

Review comments on the IPCC AR5 Synthesis Report First Order Draft - Topic 4

Chapter	From Page	From Line	To Page	To Line	Comment	Response
Topic 4	0	0			<p>General comments on Topic 4: This topic is started with a short but impressive first section 4.1 but would be better that the first section is entitled ' introduction' or no title as it suits considering the contents treated in the section 4.1.</p> <p>Generally most paragraphs have too much complementary information; please make supplementary sentences, particularly below message on bold, simpler, shorter and more comprehensive.</p> <p>Structures are well shuffled existing works from WG II and III. However figures and tables have to be corrected indications/captions or presentation, particularly tables are too complicate to understand. [Government of Republic of Korea]</p>	<p>Thank you for positive feedback. The introduction has been revised and sections re-numbered such that the current 4.2 is now 4.1. Text has been revised throughout to ensure messages are as concise as possible while being fully consistent with the underlying reports. Tables have been revised to make simpler where possible (e.g. in 4.3), and figure captions have been checked and revised.</p>
Topic 4	0				<p>In this section, there are a lot of redundancies relative to earlier topics. The same issues, e.g. emission pathways, should be discussed in just one section. [Government of Hungary]</p>	<p>The complementary information in topics 3 and 4 has been clarified and made clearer, with redistribution of material to reduce overlaps</p>
Topic 4	93	1	93	1	<p>Is the adoption of 'adaptation' before 'mitigation' in the topic title purposeful? Should mitigation come first? There are actions that can be taken in the near-term and it is important not to sideline this, or even give the impression that mitigation is second place to adaptation. [European Union]</p>	<p>We have adopted a consistent use of "adaptation and mitigation" in this order. This fits the narrative developed in topic 3 (which starts with an identification of risks and an incomplete ability to simply adapt to changing risks - which only then motivates the need for mitigation). This choice does not deny that mitigation actions can and need to be taken in the near term - but the same applies to adaptation actions.</p>
Topic 4	93	1	93	28	<p>International cooperation must be understood in the context of articles 4.7, 4.8 and 4.9 of the Convention of climate change as the provision of finance, technology transfer and capacity building from developed to developing country Parties. [Government of Bolivia]</p>	<p>The introduction has been revised to simply outline the scope and content of the topic. We note that the issues of finance, technology transfer and capacity building are all covered in this topic, but the report is a scientific one, not one that is determined exclusively by the framework set under the UNFCCC negotiations.</p>
Topic 4	93	3	93	3	<p>Focus is long-term. Possible alternative wording: 'Implementing near-term responses consistent with long-term and strategic goals'. [European Union]</p>	<p>Introduction has been revised substantially; the revision includes this point</p>
Topic 4	93	3	93	16	<p>Section 4.1: This section is not clear whether it is designed as an introduction or context to treat 'responses to climate change with short and long term strategies'. The Topic 4 doesn't have introductory part so we would like to suggest two ways to improve this section: (1) as an introductory part, there is no entitle for the section and (2) dealing with 'responses to climate change for short and long term goals' then please enhance contents. [Government of Republic of Korea]</p>	<p>Accepted; this text has been revised to clearly serve as introduction, with no title, and sections re-numbered.</p>

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Topic 4	93	3			The repeated use of the word "consistent with" a particular goal throughout the document is confusing. Implementing something in order to REACH a goal is clear; but implementing sg that is "consistent" with a goal sounds like it is a coincidental consistency rather than a conscious choice to reach a goal. [Diana Urge-Vorsatz, Hungary]	The text has been revised substantially. We note that given the diversity of goals that drive individual actions, the concept of near-term actions being consistent with, rather than explicitly driven by a long term goal, does make sense in our view and the expression has been retained (but is now used only once in the introduction).
Topic 4	93	4	93	8	This sentence is policy-prescriptive: "must be ... consistent with ... limiting global average temperature increase to 2 degrees". Suggest considering strategy more profoundly than only the choice of a temperature target. Strategy could be considered to reduce risk and create options and institutions for both mitigation and adaptation. [Haroon Kheshgi, United States of America]	Accepted; this text has been revised to serve only as an introduction to the issues covered in this topic (and how it differs from Topic 3), and avoids explicit reference to specific long-term goals.
Topic 4	93	5	93	5	"must be viewed" could be perceived as being prescriptive, consider revising. [Helmut Haberl, Austria]	Accepted; this text has been revised to serve only as an introduction to the issues covered in this topic (and how it differs from Topic 3), and avoids this wording.
Topic 4	93	5	93	8	The text here states "(...) achieving long-term goals such as limiting global average temperature increase to 2 degrees above pre-industrial levels (Topic 3)". This is inappropriate in the viewpoint of risk control for limiting only to 2 degrees cases. Various cases should be taken into account, therefore suggest deletion of the text following "such as 2 degrees above..." . [Government of Japan]	Accepted; this text has been revised to serve only as an introduction to the issues covered in this topic (and how it differs from Topic 3), and avoids explicit reference to specific long-term goals.
Topic 4	93	5	93	8	The description of "such as limiting global average temperature increase to 2 degrees above pre-industrial levels (Topic 3)" should be deleted because Topic 3 explains generally about "Transformations and Changes in Systems", not limiting to 2 degree target. [Hirofumi Kazuno, Japan]	Accepted; this text has been revised to serve only as an introduction to the issues covered in this topic (and how it differs from Topic 3), and avoids explicit reference to specific long-term goals.
Topic 4	93	5	93	9	The following wording is suggested in order to add clarity: Responses to climate change must be viewed within a strategic long-term context consistent with achieving long-term goals such as limiting global temperature increase to 2 degrees above preindustrial levels (Topic 3). Responses that can be implemented in the near-term are limited to those options available today. These near-term responses and operational decisions will have a significant bearing on the outcome of the long-term climate goals. [Government of Austria]	The suggestions were taken into account in a substantial revision of the introduction, including other comments that expressed concern about a potentially policy-prescriptive tone.
Topic 4	93	5	93	11	Again the focus is on the long-term, which of course is important but more than just lip-service needs to be paid to near-term responses especially in the opening paragraph. Perhaps give some examples of near-term (current) mitigation/adaption that will be incorporated into longer-term capital investments & sustainable development. Require stronger statement on near-term mitigation to open this topic. Paragraph 2 4.1 is more empowering! [European Union]	Text has been revised to make the importance of the near-term and implementation clearer and give a clearer contrast to topic 3.

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Topic 4	93	5	93	11	It is necessary to cite the art. 2 of decision 1/CP.18 of Doha regarding the fact that 2 degrees is the long-term global agreed at Doha, while there is disagreement of individual parties about this goal. Bolivia considers that the goal is of 1.5 egresses. [Government of Bolivia]	Reference to specific goals has been removed and text revised to better serve as overall introduction.
Topic 4	93	5	93	11	These sentences are not logically structured and the message that these sentences are meant to convey is unclear. It is stated that "..., the options available today are only those that can be implemented in the near term." This sentence is badly formulated and is simply a statement of a truism and could therefore be omitted. The entire para needs to be reviewed and rephrased so that the information is presented in a logical order. It more clearly highlights the conflict embedded in the fact that the time frame of climate change management is long while near-term responses are constrained by the set of currently available toolbox of technologies and policies. [Government of Sweden]	Accepted; the introduction has been revised substantially and this comment taken into account in the revision. However, we have no evidence to support the suggestion that the currently available toolbox of technologies and policies is a major constraint; in contrast, the toolbox is large, as sections 4.2, 4.3 and 4.4 demonstrate. Hence this particular line of thought has not been adopted.
Topic 4	93	5	93	11	The logic and language of this para should be improved: e.g., "must be viewed" is not IPCC-language, the message is unclear. [Government of Germany]	Accepted and wording revised.
Topic 4	93	7	93	8	The use of 'only' is considered suggestive and not necessarily true. Phrasing suggestion: Near-term reductions are an important element of cost-effective mitigation strategies" (SPM WGIII) [Government of Netherlands]	The wording has been revised substantially, and this point taken into account in the revised wording.
Topic 4	93	9	93	11	We consider too much emphasis on investments in capital infrastructure. We believe "hard" measures should be last option. It could be rephrased this way: ...policies and strategies with long-term perspectives and enduring effects, such as investments in social awareness, changes in livelihoods,... [Government of Spain]	The text has been revised substantially, and this concern has been implicitly taken care of since the revised introduction no longer makes explicit reference to specific policies or strategies.
Topic 4	93	11	93	11	Phrasing is considered fuzzy. Not clear what is meant with "sustainable development of human settlements". [Government of Netherlands]	The text has been revised and the phrase removed.
Topic 4	93	13	93	13	Need to be consistent throughout this section. If mitigation is to come first, then it should be 'mitigation and adaption' throughout. (this should be consistent throughout the entire document). [European Union]	We have adopted a consistent use of "adaptation and mitigation" in this order throughout topics 3 and 4 where relevant.
Topic 4	93	13			"THE" range of mitigation options available is much much more diverse than highlighted in the following. It would be more honest to say that a key group of mitigation options [Diana Urge-Vorsatz, Hungary]	Wording has been revised to refer to "a range" of adaptation and mitigation options.
Topic 4	93	15	93	15	Replace 'adaption and mitigation' with 'mitigation and adaption'. [European Union]	Rejected; We have adopted a consistent use of "adaptation and mitigation" in this order. This fits the narrative developed in topic 3 (which starts with an identification of risks and an incomplete ability to simply adapt to changing risks - which only then motivates the need for mitigation).

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Topic 4	93	18	93	18	Replace 'adaption and mitigation' with 'mitigation and adaption'. [European Union]	Rejected; We have adopted a consistent use of "adaptation and mitigation" in this order. This fits the narrative developed in topic 3 (which starts with an identification of risks and an incomplete ability to simply adapt to changing risks - which only then motivates the need for mitigation).
Topic 4	93	18	93	47	Section 4.2. repeats information of the previous sections, please straighten text. [Government of Germany]	Taken into account in revisions; some overlap is unavoidable to avoid a broken narrative, but we have revised the text here and in previous sections to ensure this section focuses on enabling factors and constraints for implementation of adaptation and mitigation measures, consistent with the focus of topic 4 (and in contrast to the more strategic, high-level perspective of topic 3).
Topic 4	93	21	93	21	The use of the word 'actors' seems inappropriate in the context of mitigative and adaptive capacities. WGIII 4.5 and 4.6 touch upon the topic, but do not focus on 'actors'. Please rephrase. [Government of Netherlands]	Because actors (i.e., institutions, organisations, governments, businesses, and individuals) are the ones that actually implement mitigation and adaptation options, they are where capacity lies. Without actors, there is no capacity, nor would there be any implementation of mitigation or adaptation options. However, the sentence in question works just fine without the term "actors", and thus this has been deleted for the sake of brevity.
Topic 4	93	21	93	28	suggestion: add to this alinea 'adaptation is place and context specific, with no single approach for reducing risks appropriate across all settings (high confidence)' (p. 22 SPM WGII) [Government of Netherlands]	The context-specific nature of adaptation and mitigation responses was clearly articulated in the original bullet. However, that text has been modified to further emphasize this point and also to capture the additional point that no single approach is appropriate for all contexts.
Topic 4	93	23	93	23	It is suggested to delete "global" before "regions" because in the context of AR5 regions should always refer to the "global" regions identified in WG II report. [Government of Austria]	The word "global" has been deleted.
Topic 4	93	24	93	24	For the sake of consistency "low-income countries" should be replace with "developing countries". Three lines below (line 26) in the same paragraph the term "developed countries" is used. [Pedro Alfredo Borges Landáez, Venezuela]	Text changed to "developing countries with low income".
Topic 4	93	24	93	24	To keep consistence with the discussions at the WGII-10 and WGIII-12, replace "low-income countries" with "developing countries with low income". [Government of Brazil]	Text changed as suggested
Topic 4	93	24	93	25	"Low-income countries", which is not clearly defined in this report, is suggested to be reworded as "LDC" (least developed countries). [Government of China]	Text changed to "developing countries with low income".

