least they do not take account of hydrates."	Will clarify figure caption to make clear what is represented here. Unconventional fossil fuels do not include methane hydrates, which are not yet being explored. Could put this in, but estimates are very crude.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	1.1	"The ""*"" are not referenced. The flux of geothermal seems to be the total reserve/resource in the sense of total heat that could be recovered; please clarify. The number on bioenergy is kind of misleading, because it surely contains agricultural production. "	Will clarify in caption.
William Kyte (E.ON AG)	1	-	-	-	-	-	-	1.1	It is not clear what this table is showing	Will clarify figure caption of theoretical potential.
Finn Gunnar Nielsen (Statoil)	1	-	-	-	-	-	-	1.1	Must be more specific in definitions. E.g. wind power: up to which height is the wind field included. How is e.g. ocean wave energy accounted for. Is it the flux of wave energy hitting the coastal areas or□??	This level of detail is included in the specific technology chapters.
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	1.1&1.2	It is absolutely unclear to me what the relationship between the two tables is. Table 1.1 makes no sense, if we have table 1.2 especially because 1.1 refers to material from other sources and 1.2 summarizes the results of the present SRREN. Also why are both tables using different years for the current energy consumption.	Table 1.1 is the theoretical potential for each resource and Table 1.2 is the estimate for the technical potential for each renewable resource. The different years are used as these are the values available in the literature. Can easily update actual energy use in Table 1.1 to be comparable with Table 1.2.
Manfred Treber (Germanwatch)	1	-	-	-	-	-	-	1.11	Please replace toe by SI-units	Will replace UNITS with SI
Nico Bauer (Potsdam Institute for Climate Impact Research)	1	-	-	-	-	-	-	1.2	"The reference below the table is in contradiction with the main body of the text, where it stated that the table summarizes the results of the technology chapters. The numbers provide the upper estimates. E.g. the number on bioenergy is surely at the upper end. It would make sense to use ranges and maybe also best guesses. The row for ocean energy should be skipped. The text ""Total Renewable production"" should be skipped, if ranges are used, or it should be ""Total renewable production potential""."	We plan to get updated data from the technology chapters and to use ranges. We will probably keep the total figure.

Name (Institute)	Chapter	From page	From line	To page	To line	Section	Figure	Table Info	Comments	Considerations by the writing team
Ruben Guisson (Flemish Institute for Technological Research)	1	-	-	-	-	-	-	1.2	Biomass is missing in this table as a potential. Biofuels are indeed mentioned.	Will assure that biomass and biofuels are each in the table.
Ladislaus Rybach (Geowatt AG)	1	-	-	-	-	-	-	1.2	here (Ch. 7, p. 4, l. 31) is another argument against keeping wind development constant over the years in Table 1.2!	Agreed. Will inform tech chapters
Finn Gunnar Nielsen (Statoil)	1	-	-	-	-	-	-	1.2	The unit should be EJ/year	Will correct. Thank you
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	-	1.4	Necessary? Suggest to delete	May state in text
Yezouma Coulibaly (International Institute fo Water and Environmental Engineering (2iE))	1	-	-	-	-	-	-	1.5	Cancelled to reach the mean length of the chapter	Accepted
Paulo Cesar de Campos Barbosa (Petrobras)	1	-	-	-	-	-	-	1.5	The table does not mention several other sources that have big progress. In order to avoid bias toward progress of specific kind and fit the maximum length allocated to this chapter, I suggest remove this table.	Will keep table, but clarify scope.
Patrick Matschoss (WG III TSU)	1	-	-	-	-	-	-	1.5	What's the conclusion / message from these examples? Suggest to delete	Will write a concluding statement