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Topic 4	93	30	93	30	Path dependence': jargon. Unclear. [scott power, australia]	"path dependence" has been changed to "inertia"
Topic 4	93	34	93	34	Suggest removing 'Some' from 'Some constraints' - the changes listed in the sentence that follows would allow us to overcome all the constraints mentioned above not just some of them! Removing 'Some' makes this statement much stronger. It may prove in the future that we were not 100% successful in removing these constraints. We should not undersell our capacity for overcome constraints, especially in a report such as this, where we are outlining feasible and constructive possibilities and opportunities to change. [European Union]	One cannot conclude that all constraints can be overcome. If this were the case, then this would largely negate the concept of limits to adaptation, which is clearly inconsistent with the underlying WGII report and WGII SPM as well as WGIII material. Without the word "some", the text would imply that all constraints will be overcome as the characteristics of technology, finance, etc. become available. However, we cannot assume that such capacity will in fact eventuate in time to achieve mitigation and adaptation objectives. In addition, given developed nations with high income still encounter constraints and limits to the implementation of mitigation and adaptation options, one cannot assume that greater capacity leads inevitably to the implementation of options.
Topic 4	93	34	93	34	impacts on vulnerable [scott power, australia]	Text changed as suggested
Topic 4	93	35	93	41	Delete because is very prescriptive sentence. [Government of Bolivia]	There is nothing prescriptive about communicating that constraints can be overcome. The text does not argue that constraints should be addressed nor does it articulate which constraints should be targeted by actors or the means by which they should be addressed.
Topic 4	93	37	93	37	The references to WGIII 5.2 and WGIII 5.3 do not cover the topic discussed, origins are unknown. [Government of Netherlands]	WGIII sections 5.2 and 5.3 discuss trends and drivers associated with greenhouse gas emissions which evidence the inertia of emissions. We have added a reference to WGIII 5.6 which discusses technology lock-in, which is also relevant to this material.
Topic 4	93	40	93	49	Delete green infrastructure and introduce the concept of environmentally sound infrastructure. [Government of Bolivia]	The phrase "environmentally sound technologies" has been added to the sentence, because this is the phrase that is used in the WGIII SPM. However, the phrase "green infrastructure" is discussed explicitly in the WGII SPM and TS and is therefore retained. The phrase "sustainable infrastructure" does not appear in the WGII or WGIII SPMs or TSs and therefore has been removed.

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Topic 4	93	42			Please add "mitigation and" resulting in the statement ".. and identified mitigation and adaptation needs..." [Government of Germany]	Text has not been modified as suggested. Original sentence states that GHG emissions continue to increase and that adaptation needs have not been addressed, both of which are supported by the underlying WG reports. The question of whether "mitigation needs" have been addressed is not one that is specifically addressed in the WG reports. It is unclear what a "mitigation need" is and it is unclear what level of mitigation is consistent with achieving such a need. For example, there are a range of emissions futures (and therefore mitigation pathways) that are consistent with achieving the 2 degree global target.
Topic 4	93	45	93	46	The last sentence is not coherent with the first, bold sentence. Whereas the first sentence is addressing the need for building capacity in existing institutions the last sentence suggests to create new institutions. This is confusing and is also not reflecting the real world. What is much more required is building new linkages, new networks among already existing institutions and organisations. Where actual restructuring will have to happen is in the private sector: renewables instead of fossil fuels, electric cars instead of otto and diesel engines etc. [Government of Austria]	The first sentence recognises the role of institutions in building capacity, but does not comment on the role of existing or new institutions. Subsequent sentences acknowledge that a range of institutional arrangements already exist, but yet challenges of mitigation and adaptation remain. The final sentence states that new institutions MAY be needed, but does not state that this is in fact a necessity. Rather this is an open question, which is consistent with how this topic is treated in the WGII report (e.g., Chapter 16).
Topic 4	93	45	93	46	Is there a need for new institutions or rather for a better coordination of the existing ones? And to which geographical scale does this statement apply? [Government of Germany]	The question of whether new institutions are needed or whether better coordination of existing institutions are needed is an open question as indicated by the text. It is clear that a broad range of new institutions have already been formed to manage climate change (e.g., the UNFCCC, IPCC, etc.). Also, as indicated by the text, institutions are needed at a range of scales.
Topic 4	93	46			WGII 2.4 can support this statement, given its coverage of climate services as an enabling institution [Stewart Cohen, Canada]	WGII 2.4 added to line of sight for this paragraph.
Topic 4	93	49	93	49	Replace "green and sustainable infrastructure" for "sustainable infrastructure". It is not clear what "green" adds or means here. [Pedro Alfredo Borges Landáez, Venezuela]	Phrase has been changed to "green infrastructure and environmentally sound technologies", reflecting language in the WGII and WGIII SPMs, respectively.

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Topic 4	93	49	93	53	Explain what new technologies. Bolivia is against the use of geoenengineering technologies, including BECCS. [Government of Bolivia]	This paragraph does not refer to new technologies. A complete catalog of relevant technologies is beyond the scope of Topic 4.2. More specific references to technologies associated with adaptation and mitigation options appear in Topic 4.3 and Topic 4.4.
Topic 4	93	49	94	4	This text could lead policy makers to conclude that a 'technical innovation' approach alone could be the way forward to approaching adaption and mitigation measures. This would be the wrong conclusion particularly when it comes to buildings. It is important to mention in this section, and before this text, that passive design strategies can play a significant part in GHG adaptation and mitigation effectiveness and their potential should be maximised before or at least in consort with any technological innovation. Passive strategies such as low energy building design or climate ready passive cooling strategies for buildings can have lower environmental impacts and should be considered before technological fixes are employed. Many technical innovations seen now as 'beneficial' for adaptation and mitigation may not prove to be so effective in implementation and could add to GHG for example by lifecycle embodied energy or lack of effectiveness compared to other adaptation and/or mitigation passive measures that could have been deployed more cost effectively. [David Gale, United Kingdom of Great Britain & Northern Ireland]	The current innovations in passive design and the associated materials and engineering supporting passive design in buildings can be considered to be technologies. Therefore, the example of passive design actually supports the concept of technological innovation helping to address mitigation and adaptation challenges. However, as is made clear in other paragraphs in this section, technological innovation alone is unlikely to be sufficient.
Topic 4	93	49			Definition of "green and sustainable infrastructure" is quite ambiguous. This should be replaced with clearer wordings like those already used in WG1, 2 or 3. [Government of Japan]	Phrase has been changed to "green infrastructure and environmentally sound technologies", reflecting language in the WGII and WGIII SPMs, respectively.
Topic 4	93	49			What is "green infrastructure"? [Government of Germany]	Green infrastructure is discussed in detail in WGII SPM
Topic 4	93	52	93	52	"the enhanced uptake of low carbon and..." is not at all a clear statement;, please, rewrite. [Government of Russian Federation]	"the enhanced uptake of low-carbon and carbon natural energy technologies" has been changed to "the implementation of low-carbon and carbon natural energy technologies"
Topic 4	93	52	93	52	Suggest that "implementation" would be a better choice of words than "uptake" since uptake has other uses in terms of greenhouse gases [Government of Canada]	Text modified as suggested

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Topic 4	93	52	93	53	"The enhanced uptake of low carbon and carbon neutral energy technologies can reduce the energy intensity of development, the carbon intensity of energy, and therefore the costs of mitigation". This statement insinuates that the "enhanced uptake low carbon technologies....." is free of costs which is incorrect. Of course mitigation later is cheaper if resources are spent on low carbon technologies early on. [H-Holger Rogner, Austria]	Text modified to read "Investments in near-term efficiency measures and the implementation of low-carbon and carbon neutral energy technologies can reduce the energy intensity of economic development, the carbon intensity of energy, GHG emissions, and therefore the long-term costs of mitigation." This language makes it more clear that such technologies require investment and that the reduced costs of mitigation manifest over the long term.
Topic 4	93	52	93	53	The sentence "The enhanced uptake of low carbon and carbon neutral energy technologies can reduce the energy intensity of development, the carbon intensity of energy, and therefore the costs of mitigation." essentially states that "mitigation can reduce the costs of mitigation". It needs to be rephrased in order to convey a meaningful message. [Government of Sweden]	Text modified to read "Investments in near-term efficiency measures and the implementation of low-carbon and carbon neutral energy technologies can reduce the energy intensity of economic development, the carbon intensity of energy, GHG emissions, and therefore the long-term costs of mitigation." This language makes it more clear that such technologies require investment and that the reduced costs of mitigation manifest over the long term.
Topic 4	93	52	93	53	"The enhanced uptake of low carbon and carbon neutral energy technologies" does not influence energy intensity (efficiency measures). Suggested: Efficiency measures and the uptake of low carbon and carbon neutral technologies.... [Government of Netherlands]	Text modified to read "Investments in near-term efficiency measures and the implementation of low-carbon and carbon neutral energy technologies can reduce the energy intensity of economic development, the carbon intensity of energy, GHG emissions, and therefore the long-term costs of mitigation." This language makes it more clear that such technologies require investment and that the reduced costs of mitigation manifest over the long term.
Topic 4	93	53			Is it possible to qualify the timeframe meant by 'the costs of mitigation' (i.e., is this in the short term, medium term, long term)? [Government of Canada]	Text modified to read "Investments in near-term efficiency measures and the implementation of low-carbon and carbon neutral energy technologies can reduce the energy intensity of economic development, the carbon intensity of energy, GHG emissions, and therefore the long-term costs of mitigation." This language makes it more clear that such technologies require investment and that the reduced costs of mitigation manifest over the long term.

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Topic 4	93		93		The introduction of Topic 4 really needs a brief summary of the various mitigation and adaptation options available. For mitigation, I could imagine something along these lines: "Mitigation responses belong to one of these key mitigation strategies: reducing energy demand, improving the efficiency of energy production and use, switching to lower carbon energy sources such as renewable sources of energy and nuclear energy, removing (and storing) carbon-dioxide; changing land use patterns and improving urban design;". (instead of the dots please include other key non-CO2 mitigation strategies, too). [Diana Urge-Vorsatz, Hungary]	Rejected, this would become a mini-summary which is not appropriate. We provide a clearer description of the intent of Topic 4 but it is not possible to summarise its content, this is done in the SPM.
Topic 4	93				The section immediately jumps into discussing a few details without introducing why those details are paid so much attention to. This includes the sectoral coverage. The section should have a sentence or two that explains that mitigation can be discussed by many groupings/strategies, and in AR5 (similarly to AR4 etc) we choose discussing these by the principal sectors of the economy. This choice is convenient for devising mitigation policies that are often designed/implemented by (sectoral) ministries [or give a better explanation!!] [Diana Urge-Vorsatz, Hungary]	The introduction has been revised to give a better overview of the intent of topic 4, but we do not feel that it is helpful to go into too much detail.
Topic 4	93				Please see the above two comments and apply them to adaptation. It would be very important to see a high-level summary of key adaptation strategies (or groups of adaptation strategies). [Diana Urge-Vorsatz, Hungary]	The introduction has been revised to give a better overview of the intent of topic 4, but we do not feel that it is helpful to go into too much detail.
Topic 4	94	1	94	1	Reference to WGIII 5.6 would indicate additional insight on lock-in with infrastructure (WGIII 4.5.2.1. and 5.6.3). No such insight is presented in this paragraph. [Government of Netherlands]	WGIII 5.6 discusses technological change. 5.6.3 is one subset of that, but the points made in this particular section of text are supported by 5.6.
Topic 4	94	1	94	1	Table 4.1: It is not clear why the table contains the entry "Social attitudes and behaviors" while the text to which it refers uses the notions of "behavior, lifestyle and culture" to make a very similar point. I think the formulations in this part could profit from being phrased more precisely and to the point [Helmut Haberl, Austria]	Such apparent inconsistencies are due to differences in how WGII and WGIII address this general topic and associated terminology. However, based on other comments, row headings have been revised in the table.
Topic 4	94	1	94	3	Please insert after "can be contingent" the words "upon the policy enabling environment". Justification: finance and technology as well as broader economic development are only one side of the factors that induce private sector finance, as also highlighted by SPM (p. 30-32) and the underlying chapters of these SPM pages and as highlighted by table 4.1 on page 94. [Government of Germany]	Phrase "an enabling policy environment" inserted in the suggested location.
Topic 4	94	6	94	9	Please revise the text of this statement; it is not clear. [Government of United States of America]	Latter half of sentence deleted.

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Topic 4	94	6	94	9	Suggest breaking into two sentences to enhance clarity and impact, ending after first evidence/agreement statement, and moving the rest of the statement to the proceeding paragraph. For example: Behavior, lifestyle and culture have considerable influence on energy use and associated GHG emissions and the vulnerability of human and natural systems to climate change (high agreement, medium evidence). High mitigation potential exists in some sectors, in particular when complementing technological and structural change". [Government of Canada]	Latter half of sentence deleted.
Topic 4	94	6	95	1	In my view, consumption and production should not be subsumed in "lifestyles". The arguments assembled here show that substantial changes in patterns of consumption and production are required for deep cuts in GHG emissions; I am not sure whether that important message should be blurred by omitting "production" almost completely and referring to "consumption" very sparsely. [Helmut Haberl, Austria]	This paragraph focuses specifically on aspects of mitigation and adaptation associated with personal/individual consumption and behavioral preferences. However, text has been modified to create a link between such individual choices and production (e.g., preferences for greater consumption ultimately drive greater production to meet demand).
Topic 4	94	9			Delete structural change because is a subjective and a prescriptive concept. [Government of Bolivia]	Latter half of sentence deleted.
Topic 4	94	11	94	12	It would seem relevant to also include energy saving measures/habits among the factors that can reduce the growth in emissions resulting from change in lifestyles - fix the latter part of sentence could read: "..., but emissions can be substantially lowered through changes in consumption patterns, energy savings measures, dietary change and reduction in food wastes." [Government of Denmark]	Sentences modified to read: "Shifts toward more emission-intensive lifestyles might contribute to higher energy and resource consumption. This in turn might drive greater energy production and GHG emissions and therefore higher mitigation costs. In contrast, emissions can be lowered through changes in individual consumption patterns, adoption of energy savings measures, as well as dietary changes and reduction in food waste."
Topic 4	94	12	94	12	food waste (not plural) [Peter Thorne, Norway]	Text modified as suggested
Topic 4	94	13	94	13	may depend on [scott power, australia]	Text modified as suggested
Topic 4	94	14	94	14	that depend on [scott power, australia]	Text modified as suggested
Topic 4	94	15	94	17	The use of the phrase 'amenity value' here is confusing - why would living somewhere with a 'high perceived amenity value' be negative? It needs to be qualified e.g. 'More recent studies have demonstrated that economic development and urbanization of hazardous landscapes may increase human exposure to extreme weather events and climate change resulting in greater economic losses and risks to public health and safety (Baldassare et al., 2010; IPCC, 2012; Preston, 2013)' WG2_16.3.2.4_para4 - urbanization of coastal regions, flood plains...hazardous/potentially hazardous landscapes. Some areas of high perceived amenity value will not be prone to the same hazards. [European Union]	Text modified to read "Economic development and urbanization of high amenity landscapes exposed to climate hazards may increase the exposure of human settlements and reduce the resilience of natural systems."

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Topic 4	94	15	94	17	This sentence needs to be rewritten in plain English [Government of United Kingdom of Great Britain & Northern Ireland]	Text modified to read "Economic development and urbanization of high amenity landscapes exposed to climate hazards may increase the exposure of human settlements and reduce the resilience of natural systems."
Topic 4	94	16	94	16	Unclear what is meant here by "high perceived amenity value". [Government of Canada]	Text modified to read "Economic development and urbanization of high amenity landscapes exposed to climate hazards may increase the exposure of human settlements and reduce the resilience of natural systems."
Topic 4	94	18	94	18	Excessive reference to WGIII 2.2, plus reference WGIII 3.9 does not entail any evidence to the influence of behaviour change, lifestyle or culture [Government of Netherlands]	References to WGIII 2.2 and 3.9 have been deleted. Reference to 3.4 has been added.
Topic 4	94	20	94	20	Table 4.1, row 1 'Demographic Change', under the column of 'Implications for Adaptation': clarification should be made as to what the authors mean by a 'hazardous landscape'. This is making an important point about the link between population growth and pressure on ecosystem services, but greater clarification should be made regarding the nature of a hazardous landscape. [European Union]	Text modified to read "Economic development and urbanization of high amenity landscapes exposed to climate hazards may increase the exposure of human settlements and reduce the resilience of natural systems." Row heading for Table 4.1 has been changed to "Adverse Externalities of Population Growth and Urbanization".
Topic 4	94	20	94	20	Regarding the Table 4.1, the title of the first column should be changed: instead of saying "Constraining Factor", it would better to say " Driving forces" [JACQUES ANDRE NDIONE, SENEGAL]	Use of driving forces is problematic because driving forces alone have various implications for mitigation and adaptation in addition to the potential they have to constrain adaptation and mitigation.
Topic 4	94	20	94	20	Regarding the Table 4.1, the title of the first constraining factor "Demographic change", it would better to say "Demographic change and Urbanization" [JACQUES ANDRE NDIONE, SENEGAL]	Row heading for Table 4.1 has been changed to "Adverse Externalities of Population Growth and Urbanization".
Topic 4	94	20	94	20	Table 4.1 (Common constraints influencing mitigative and adaptive capacity) is confusing and needs to be revised. It is not clear what is meant by "Constraining Factor". Some listed as such are positive, like "Knowledge, education, and human capital", others are more neutral or labels like "Governance, institutions and policy" and yet others are clearly negative, like "inequality" or "Adaptation and development deficits". Additionally, "Demographic change" seems to mean "Population growth". [Pedro Alfredo Borges Landáez, Venezuela]	Table caption has been modified to provide greater clarity regarding what is meant by a constraint. However, the venacular menaing of constraint would be sufficient to interpret the table. Row headings have been modified to emphasize the negative dimension of each factor.

Review comments on the IPCC AR5 Synthesis Report First Order Draft - Topic 4

Topic 4	94	20	94	20	Table 4.1 (Common constraints influencing mitigative and adaptive capacity): In the row about Finance, the statement "Influences the capacity of developed and, particularly, developing nations ..." which appears in the mitigation column refers to an issue that is applicable to both mitigation and adaptation and should therefore be also reflected in adaptation: e.g. "Influences the scale of investment of developed and, particularly, developing nations in adaptation policies and measures and therefore their effectiveness.". [Pedro Alfredo Borges Landáez, Venezuela]	The fact that different constraints affect both mitigation and adaptation is self-evidence from the table structure. We have specifically chosen to highlight slightly distinct issues for mitigation and adaptation, but recognize that we have not provided an exhaustive or exclusive list of the ways in which these constraints influence mitigation and adaptation.
Topic 4	94	20	94	20	Consider adding WGII 5.5 as supporting references under "Implications for Adaptation" in rows 2, 3, and 4. [Government of United States of America]	Suggestion not adopted, as specific sectoral examples are not provided for this table, and thus it seems inappropriate to single out coastal systems as an exemplar.
Topic 4	94	20	95	1	Table 4.1 : This table is quite well summarized and illustrated common constraints influencing mitigative and adaptive capacities with key worlds and signpost where can find more details of relevant issues. [Government of Republic of Korea]	Thanks
Topic 4	94	20			Table 4.1: Knowledge/implications for mitigation, 4th line: It is suggested to insert "to" before "adopt". [Government of Austria]	Text modified as suggested
Topic 4	94	20			Delete this table because is not in previous reports. [Government of Bolivia]	As indicated by the citations, the content in this table appears in the WGII and WGIII reports. A new table is used to synthesize this information because this section necessitates the consideration of both mitigation and adaptation. Such an integrated perspective does not appear in the WG reports.
Topic 4	94	20			It is suggested to add lines on "RDD" and "social and technological innovation". [Government of Germany]	RDD (i.e., research development and deployment) and social and technological innovation seem to be consistent with the existing row that addresses technology.
Topic 4	94		94		Table 4.1 - Row on Technology: "Influences the rate and scale at which society can reduce the carbon intensity of energy production and use and transition toward renewable technologies" - Why only renewables? Add "nuclear energy and CCS" Suggestion: Influences the rate and scale at which society can reduce the carbon intensity of providing energy services and the transition toward low carbon technologies, i.e., renewables, nuclear and CCS" [H-Holger Rogner, Austria]	Text modified to not highlight a particular technology: "Slows the rate at which society can reduce the carbon intensity energy services and transition toward low carbon and carbon neutral technologies,"
Topic 4	94		94		Table 4.1: 'framing': jargon. Meaning unclear. [scott power, australia]	Term deleted as suggested.
Topic 4	94		94		Table 4.1:Description for `Technology` & Mitigation: mainly focused on "renewable technologies", whereas reference WGIII 6.3.2.2 refers mainly to CDR that is currently not incorporated (a ref to WGIII 6.3.2.2 alone seems sufficient enough for the context of this paragraph). [Government of Netherlands]	Text modified to not highlight a particular technology: "Slows the rate at which society can reduce the carbon intensity energy services and transition toward low carbon and carbon neutral technologies"

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Topic 4	95	0			Figure 4.1 : Use () around units, use CO2-eq and use yr ⁻¹ There is no line of cite in the caption, it should be [Thomas Stocker/ WGI TSU, Switzerland]	Accept Figure modified
Topic 4	95	2	101	20	In light of maintaining a balanced text throughout the subsection, request provision of current emissions for each sector – not only AFOLU – in the respective paragraphs. [Government of Japan]	Accept mitigation potential estimate values given in figure and deleted from text
Topic 4	95	2	101	22	The titles of sections 4.3 and 4.4 use the expression "response options". This is not an appropriate expression as it is not self-explaining. WG2 and WG3 use the expression "sectoral" measures or opportunities. This is much clearer and indicates the topic of the sections. Please modify. [Government of Germany]	Reject: titles given by IPCC panel
Topic 4	95	2			Section 4.3. This is a very important section, and we appreciate it in its current form. However, we would like more findings on how the different mitigation options presented can be enabled through the use of policies and measures. E.g. in page 93 line 13-16 it is said that Topic 4 will highlight the mitigation and adaptation options available, but also enabling factors together with policies and measures. In the current draft we feel that the latter are missing. [Government of Norway]	Noted: Covered in topic 4.5
Topic 4	95	4	95	5	Need to mention region [Government of India]	Accepted: added across regions
Topic 4	95	4	101	20	Section 4.3: This section is dealing with broad subjects and at a glance it is not easy to concentrate on main messages or to follow the stream of contents. Therefore we would like to suggest two things: (1) put an introductory part at the beginning of the section to say what will be treated in this section and (2) divide into a couple of sub-sections which make this section get more understandable and easier to gain main lessons. [Government of Republic of Korea]	Accept: The section structure modified
Topic 4	95	7	95	7	baseline': jargon. Unclear. Define/clarify. [scott power, australia]	Noted: BSL used in all chapters
Topic 4	95	7	95	8	An annex with acronyms could be added to facilitate reading (AFOLU, BECCS...) [European Union]	Accepted: glossary explained
Topic 4	95	7	95	8	This statement is a direct copy of the statement in the IPCC WGIII SPM 4.2.1 page 20. Do the readers know about the different scenario's and the likelihood of the baseline scenario? [Government of Netherlands]	Noted: Baseline has no scenarios
Topic 4	95	7	95	10	In baseline scenarios, GHG emissions are projected to grow in all sectors, except for net CO2 emissions in the AFOLU sector (robust evidence, medium agreement). In 2010, 35% of direct GHG emissions were released in the energy supply sector, 24% in AFOLU, 21% in industry, 14% in transport and 9.6% in buildings. Exact reference to the estimations should be reflected, see for instance page 37 line 8-14 in SPM SYR [Government of Sweden]	Accept: Text modified
Topic 4	95	7	95	13	• SYR [P95 L7-13] Add Agriculture as sector [Government of Saudi Arabia]	Noted: AFOLU includes agriculture
Topic 4	95	7	95	13	We would suggest to also include in the text the figures for indirect emissions for industry, transport and buildings respectively. [Government of Denmark]	Noted: too much data , only years given
Topic 4	95	7	95	13	Duplication of P 37 L 8-17. Please straighten text. [Government of Germany]	Accept text modified

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Topic 4	95	7		13	This section refers to SPM 4.2.1 not SPM 4.2.2, please change. [Government of Germany]	Accept change : 4.2.1
Topic 4	95	8	95	8	Define AFOLU here unless there is an acronym table or it has been defined elsewhere. [Government of United States of America]	Accept : defined in glossary
Topic 4	95	10			Add sentence: "The share of energy supply, buildings and industry changes to X%, Y%, and Z%, if indirect emissions from electricity production are allocated to end-u sectors. " [Diana Urge-Vorsatz, Hungary]	Accept: due to limitation of space not feasible
Topic 4	95	12	95	13	To make it consistent with the published WGIII SPM, request to replace the sentence with "Most recent estimates indicate a decline in AFOLU CO2 fluxes, largely due to decreasing deforestation rates and increased afforestation. {WGIII SPM}". The sentence is taken from WGIII SPM.4.2.4 (page 16, the second sentence of the first paragraph of SPM.4.2.4). Also, please review the reference made at the end of the paragraph, as the sentences in the paragraph are drawn from WGIII SPM. 3, SPM. 4.2.1, SPM. 4.2.4. [Government of Japan]	Accept replaced sentence on 'Deforestation' text modified
Topic 4	95	12	95	13	SPM 4.2.3 states: "... a decline in AFOLU Co2 fluxes, largely due to decreasing deforestation and increased afforestation" Please consider wording and be specific about which sector this entails. It seems to refer to the last mentioned sector (energy supply), but it should refer to the AFOLU sector. [Government of Netherlands]	Accept : Text modified
Topic 4	95	14	95	14	On Figure 4.1; Does 'AFOLU' mean 'AFOLU (net)', following Figure SPM7 on P21? [Takashi Hongo, Japan]	Accept: Always ' Net'
Topic 4	95	14	95	15	Figure 4.1 - No whiskers - mentioned in the caption but not shown in the figure [H-Holger Rogner, Austria]	Accept : figure modified
Topic 4	95	14	96	2	Figure 4.1 : The figure 4.1 is not shown where it comes from. Please put the indication of the figure, WGIII Figure TS.15 (or WGIII Figure 6.34). [Government of Republic of Korea]	Accept: Reference for figure given
Topic 4	95	15	95	15	Figure 4.1 provides important information about the baseline scenario up to 2100. However, information about mitigation scenarios by sector in line with 450 ppm would also be important information. Please consider replacing Figure 4.1 with Figure WGIII SPM.7. Or alternatively, a combination where the middle panel (450 ppm with CCS) of Figure WGIII SPM.7 is added to SYR Figure 4.1. In addition, it would be very helpful if the ranges for the mitigation potential by sector from Figure WGIII SPM.7 is included in the sector paragraphs on page 99, lines 6, 38 and 47, and page 100, line 1, respectively. [Government of Norway]	Accept : figure .1 modified
Topic 4	95	16			Figure 4.1: It is suggested to improve the clarity of the figure. One option is to keep the dotted line for the current emission level as short as the graphs for the years 2030, 2050 and 2100 and to include the year 2010 in the figure in the same manner as for the projections. [Government of Austria]	Accept : figure modified

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Topic 4	95	16			Figure 4.1: Clarification is required in comparing panel a and panel b about the allocation of non-CO2 emissions in panel b. It would be also helpful to clarify whether or not the sums of the bars for a given year and sector in comparing panel a and b are equal or not. [Government of Austria]	Accept : figure modified
Topic 4	95	17	95	17	The AR5 Scenarios Database is mentioned in the SYR but I was not able to find it. A reference is needed (and perhaps a web link). [Haroon Kheshgi, United States of America]	Accept : text modified
Topic 4	95	21	95	21	Should be hollow boxes not whiskers to match the figure [Haroon Kheshgi, United States of America]	Accept : figure modified
Topic 4	95		95		Table 4.1, row 9 'Inequality' under the column of 'Implications for Mitigation': Say what metric was used to define 'poor'. [European Union]	Accept table 4.2 modified and replaced
Topic 4	95		95		Table 4.1: row titled "inequality". "Inequality" should probably be " Existence of low-income countries: it is not inequality that constrains ability of poor nations to adapt. It is the fact that they are poor. Last column then becomes: "As there are other countries that do not have low incomes, the impacts of climate change ..." Also, does not logically follow that impacts are greater just because people are poor, since some poor may not be in harms way. row needs more thought. [scott power, australia]	Accepted table modified
Topic 4	95		95		Figure 4.1: It is unclear why direct emissions of a sector are lower compared to direct + indirect emissions in the graph. E.g., 'CO2 energy supply'. [Government of Netherlands]	Accepted table modified
Topic 4	95				Table 4.1: Natural resources/implications for mitigation as well as adaptation: substitute "influences" by "influence". [Government of Austria]	Accepted table modified
Topic 4	95				Table 4.1: Natural resources/implications for adaptation: Substitute "enhances" by "enhance". [Government of Austria]	Accepted table modified
Topic 4	95				Figure 4.1: the legend is unnecessary, because the sectors are labeled in the column titles. [Tommi Ekholm, Finland]	Accept : figure modified
Topic 4	95				Figure 4.1 The key colour codes as well the axes labels at the bottom are faint and small . Consider enhancement as well as increasing the font size [Government of Kenya]	Accept : figure modified
Topic 4	96	4	96	4	'low- level' requires qualification/quantification i.e. 450ppm by 2100 - is this what is meant here? Should this also be quantified as matching temperature pathway i.e. 2deg, 4deg? [European Union]	Accept : low land explained in topic 3
Topic 4	96	4	96	4	Remove the semicolon after "level". [Government of Austria]	Accepted: text modified
Topic 4	96	4	96	4	editorial: remove ";" [Government of Russian Federation]	Accepted: text modified
Topic 4	96	4	96	4	"throughout the economy" considered too vague. Suggested: "Energy supply, demand, agriculture, forestry and other land use (AFOLU) (WGIII 6.8) [Government of Netherlands]	Accepted: text modified
Topic 4	96	4	96	4	"," shall be deleted after "level" [Government of Italy]	Accepted: text modified

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Topic 4	96	4	96	9	Messy paragraph: what is the crucial message here? No information on diversity of policies, whose effectivity varies per region. Importance of flexibility? Section 6.3 provides 3 measures for mitigation: 1> Decarbonization of energy supply, 2> Fuel switching in energy demand, 3> Demand reduction. Make sure that the comments below are considered and the measures pointed forward to link together to a full mitigation strategy needed for low emission scenarios. [Government of Netherlands]	Accepted: text modified
Topic 4	96	4	96	9	This paragraph does not relate to the topic in the previous bolded header - about baseline scenarios - and so requires its own bolded header. Suggest the first sentence be bolded and expanded slightly by adding text from lines 6-7 to read as follows: "Stabilizing GHG concentrations in the atmosphere at a low level (remove semi-colon (typo)) requires mitigation throughout the economy and full decarbonization of energy supply in the long-term." Then lines 6-8 can be abbreviated to read as follows: "Decarbonization of energy supply in the long-term provides more flexibility for end-use sectors." Also, suggest adding to the end of this paragraph a sentence noting the additional advantages of demand reductions which might then allow deletion of the paragraph on lines 20-26 and 28-38. In general, there seemed to be a lot of repetition on this page. [Government of Canada]	Accepted: text modified
Topic 4	96	4	96	26	The more general paras starting in L 4 and L 20 should be joint, the one on urbanization starting in L 11 should follow. Repetition of information already given in previous sections should be avoided. [Government of Germany]	Accepted: text modified
Topic 4	96	5	96	5	Efforts in one sector determine the need for mitigation in others (medium confidence)'. This is not very clear and I can't find it in the WG3 SPM. Suggested alternative text 'Efforts to increase mitigation is required in all sectors with greater gains possible in some sectors while in other sectors where gains may be more difficult'. [European Union]	Accepted: text modified
Topic 4	96	5	96	5	This is a statement of the obvious and we can only say we have "medium confidence" in it? The authors should re-assess the confidence level associated with this statement. [Government of United States of America]	Accepted: text modified
Topic 4	96	6	96	7	Delete full decarbonization because is a prescriptive and very subjective concept. Also delete this concept from the whole text. [Government of Bolivia]	Reject: Approval in WG III SPM
Topic 4	96	6	96	7	Based on SPM.4.2.2 Please include the important role of electricity generation [Government of Netherlands]	Accepted: text modified
Topic 4	96	6	96	7	Low stabilization scenarios are not just dependent on the decarbonization of the power system; suggested to add that also energy intensity reduction and the timing of the two are crucial (WGIII 6.8.4) [Government of Netherlands]	Accepted: added
Topic 4	96	6	96	7	"Low stabilization scenarios are dependent upon a full decarbonization of energy supply in the long term." This is a very important statement, please consider putting it in bold, and restructure the text so this sentence leads the para [Government of Denmark]	Accept: change bold statement

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Topic 4	96	6	96	7	Suggest deletion or revision. Statement "Low stabilization scenarios are dependent on a full decarbonisation of energy supply" is not supported by WGIII SPM and AR5 and should be deleted. If alternate text sought, could use: "While stabilizing CO ₂ eq concentrations requires fundamental changes to the global energy supply systems, a portfolio of measures is available that includes the reduction of final energy demand through enhanced efficiency or behaviours, and the introduction of low-carbon supply options such as renewables, nuclear, CCS, in combination with fossil or biomass energy conversion processes, and finally, improvements in the efficiency of fossil fuel use." (ref. WGIII AR5, 7.11.2 p58) [Government of Australia]	Accepted text revised
Topic 4	96	7	96	7	What entails? Rephrase to "...flexibility could support the implementation of fluctuating renewable energy sources ..." [Government of Netherlands]	Text revised
Topic 4	96	11	96	11	Consider to write a shorter sentence [Government of Italy]	Accepted: text modified
Topic 4	96	11	96	14	It is unclear what basis was used for the description of the head line "urbanization is expected to continue to be a major driver". Suggest replacing the headline with "Urbanization is a global trend and is associated with increases in income, and higher urban incomes are correlated with higher consumption of energy and GHG emissions."(WG3 SPM, p.18) [Government of Japan]	Accepted: Urbanization section deleted due to space limitation
Topic 4	96	11	96	14	The text here needs editing for clarity - it says urbanization will continue to be a driver in rapidly urbanizing areas. [Government of United States of America]	Accepted: edited and revised
Topic 4	96	11	96	16	previous comment also apply for this paragraph. [Government of Bolivia]	Noted: Text revised
Topic 4	96	11	96	18	The explanations of this paragraph dealing with Urbanization, are relevant [JACQUES ANDRE NDIONE, SENEGAL]	Accepted: text modified
Topic 4	96	20	96	21	Should the point in electricity decarbonization be with a bold typeface? This statement an important and clear message. [Tommi Ekholm, Finland]	Accepted: made bold
Topic 4	96	20	96	21	Based on SPM.4.2.2; which levels? GHG, CO ₂ eq, direct&indirect? [Government of Netherlands]	Accept: Text shortened and modified due to space limitation
Topic 4	96	20	96	21	We suggest that the first sentence be in bold. [Government of Denmark]	Accepted
Topic 4	96	20	96	21	If retained, this paragraph requires that the first sentence be bold as the topic here does not link to that in the previous paragraph on urbanization. [Government of Canada]	Accepted: Shift paragraph
Topic 4	96	21	96	26	mainly subtracted from chapter 7 of the WGIII final report. The main text also mentions the removal of CO ₂ with CCS, BECCS, or other technologies. Please include. [Government of Netherlands]	Accepted: Include CCF, BECCS
Topic 4	96	22			Suggest inserting the word 'global' in front of 'economy' [Government of Canada]	Accepted

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Topic 4	96	23	96	23	The statement: "Many most ambitious scenarios are relying on a net removal of CO2 from the atmosphere" should not be hidden in a paragraph but should be highlighted as a key finding in a sentence of its own in bold. This statement should be further expanded by the statement that any further delay of mitigation action would finally result in a greater dependence on carbon dioxide removal (CDR) technologies in order to meet long-term goals. [Government of Austria]	Noted
Topic 4	96	23	96	26	The description of "an associated phase out of freely emitting coal generation" should be deleted. It is not always case. "Coal without CCS" is NOT phased out in the Figure 7.10 of WG3 Final Draft, for example. [Hirofumi Kazuno, Japan]	Noted: text clarified
Topic 4	96	25	96	25	The text should be changed from "coal" to "fossil", for consistency with WG3; see, e.g., WG3 SPM, p. 24: "CCS technologies could reduce the lifecycle GHG emissions of fossil fuel power plants." [Government of United States of America]	Accepted: Paragraph revised
Topic 4	96	26	96	26	'roughly 550ppm CO2eq or less by 2100' - what temperature pathway is this the equivalent of? [European Union]	Noted: not easy to equate with temperature
Topic 4	96	26	96	26	Reference to decarbonization of electricity and phase out of freely emitting coal generation could be made even more useful to policymakers by adding information related to various concentration levels. Request accurate reflection of approved AR5 WGIII SPM text on decarbonization by 80% and phase-out of fossil fuel power generation (not limited to coal) without CCS be added. Request addition of the following text after p96, line26 "or less by 2100"; In the majority of low-stabilization scenarios(430-530 ppm CO2eq), the share of low-carbon electricity supply (comprising renewable energy (RE), nuclear and CCS) increases from the current share of approximately 30% to more than 80 % by 2050 and fossil fuel power generation without CCS is phased out almost entirely by 2100. [Government of Japan]	Accepted: Text modified to be consistent with SPM, text added from SPM to make it short
Topic 4	96	26	96	26	"C02", "CO2" [Akihiko Murata, Japan]	editorial corrections will be taken care of in final draft
Topic 4	96	28	96	28	Energy demand and energy service demand are not clearly differentiated here. It is suggested to add "Energy" before 'Demand' in Line 28. [Government of China]	Accepted: text revised

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Topic 4	96	28	96	29	This is the expression from the WG3 SPM Final Draft. It has been changed during the approving process. Please replace it with the approved text as written down below. "Efficiency enhancements and behavioural changes, in order to reduce energy demand compared to baseline scenarios without compromising development, are a key mitigation strategy (...) Near-term reductions in energy demand are an important element of cost-effective mitigation strategies, provide more flexibility for reducing carbon intensity in the energy supply sector, hedge against related supply-side risks, avoid lock-in to carbon-intensive infrastructures, and are associated with important co-benefits. (p.21) [Government of Japan]	Accepted: text modified
Topic 4	96	28	96	29	This text is an almost verbatim repetition of the text in lines 8-9 of this same page. Suggest removing duplication. [Government of Canada]	Accepted: text modified
Topic 4	96	28	96	38	Highlight that this paragraph only applies for developed countries because developing countries are still trying to reach universal coverage in energy services. [Government of Bolivia]	Reject: Relevant to all countries: addressed later in para
Topic 4	96	28	96	38	Two comments: (1) why would premature retirement of C-intensive infrastructure represent a lock-in situation? Not clear to me. (2) Perhaps it could be argued that demand reductions need not result in commensurate reductions in services, e.g. if energy services can be provided in a more efficient manner. Note that I do not want to imply it would be better to phrase this in the "energy efficiency" language as this would immediately raise questions of rebound effects (although the authors might also consider to explicitly address that concern) [Helmut Haberl, Austria]	Accepted: text modified, section shortened
Topic 4	96	33	96	34	"since the number of co-benefits for energy end uses measures outweighs the adverse side effects which is not the case for all supply side measures" is difficult to understand. Please be more specific/clear. Furthermore, it is not clear where this statement is corroborated in the rest of the report [Government of Netherlands]	Accepted: text modified
Topic 4	96	33			Request that "the number of co-benefits" be replaced with "potential for co-benefits" in line with AR5 WGIII SPM, as there is no significance in comparison of "numbers." [Government of Japan]	Accepted: replaced
Topic 4	96	36	96	38	Change suggested: "However, energy service demand reductions are unlikely or even incompatible with the right to development in developing countries or for poorer population segments whose energy service levels are low or partially unmet" [Pedro Alfredo Borges Landáez, Venezuela]	Accepted: text reflects
Topic 4	96	36	96	38	Based on WGIII total report Technical summary. But is 'rarely applicable' similar as 'unlikely'? Please try to be specific about the prerequisites for this statement. If the energy supply does not meet minimal / basic demands there is most likely to energy reduction potential. [Government of Netherlands]	Accepted: delete poorer population

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Topic 4	96	37	96	37	Please ensure that the terminology used to describe groups of countries is consistent with the underlying scientific literature. "...in developing countries and for poorer population segments" is not clear here. WGIII Ch.6 discusses countries in terms of the income level which more accurately capture the diversity across regions and within countries. [European Union]	Accepted: consistency ensured
Topic 4	97	0			Figure 4.2 : EJ (exa joule = 10^{18} joule) should be explained in the caption Use () around units and use yr^{-1} [Thomas Stocker/ WGI TSU, Switzerland]	Accepted: EJ used in several paragraphs of WG III SPM
Topic 4	97	1	97	9	<Figure 4.2> This figure should be changed to the Figure SPM.7 in the page 21 of the approved WG3 SPM since it is adopted in the approved WG3 SPM. Adopting this discarded figure at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	Agreed Replaced with SPM
Topic 4	97	1	97	9	This is a very complicated figure; it may be good for scientists, but is not for communicating science. [Government of United States of America]	Accepted: figure replaced
Topic 4	97	2	97	9	"see chapter 6" should be removed and placed in the line of cite, e.g. {WGIII Figure 7.11, WGIII Chapter 6 for details} [Thomas Stocker/ WGI TSU, Switzerland]	Accepted text revised
Topic 4	97	2	97	9	Figure 4.2: Please check how to put the indication of Figures, as this figure is from WGIII Figure TS.15 which is WGIII Figure 6.34. It would be better to indicate both TS and WGIII AR or either one is enough. [Government of Republic of Korea]	Accepted
Topic 4	97	3	97	3	'430-530ppm CO ₂ eq concentrations by 2100' add temperature pathway equivalent? [European Union]	Accepted: added temperature
Topic 4	97	14	97	14	Proposal: replace "storing carbon" with "increasing carbon stocks" to reduce risks of misunderstandings related with stock/flow issues. [Helmut Haberl, Austria]	Accepted: text modified
Topic 4	97	14	97	15	The direct options of AFOLU for storing carbon in terrestrial systems is a only part of the reductions highlighted in the sentence above. The highlighted sentence could be better illustrated from other sectors - energy supply, transport, buildings & industry and there could be a separate highlight related to reduction of emissions from AFOLU. Currently this paragraph does not hang together very well, it is unclear and unreferenced - not a good introduction to Table 4.2 which is very informative and successfully differentiates between AFOLU and other sectors. [European Union]	Accepted: Delete AFOLU
Topic 4	97	14	97	15	Paragraph seems disjointed with the main statement, focusing on AFOLU alone [Government of Netherlands]	Accepted: Text modified
Topic 4	97				Figure 4.2: the figure and the point that it's trying to make is confusing. I would rather like to see a figure which outlines the mitigation potentials of each sector (if I remember right, there is such a figure in WG3). [Tommi Ekholm, Finland]	Fig 4.2 approved WG III SPM
Topic 4	97				Figure 4.2 The bottom notes labelled 1,2,3,4 as well as the key colour codes are faint. Consider enhancement [Government of Kenya]	Accepted: Final edition will address this

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Topic 4	97				Try to have same range of values for y-axis, as it gives a bad impression, with oil graph is up to 160, whereas others are up to 60. [Government of Netherlands]	Accepted: There is a huge difference between the two Y axis values - the figures are separated
Topic 4	97				Fig. 4.2. It does not reflect the Plenary-approved version of WG3 report. SYR is supposed to synthesize the findings across WG1, 2, 3, but is not supposed to override the wordings of individual WG. The followings, at least, have to be redrafted by reflecting the WG3 report: The figure should be revised by approved figure in WG3 SPM. [Taishi SUGIYAMA, Japan]	Accepted \: this figure is from chapter 7 and useful thus included
Topic 4	98	1	98	1	Table 4.2, Cell AFOLU/Supply side improvements/Substitution: Substitution of fossil fuels with biomass does not under all circumstances reduce GHG emissions; in my view adequate caveats (see responses 30 and 31 above) need to be introduced. [Helmut Haberl, Austria]	Accepted: table modified
Topic 4	98	1	98	1	This table could benefit from footnotes that explain some of the acronyms (e.g., HFC = hydrofluorocarbon, but also many others RES, BAT, MSP, CHP, LDVs, HDVs; some of these are given in the main text after this table). [Government of Canada]	Accepted: table modified
Topic 4	98	1	98	1	The text in Table 4.2 is too small. [Government of Switzerland]	Accepted: table modified
Topic 4	98	1	98	1	Table 4.2, cell Transport/GHG emission intensity reduction: As it has been shown that biofuels may have higher emissions per Joule of energy than fossil fuels it is in my view necessary to specify that only biofuels with lower GHG emissions than fossil fuels can help reduce GHG emissions. Full consideration of all relevant effects, including indirect land use change effects, is necessary to ensure GHG reductions. [Helmut Haberl, Austria]	Accepted: table modified
Topic 4	98	1	98	1	Table 4.2 cell industry/GHG emission intensity reduction: replacing fossil energy with biomass does not always result in GHG emission reductions. A caveat needs to be introduced that full consideration of GHG effects of increased biomass supply needs to be considered. [Helmut Haberl, Austria]	Accepted: table modified
Topic 4	98	1	98	2	<Table 4.2> The description of "Greater deployment of RES, nuclear energy..." in the row of "Energy" and the column of "GHG emission intensity reduction" should be kept as it is because this part is inevitable to indicate various technologies for mitigation. From a viewpoint of the effect of CO2 reduction, nuclear power has huge potential and necessary power source. [Hirofumi Kazuno, Japan]	Accepted: table modified
Topic 4	98	1			Delete this table because it has not been agreed in previous SPm. [Government of Bolivia]	Accepted: table modified
Topic 4	98		98		Table 4.2, 6th mitigation measure, sequestration: Please also consider to include conservation and restoration of wetlands and other high-carbon ecosystems. [Government of Norway]	Accepted only illustration
Topic 4	98				Acronym "RES" used for first time, not defined. [Government of Netherlands]	Accepted : defined

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Topic 4	98				Acronym "LDV" used for first time, not defined. [Government of Netherlands]	Accepted : defined
Topic 4	98				Acronym "BAT" used for first time, not defined [Government of Netherlands]	Accepted : defined
Topic 4	98				Table 4.2. Text in Column A need alignment [Government of Italy]	Accepted: table modified
Topic 4	99	1	99	2	This is a crucial statement but has already being pointed out in other forms earlier in this synthesis. Considering other placing in the document [Government of Netherlands]	Accepted: table modified
Topic 4	99	2	99	2	final energy demand': jargon. Unclear. [scott power, australia]	Noted: commonly used phrase
Topic 4	99	3	99	4	Suggest this sentence be deleted. Their relative importance is also dependent on policy and institutions. There is such a long list of factors in specific cases, I am not sure what the general factors given add? [Haroon Kheshgi, United States of America]	Accepted: text modified
Topic 4	99	6	99	8	The description of "decarbonisation through renewable energy (RE), nuclear power..." should be kept as it is because this part is inevitable to indicate various technologies for decarbonisation. From a viewpoint of the effect of CO2 reduction, nuclear power has huge potential and necessary power source. [Hirofumi Kazuno, Japan]	Accepted: text retained
Topic 4	99	6	99	33	Particularly in hot and dry regions closer to the equator, solar energy has great potential to gradually replace other energy sources. [Government of Brazil]	Noted: too detailed information: lack of space
Topic 4	99	7		33	These lines are full on unnecessary acronyms that make it difficulto for the uninitiated reader [Government of Sweden]	Accepted: text revised
Topic 4	99	8	99	11	Replacing coal by gas power plants is only part of the solution and only applies in the short term. The current text does not reflect these facts. Therefore: - The sentence after the first, bolded one should rather refer to the future development of emissions from energy supply, and address the necessity to do more than phasing out fossil fuels and that a changing the electricity supply is a key mitigation strategy, e.g. use the sentences from SPM WGIII, P 21, first paras of section SPM.4.2.2. - Please move the sentence on replacing current fossil fuel based plants by modern ones into the last bullet which also addresses the reduction of emissions from fossil fuel combustion (by CCS). [Government of Germany]	Accepted: text made consistent with approved SPM
Topic 4	99	10	99	10	Consider inserting ", selectively choosing (perhaps, through a Pigouvian taxing mechanism) not to exploit known energy reserves (when such exploitation is energy intensive), and limiting waste of energy in reserves that are exploited (e.g., eliminating or reducing flaring and levying royalties payments and penalties on flared gas (and other unnecessary waste))," after "plants". [Carl Southwell, United States of America]	Noted: too detailed information: lack of space
Topic 4	99	12	99	17	In order for readers to avoid an excess expectation to RE, following sentence should be added. "However, many RE technologies still need direct and/or indirect support, if their market shares are to be significantly increased."(WG3 SPM4.2.2) [Kei ESASHI, Japan]	Accepted: para modified: consistent with SPM

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Topic 4	99	12	99	17	Exclude the world "small". Using "hydropower" in general gives a broader example and there is no real reason for discriminating between generation scales of the Renewable energy. [Government of Brazil]	Accepted: text revised
Topic 4	99	12	99	17	The current text does not reflect the Plenary-approved version of WG3 report. The statements on renewable energy have to be described not only positive comment but also its challenges and costs as well as the statements in WG3 report [WG3 SPM P23, WG3 Chapter7 P22,P28,P40]. [Yuta SASAKI, Japan]	Accepted: para modified: consistent with SPM
Topic 4	99	12	99	17	This part should be re-written in a consistent manner with WG3 SPM Page 23 Lines 23-32. Especially, it should be correctly described that "many RE technologies still need direct/indirect supports" and integrating RE into energy systems has some challenges. [Government of Japan]	Accepted: para modified: consistent with SPM
Topic 4	99	12	99	17	This paragraph should be change to the description in the page 23 of the approved WG3 SPM. Especially, the description of "many RE technologies still need direct and/or indirect support" and "Challenges for integrating RE into energy systems and the associated costs vary by RE technology, regional circumstances, and the characteristics of the existing background energy system" are quite important for integrative discussion of the synthesis report. Renewable energy also has its merits and demerits and this fact should be more fully recognized by policy makers. [Hirofumi Kazuno, Japan]	Accepted: para modified: consistent with SPM
Topic 4	99	12	99	17	We believe this bullet could be further strengthened by lifting some findings on how renewable energy can be enabled through policies and measures. [Government of Norway]	Accepted
Topic 4	99	12	99	17	Recommend also mentioning large-scale hydropower, considering the important role it plays in some countries having mostly non-emitting electricity supplies. [Government of Canada]	accepted: issue covered in topic 4.5
Topic 4	99	12	99	17	Please refer to the SRREN as well. [Government of Germany]	Paragraph has been removed
Topic 4	99	12	99	17	Please add from P 21, from the third para of section WG3 SPM.4.2.2: "Regarding electricity generation alone, RE accounted for just over half of the new electricity-generating capacity added globally in 2012, led by growth in wind, hydro and solar power. However, many RE technologies still need direct and/or indirect support, if their market shares are to be significantly increased; RE technology policies have been successful in driving recent growth of RE." [Government of Germany]	Accepted: para modified to be consistent with SPM
Topic 4	99	12	99	17	The potential effect of the expansion of bio-fuel on food and water security should be mentioned here. [Government of Switzerland]	Accepted: addressed later under heading "Bioenergy"

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Topic 4	99	16	99	17	The expression "small hydropower" is introduced - this is not a valid classification of hydropower - the conceptualisation such as "small hydro" or " large hydro" is often used as synonymous with environmental or sustainability performance - this is discussed extensively in the SRREN ch 5.3.1 and 5.4.3.4 - I suggest that this is corrected to small-scale hydropower, thus bringing the language in line with SRREN findings. [Tormod Andre Schei, Norway]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	17	99	17	What does "PV" stands for? Explain it. [Government of Netherlands]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	18	99	19	Please insert the "Nuclear energy could make an increasing contribution to low-carbon energy supply, but a variety of barriers and risks exist" from the WG3 SPM p.23 as the nuclear has been suggested as the zero-and low carbon energy supplies in the SYR and also one of the down-to-earth options that policy makers take into account. [Government of Japan]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	18	99	19	This part should be revised to "Nuclear energy is a mature low GHG emission technology, and its global electricity generation has increased gradually." because global electricity generation of nuclear has increased by 566TWh between 1993 and 2010 according to IEA statistics. Referring to "share" is misleading. [Hirofumi Kazuno, Japan]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	18	99	25	Suggest reviewing the balance of this paragraph on nuclear energy. Are all the barriers mentioned of equal significance or are financial barriers more significant? [Government of Canada]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	18	99	26	Nuclear energy is the only method which is criticized in this part. [Government of France]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	18	99	26	The treatment of nuclear energy is unfair : <ul style="list-style-type: none"> • How is it possible to denounce uranium mining risks without a word on coal mining risks (even with CSC) ? • Why not explain that never has a nuclear armament been a consequence of an existing civilian electricity production ? Proliferation is easier with small reactors for plutonium production and compact centrifugal techniques. In particular Light water reactor are very poor military plutonium producers. • Nuclear wastes are carefully stored and controled at variance with gases, particles and solids produced by coal, gas and oil combustion. [Government of France]	Accepted: text will be consistent with SPM and TS - Modified and shortened - Space limitation
Topic 4	99	18	99	26	It is proposed to replace the paragraph (p.99, l.18 to 26) by: "Nuclear energy is a mature low-GHG emission source of baseload power and could make an increasing contribution to low carbon energy supply" [Government of France]	Accepted: Text modified and shortened due to space limitation

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Topic 4	99	19	99	23	Consider reorder of this sentence. Difficult to understand whether the argument is a risk or a barrier. Main text in the report specifies also other barriers, e.g. high mining / upgrading costs and limited resources. Use of sentences like "Continued use and expansion of nuclear energy worldwide as a response to climate change mitigation require greater efforts to address the safety, economics, uranium utilization, waste management, and proliferation concerns of nuclear energy use" (from main text) [Government of Netherlands]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	23	99	23	Change "..fuel cell cycles." to " ..'fuel cycles', i.e., delete "cell" [H-Holger Rogner, Austria]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	23	99	23	Editorial: Need a space before "New fuel cell cycles ..." [Government of Norway]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	23	99	23	"(space)" required after "." [Government of Italy]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	23	99	25	In my view, the sentence "New fuel cell cycles ... waste disposal" is very generic and does not convey much concrete information. It might be considered to delete that sentence. [Helmut Haberl, Austria]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	23	99	25	Add implementation. Text should read: ...'and progress in research, development and implementation..'. Examples for implementation are the high level nuclear waste/spent fuel repositories in Sweden and Finland which are under construction. [H-Holger Rogner, Austria]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	26	99	32	In my view it needs to be clarified that strong efforts to scale up biomass supply for BECCS may well not be C neutral in terms of C in biota and soils, in particular when the option to use the same area to increase C stocks in biota and soils (terrestrial C sink) are also considered (see Haberl, 2013, GCBB 5, 351-357 (doi: 10.1111/gcbb.12071 as well as IPCC WGIII, ch11). This may reduce the net benefits of BECCS and represents a risk that net benefits of BECCS deployment may be a lot lower than if such C cycle effects are not considered. Therefore, this para should be in my view mention these issues and also be stronger in discussing the potential sustainability issues related with strong increases in biomass supply discussed in great detail in ch11, WGIII, AR5 [Helmut Haberl, Austria]	Accepted: Text modified and shortened due to space limitation
Topic 4	99	26	99	33	Bolivia has reservations with the use of BECCS on climate change. Delete the whole paragraph. [Government of Bolivia]	text considered with SPM
Topic 4	99	26	99	33	The current text does not reflect the Plenary-approved version of WG3 report. The statements on carbon dioxide capture and storage have to be also described its costs as well as the statements in WG3 report [WG3 SPM P23, WG3 Chapter7 P26,P40]. [Yuta SASAKI, Japan]	Accepted: will be consistent with SPM

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Topic 4	99	26	99	33	CCS and BECCS are not mature technologies and it is not proven that they will be able to provide the carbon capture from fuels or achieve credible quantities of carbon removal from the atmosphere. Policy makers need to be aware of the implications of CCS and BECCS not performing as modelled. [David Gale, United Kingdom of Great Britain & Northern Ireland]	Accepted: text modified to add the new text
Topic 4	99	26	99	33	This paragraph here fails to mention the important fact that CCS has not yet been applied at scale to a large, commercial fossil fuel power generation facility (WGIII, SPM, page 22) and that "Since AR4 studies have underscored a growing number of practical challenges to commercial investment in CCS" (WGIII, Chapter 1, page 12). It should also mention that replacing coal with CCS comes with many adverse side-effects and only one co-benefit (Table 4.6 of SYR-114). [Kaisa Kosonen, Finland]	Accepted: text modified to add the new text
Topic 4	99	26	99	33	Suggest adding two sentences. First, "CCS power plants could be seen in the market if this is incentivized by regulation and/or if they become competitive with their unabated counterparts, if the additional investment and operational costs, caused in part by efficiency reductions, are compensated by sufficiently high carbon prices (or direct financial support). The sentence should be added in line 30 ahead of "Barriers to large-scale...". Secondly in the end of line 32 we suggest adding a shorter description drawn from the following sentence from WGIII SPM: "There is, however, a growing body of literature on how to ensure the integrity of CO2 wells in the potential consequences of a pressure build-up within a geological formation caused by CO2 storage (such as induced seismicity), and on the potential human health and environmental impacts from CO2 that migrates out of the primary injection zone.". Both suggested sentences are agreed language from WGIII, SPM 4.2.2. Please consider to include such a short description, and please keep in mind that measures should be described in a balanced way for all mitigation options presented. [Government of Norway]	Accepted : too detaled for SYR
Topic 4	99	26	99	33	Suggested to add: "While all components of integrated CCS systems exist and are in use today by the fossil fuel extraction and refining industry, CCS has not yet been applied at scale to a large, operational commercial fossil fuel power plant." [Tabaré Arroyo Currás, Mexico]	Accepted: new text addresses the issue
Topic 4	99	26	99	33	Please keep the meaning and wording of this paragraph. In this form it is balanced between risks, challenges and benefits of CCS. [Government of Germany]	Accepted: new text added

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Topic 4	99	26	99	33	<p>Replace bullet on CCS by: "To date, the amount of GHG mitigation that can be attributed to commercial deployment of CCS is on the order of a few megatons per year. This early CCS deployment in the industrial sector has yielded a significant body of knowledge that will help inform any future large-scale CCS deployment. The most significant barrier to be large-scale CCS deployment is the lack of sufficiently stringent climate policies (or other measures) required to make CCS economically viable. Technological obstacles for large-scale deployment of CCS technologies include concerns about the lifecycle impacts as well as costs of current and next generation CO2 capture systems as well as concerns over operational safety and long-term integrity of CO2 storage sites. A unique concern for BECCS is potentially the long-term provision of biomass feedstocks".</p> <p>Rationale: CCS (including BECCS) is mentioned 30 times in the SYR. Twenty seven of those instances speak to how important CCS/BECCS is to "avoiding dangerous anthropogenic interference..." So much of what the SYR is trying to communicate about humanity's need to address climate change and our ability to address climate change is tied to CCS being economically viable and widely deployed. However, when the reader comes to the one passage that talks about the real world knowledge base of CCS the reader is confronted with nothing but barriers absent any context on the significance of those barriers. Understandably, the SYR must - by definition - be pithy and selective, but the authors should strongly consider substantially revising this short paragraph. If this paragraph is not changed, the SYR is going to present a very optimistic view of CCS through the lens of Integrated Assessment Models (i.e, the 27 out of 30 mentions of CCS and BECCS) where CCS is a mathematical construct in a larger numerical model and an overly negative description of what humanity knows about these systems in the real world. That doesn't help anyone</p>	Accepted: Text modified and shortened due to space limitation
Topic 4	99	28	99	32	<p>We would like to have more information about the role of BECCS in achieving negative global emissions in low stabilization scenarios. What is implied in terms of scale of implementation if sustained negative global emissions is to be achieved with these systems? Also, the reference to CCS technologies on line 31 should probably be to BECCS technologies as there is references to biomass feedstocks later in the sentence. [Government of Canada]</p>	Accepted: Due to space limitation, not feasible in SYR refer to AR5 chapter
Topic 4	99	29	99	29	<p>low stabilisation scenarios (e.g. 430 - 480 ppm)' include temperature pathway equivalent? [European Union]</p>	Rejected. This text is about the range of stabilization scenarios, and so there is no need to include temperature pathway equivalent.
Topic 4	99	30	99	32	<p>Request that it be made clear that "provision of biomass feedstock" applies only to BECCS. [Government of Japan]</p>	Accepted: Text modified

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Topic 4	99	30	99	33	<p>I am an expert in this field. With reference to SYR section 4.3 'Response Options for Mitigation' (page 99 lines 30-33) I have serious concerns that the main conclusions given are not consistent with the underlying WGIII Chapter 7 report, and hence distort the balance and objectivity of this part of the SYR. My comments refer specifically to the barriers for CCS, where both the language and the actual barriers differ to those in the underlying WGIII report.</p> <p>This is troubling because the underlying Chapters such as Chapter 7 go through an extensive multi-stage peer review process, the global scientific community had opportunity to review the description of CCS barriers and risks described in Chapter 7, and the final version of the wording in Chapter 7 therefore reflects the views of the global scientific community. In the process of abstracting what was written in Chapter 7 to fit into the TS and then the SPM and now the SYR, the meaning of what was originally in Chapter 7 has been lost and an educated reader of the SYR would arrive at different conclusions to those intended. To be clear, what is now in the SYR does not accurately reflect what was in Chapter 7 and the broad body of peer reviewed literature that was drawn upon in the CCS parts of Chapter 7. [Tim Dixon, United Kingdom]</p>	Accepted: Text modified
Topic 4	99	30	99	33	<p>The SYR section 4.3 page 99 lines 30-33 focuses disproportionately on the negative points from Chapter 7 and they also exaggerate those points being made. For example the strongest negative statements in Chapter 7 are "concerns... which are addressed by growing body of literature" (Chap 7.5.5 page 27) and "significant challenges in growing CCS to the gigatonne level.....none of which are showstoppers" (7.11). However these become "barriers to large-scale deployment" in the SYR.</p> <p>Another example is that transport risks are listed as a barrier in the SYR, but in the underlying Chapter 7 section 7.6.4 on CO2 Transport there are no references to barriers due to risks of transport, in fact the opposite because of the extensive experience in North America with CO2 pipelines.</p> <p>The SYR quotes the WGIII SPM and the TS, however on the point of barriers these themselves do not accurately reflect the underlying WGIII Chapter 7. Where Chapter 7 does refer to some 'significant challenges', these are different to the barriers listed in the SYR. For example, section 7.11 says "Significant challenges remain in growing CCS..... to the gigatonne level. These challenges, none of which are showstoppers, include lowering costs, developing needed infrastructure, reducing subsurface uncertainty, and addressing legal and regulatory issues". [Tim Dixon, United Kingdom]</p>	Accepted: text modified

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Topic 4	99	30	99	33	<p>In fact it is well known that the main barriers to large-scale deployment of CCS are not those listed in the SYR, but are primarily policy and economic. The IEA CCS Roadmap (2013) states “While technical challenges obviously remain in integrating the parts of the chain, the major impediment is the lack of policy and economic drivers.” (page 20) and “The technical risks associated with capture and storage can be progressively reduced through learning-by-doing (i.e. implementing more projects), developing transport networks that can link multiple sources and sinks, and developing (or adopting) management systems to manage risks inherent in resource development. However, the political risks presented by indecisive policy making and market uncertainties remain. This situation is compounded by a lack of understanding and experience with CCS in the finance sector, and a focus on the additional costs of CCS rather than the overall competitiveness of low-carbon energy production in the long term. Governments, industry and the finance community need to work together to identify and develop the key features of a model incentive framework (as part of a broader emissions reduction framework where one exists) that would encourage adequate CCS investment.” (Page 21). However this IEA document was omitted from the wide range of IEA publications used by Chapter 7 and so can’t be used in the SYR. To note also that IEAGHG has published many reports covering all of the technical CCS topics covered by Chapter 7, but only two were used. [Tim Dixon, United Kingdom]</p>	Accepted: text modified
Topic 4	99	30	99	33	<p>A suggestion for an improved SYR to mitigate these inaccuracies would be to replace “Barriers to large-scale deployment of CCS technologies include concerns about the operational safety and long-term integrity of CO2 storage, as well as risks related to transport and provision of biomass feedstock. {WGIII SPM 4.2.2, TS 3.2.2} “ With “Technical concerns around large-scale deployment of CCS technologies include the operational safety and long-term integrity of CO2 storage, however there is a growing body of literature, experience and CCS-specific regulations which address these such that they are not considered as barriers. Barriers to large-scale deployment of BECCS include risks related to provision of biomass feedstock. {WGIII Chapter 7 sections 7.5.5, 7.6.4, 7.9.2, 7.9.3} “ [Tim Dixon, United Kingdom]</p>	Accepted: text modified

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Topic 4	99	30	99	33	In looking at the CLAs, LAs and CAs listed for Chapter 7, I am virtually certain that Jim Dooley of the Joint Global Change Research Institute (USA) — given his expertise in this area—wrote or played a substantial role in the writing of and revision based upon peer review comments all the sections of Chapter 7 that dealt with CCS. You might want to consider sending him the text in 4.3 of the SYR along with my comments and see if he thinks the text in the SYR is an accurate 'synthesis' of the underling peer reviewed literature cited in Chapter 7 as well as the text of Chapter 7. [Tim Dixon, United Kingdom]	Accepted: text modified
Topic 4	99	30			Please add "and risks" so that the text reads "Barriers and risks to large-scale deployment..." [Government of Germany]	Accepted: text modified
Topic 4	99	42	99	43	"Strategies to reduce the carbon intensities of transport fuels are constrained by energy storage and low energy densities". Revise to 'Strategies to reduce the carbon intensities of transport fuels are constrained by low energy densities and on-board energy storage capacity '. [H-Holger Rogner, Austria]	Accepted: text modified
Topic 4	99	42	99	43	This is a poor summary of the SPM or the TS regarding this issue. Shouldn't the focus be more on the low energy density OF low emitting fuels CURRENTLY? Potentially use: "Use of low emitting fuels is currently restrained by low energy density." [Government of Netherlands]	Accepted: text modified
Topic 4	99	43	99	44	It is not easy to understand what is meant by "..., when associated with no-climate policies, .." - could this perhaps be rephrased/elaborated. One option may be to rephrase to "...,when planned in conjunction with and hence incorporating the benefits of non-climate policies,.." [Government of Denmark]	Accepted: text modified
Topic 4	99	47	99	55	this might be the case that recent advances can provide opportunities but there is going to have be a seismic shift in how buildings are built by contractors if design intent is to be realised in the finished building, as more often is the case that low energy buildings are not being realised on site [Jason Fitzsimmonz, England]	Accepted: text modified
Topic 4	99	47	99	55	Request revision of paragraph to be a more balanced summary of AR5 WGIII SPM subsection on Buildings, as the current draft seems to be a combination of one bold sentence and one entire paragraph. [Government of Japan]	Accepted: text modified
Topic 4	99	50	99	51	is 'building-related' not confusing for the reader. The TS has left that out; maybe better? Simply remove 'building-related' [Government of Netherlands]	Accepted: text modified
Topic 4	99	51	99	53	Please ensure that the terminology used to describe groups of countries is consistent with the underlying scientific literature. Also, please check references. [European Union]	Accepted: text modified

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Topic 4	99	53	99	55	Suggestion to replace text 'In developing nations, integrating elements of traditional lifestyles into building practices and architecture ...' replace with 'Integrating elements of traditional lifestyles into building practices and architecture in all countries...'. Practices like these need not be limited to developing nations, there are plenty of examples where traditional lifestyles and building practices in developed nations can provide and conserve energy. [European Union]	Accepted: text rewritten
Topic 4	99				It does not reflect the Plenary-approved version of WG3 report. SYR is supposed to synthesize the findings across WG1, 2, 3, but is not supposed to override the wordings of individual WG. The followings, at least, have to be redrafted by reflecting the WG3 report: the statements on renewable technology and nuclear technologies have to be revised using wordings in WG3 SPM. [Taishi SUGIYAMA, Japan]	Accepted: text modified
Topic 4	100	0			Figure 4.3 : Use () around units, use CO2-eq instead of CO2eq [Thomas Stocker/ WGI TSU, Switzerland]	Accepted
Topic 4	100	1	100	3	why is waste-water not included in the list of options? See SPM 4.2.3, page 27: "Waste and wastewater accounted for 1.5 GtCO2eq in 2010." [Government of Netherlands]	Accepted: limited space
Topic 4	100	1	100	6	This part should be re-written in a consistent manner with WG3 SPM Page 26 Line 36 to Page 27 Line 5. It is clearly described that improved efficiency through the introduction of best available technologies could directly reduce energy intensity about 25% compared to the current level. To be based on approved SPM text, Suggest to add effectiveness of measures such as information programs, regulatory approaches and voluntary actions. [Government of Japan]	Accepted: New text reflects this
Topic 4	100	1	100	6	Request discussion of fluorinated greenhouse gases and waste in addition to emphasis on CO2 emissions from fossil fuel . [Government of Japan]	Accepted: Space limitation prevents detailed covergae
Topic 4	100	3	100	3	delete "." after "CCS" [Government of Italy]	Accepted : Deleted and text modified
Topic 4	100	3			Delete deployment of CCS. [Government of Bolivia]	Accepted: Deleted
Topic 4	100	7	100	7	This is a very complicated figure; it may be good for scientists, but is not for communicating science. [Government of United States of America]	Accepted: Difficult to simplify - approved SPM figure
Topic 4	100	8	100	14	Figure 4.3 : This figure should be indicated as WGIII Figure SPM.8 rather than SPM.11. [Government of Republic of Korea]	Accept
Topic 4	100	9	100	9	delete " ," after "the" [Government of Italy]	Accepted ; - editorial change
Topic 4	100	16	100	16	REDD+ miss (or can't find) an explanation of this abbreviation [Government of Sweden]	Accepted: Text modified

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Topic 4	100	16	100	16	Request to replace "REDD+" with "Reducing deforestation, afforestation and sustainable forest management", which is also used in following paragraph (page 101, lines 5-6). Since REDD+ is an example of reducing deforestation, it would not be a substitute word for Reducing deforestation, afforestation and sustainable forest management. [Government of Japan]	Accepted: Text modified
Topic 4	100	16	100	16	Please spell out or explain REDD+ A boxed headline statement should be able to stand alone, but this term will not be known to all readers [Government of Denmark]	Accepted: Text modified
Topic 4	100	16	100	16	Define REDD+ here unless there is an acronym table or it has been defined previously. [Government of United States of America]	Accepted: Text modified
Topic 4	100	16	100	17	In my view this formulation needs to be rewritten. First, because the "if" construction is very unlikely to survive an approval process, given the experience of the approval plenary of WGIII because it may be perceived as policy prescriptive. Second, the message falls short of the necessity to communicate clearly that increased use of biomass for bioenergy can only contribute positively to GHG mitigation when it is ensured that systemic effects in the global land system e.g. increased land-use competition, possible feedbacks on food prices and the need to focus on biomass that can be supplied at low GHG costs, considering the full suite of direct and indirect impacts, are resolved - if they are not, bioenergy may fail to deliver GHG emission reductions and result in large-scale adverse systemic effects. [Helmut Haberl, Austria]	Accepted: Statement deleted due to lack of space
Topic 4	100	16	100	17	The mention to REDD+ is contradictory with outcomes of WGII that describes that REDD+ has not been able to demonstrated that is a sustainable option for mitigation. Also, it is important that the mention to REDD+ should be aligned to the agreed paragraph in WGIII that we have REDD+ among other options improving reduction of emissions and adaptation in the context of climate change (see paragraph of WGIII). [Government of Bolivia]	Refer WG II
Topic 4	100	16	100	17	Request to rewrite the sentence as "Reducing deforestation, afforestation, and sustainable forest management have a critical role to play in mitigating climate change. Sustainable bioenergy also does, especially in the near term, if food security, socioeconomic and biodiversity concerns are addressed." In the paragraphs following the caption as well as the referenced sections of WGIII report, "if food security, socioeconomic and biodiversity concerns are addressed" is explicitly relevant to bioenergy but not so to reducing deforestation, afforestation and sustainable forest management. [Government of Japan]	Accepted: Text modified

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Topic 4	100	16	100	17	Does the statement: REDD+ and sustainable bioenergy not conflict? It may be sustainable bioenergy under the REDD+ framework? If sustainable bioenergy is used this would already account for issues regarding food security, socio-economic and biodiversity impacts issues. [Government of Netherlands]	Accepted: text deleted due to limited space
Topic 4	100	16	100	17	The word of "REDD+" includes meaning of afforestation these days. But some persons think "REDD+" does not include afforestation. Then I propose to rewrite "REDD+ and ..." to "REDD+, including afforestation, and ...". [Makoto Araki, Japan]	Accepted: Text modified
Topic 4	100	16	100	17	The statement only applies to the short run, because in the long term, CCS should be mentioned given its relevance in the IAM-scenarios for the second half of the century, including information on its risks. [Government of Germany]	Accepted: Text modified
Topic 4	100	16	100	17	Suggest replacing REDD+ which is a specific UN initiative/policy with the generic option of reducing deforestation and forest degradation. Claiming that REDD+ is important is policy prescriptive. [Haroon Kheshgi, United States of America]	Accepted: Text modified
Topic 4	100	16	100	18	There is need to explain the difference between "REDD" and "REDD+" used in this sentence for clarity to the reader [Government of Kenya]	Accepted: Text deleted and modified
Topic 4	100	16	101	20	It is important to point to the possibilities and not only give a negative message. However, at the same time it is important to explicitly point out potential pitfalls in order for society to avoid them. We therefore feel it is important to mention possible adverse side-effects of mitigation measures. [Government of Norway]	Accepted: Text modified
Topic 4	100				Figure 4.3 Labels to key colour codes on the top diagrams and time horizons in the bottom diagrams are very small and faint. Consider enhancing them as well as increasing the font size [Government of Kenya]	Accepted: figure deleted due to lack of space
Topic 4	101	1	101	3	I added the word which marked with red: The AFOLU sector accounts for about a quarter (~10–12GtCO ₂ eq/yr) of net anthropogenic GHG 1 emissions (medium evidence, high agreement). Most recent estimates indicate a decline in AFOLU CO ₂ fluxes, largely due to decreasing deforestation rates, rehabilitation and increased afforestation. [Eray Özdemir, Turkey]	Accepted: Text modified, original text deleted due to lack of space
Topic 4	101	1	101	3	I added the word which marked with red: The AFOLU sector accounts for about a quarter (~10–12GtCO ₂ eq/yr) of net anthropogenic GHG 1 emissions (medium evidence, high agreement). Most recent estimates indicate a decline in AFOLU CO ₂ fluxes, largely due to decreasing deforestation rates, rehabilitation and increased afforestation. [Government of Turkey]	Accepted: text modified
Topic 4	101	2	101	3	please clarify: A decline in history or future? [Government of Netherlands]	Accepted: text modified
Topic 4	101	2			the word "decline" needs to be qualified: what is the rate of decline? 1% or 20% or more? Since emissions from deforestation account for one fourth of all emissions, this issue does matter. Also, are there any projections as to how much emissions could decline in future? [Government of Hungary]	Accepted: text modified
Topic 4	101	3			"...largely due to regionally decreasing deforestation rates and..." There is no evidence for general (global) "decreasing deforestation rates". [Government of Germany]	Noted: SPM approved text

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Topic 4	101	5	101	5	In the first sentence,for purposes of clarity, the phrase " reducing deforestation" should come at the end of the sentence. Oterwise where it is conveys a different message: that afforestation and sustainable forest management should be reduced, which is definately not what is implied by the sentence! [Government of Kenya]	Accepted: text modofloed
Topic 4	101	5	101	5	"afforestation/reforestation" is changed for "afforestation" [Chaozong Xia, China]	Noted: A And R is correct
Topic 4	101	5	101	6	I propose to add "REDD+" on the following sentence "The most cost-effective mitigation options in forestry are reducing deforestation, afforestation, and sustainable forest management." For instance; "The most cost-effective mitigation options in forestry are reducing deforestation, afforestation, and sustainable forest management (REDD+)." [Makoto Araki, Japan]	Accepted: text modofloed
Topic 4	101	5	101	6	I suggest to review the sentence with "...reducing afforestation, increasing afforestation, enhancing sustainable forest management" [Government of Italy]	Accepted: text modified to make it consistent with SPM
Topic 4	101	5	101	6	Please modify: "afforestation, sustainable forest management and reducing deforestation", in line with SPM, page 24, line 38. [Government of Germany]	Accepted: text modified to make it consistent with SPM
Topic 4	101	5	101	7	Please change the order of measures here, to generate "sustainable forest management, increased afforestation, and reduced deforestation" to make it clear that afforestation and sustainable management should be increased (or maintained), not reduced (cf. corresponding text in the SPM: p. 24, l. 37-39). [Government of Norway]	Accepted: text modified to make it consistent with SPM
Topic 4	101	5	101	12	This is a problematic paragraph. It is important to incorporate the foot note that the price of carbon can be used as a proxy of efforts of managing the forests. Otherwise delete the whole paragraph. [Government of Bolivia]	Accepted: text modified to make it consistent with approved SPM
Topic 4	101	5			The sentence could be undesrtood that also afforestation and sustainable forest management should be reduced. Propose reorganising the content of the sentence. [European Union]	Accepted: text modified to make it consistent with SPM
Topic 4	101	6	101	7	It is stated that "In agriculture, the most cost-effective mitigation options are cropland management, grazing land management, and restoration of organic soils". Maybe some notion could be added of how this could happen - with what kind of real world policy instruments could these mitigation potentials be unlocked. [Government of Sweden]	Accepted: Space limitation so refernce to main chapter
Topic 4	101	8	101	8	delete "." after ")" [Government of Italy]	Accepted: editorial
Topic 4	101	8	101	8	".." [Akihiko Murata, Japan]	Accepted: editorial
Topic 4	101	8			Delete a duplicated period symbol (".."). [Government of Republic of Korea]	Accepted: editorial
Topic 4	101	11	101	11	editorial: delete a comma between "significant potential" [Government of Russian Federation]	Accepted: editorial

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Topic 4	101	11	101	12	The supply-side and demand-side potentials are not comparable and presenting them side by side invites direct comparison. The supply-side reflects economic potentials; the demand side are technical potentials (which, by construction, will be much higher than economic potentials). It is very misleading not to make this distinction clear. Further, demand side economic potentials have not been studied yet - which is why technical potential are used here. The document needs to clearly acknowledge to avoid the appearance of bias. [Government of United States of America]	Accepted: Text modified
Topic 4	101	14	101	14	How can bioenergy play that role; please specify its role. Bioenergy plays an important role, especially for low-emitting scenarios. [Government of Netherlands]	Noted: Approved SPM text modified
Topic 4	101	14	101	16	Be specific; concerns are related to land-use change or land conversion, not simply 'from land' [Government of Netherlands]	Noted: Approved SPM text modified
Topic 4	101	14	101	16	I would suggest to review the sentence. I don't understand how food security and biodiversity conservation is linked to GHG emissions [Government of Italy]	Accepted: text deleted due to limited space
Topic 4	101	14	101	20	It is important to align this paragraph to what was decided in SPM of WGIII. [Government of Bolivia]	Accepted: text consistent with SPM
Topic 4	101	14	101	20	In the paragraphs above this paragraph there is a strong tendency toward usage of biofuels and bioenergy. It is only in this paragraph that one can see some info about the limitations of bioenergy large scale use. I strongly suggest to bring this paragraph up and mention indirect land use change and the possibility of larger GHG emission due to usage of biofuel. Including the emissions from fertilizers, transportations, etc. [Vahid Mojtahed, Italy]	Accepted: Text modified due to space limitation
Topic 4	101	14			The statement 'Bioenergy can play a critical role for mitigation' is followed by a discussion of barriers. Suggest clarifying the interplay between mitigation potential and barriers. [Government of Canada]	Noted: Text shortened due to space limitation
Topic 4	101	14			Please add "and risks" so that the text reads "Barriers and risks to large-scale deployment...". [Government of Germany]	Accepted: Text revised due to space limitation
Topic 4	101	18	101	20	poor choice of example; improved cookstoves reduce 'bioenergy' use. They do provide a basis to improve livelihood and health. But the use of cookstoves should be under different heading. The example of small biogas of bioelectricity generation installations would suit better. [Government of Netherlands]	Noted: Text deleted due to space limitation
Topic 4	101	22	105	6	I suggest to review the whole section using shorter sentences. Section 4.4 is difficult to read. [Government of Italy]	The text has been revised extensively both for content and readability
Topic 4	101	24	105	5	Section 4.3: This section is required a bit of editorial work with tables; each table would be better to put relevant place rather than put all at the end of the section. [Government of Republic of Korea]	The placement of tables will be handled at the layout stage.
Topic 4	101	28	101	36	The authors should add WGII 5.5 as supporting reference. [Government of United States of America]	The sentence has been deleted from this section.
Topic 4	101	28	101	36	Financial subsidies and incentive plans to disaggregated adaptation is a missing strategies [Vahid Mojtahed, Italy]	The sentence has been deleted from this section.

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Topic 4	101	34			reduced pollution [Stewart Cohen, Canada]	The sentence has been deleted from this section.
Topic 4	101	36	101	36	The authors should consider adding: 29.3, 29.4 and 29.6 as additional supporting references. [Government of United States of America]	The sentence has been deleted from this section.
Topic 4	101	38	101	46	I personally believe the most effective adaptation strategy is education. Education is fundamental to effective consumption of resources such as water and energy in societies. Education is important for risk communication and understanding which can lead to purchases of financial services such as insurances. In addition, education is always less costly compared to other structural measures. [Vahid Mojtahed, Italy]	We agree. Education is an example that is highlighted in the table, and is now mentioned in the bullet point.
Topic 4	101	38	101	50	The authors should consider adding WGII 5.5 as supporting reference. [Government of United States of America]	Added WGII 5.5 on coastal sector as supporting reference.
Topic 4	101	41	101	41	Again, too much emphasis on infrastructure. We suggest to add some other bullet on social adaptation practices and not to place the infrastructure development in the first position [Government of Spain]	The bullet points have been revised to be consistent with the main sequence in the table. Social development is the first item mentioned, while infrastructure is the third item, in the first bullet.
Topic 4	101	44			Please remove the example here, it is unbalanced to highlight one specific activity. Table 4.3. provides plenty of information. [Government of Germany]	Examples have been removed.
Topic 4	101	45	101	45	I am afraid that "risk transfer" is misleading for the audiences. Insurance is a useful economic measure but climate risk itself will not be diminished. Insurance can levelize the economic damage by setting risk pool. Refence; https://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/adaptation_finance_2014_01_20_unfccc_scf.pdf [Takashi Hongo, Japan]	The table presents examples of various economic options for adaptation including risk transfer measures, which are pursued simultaneously with other options. So the term risk transfer is retained.
Topic 4	101	47	101	48	Not 'These approaches' as they have not been mentioned earlier (in the paragraph); Consider rephrasing into 'Approaches for managing the risks of climate change through adaptation (Table 4.3 for examples and details) have ...' [Government of Netherlands]	Revised. "These approaches" have been replaced with "Adaptation approaches".
Topic 4	101	48	101	50	Unclear what 'existing other climate and non-climate pressures' are; consider giving some examples 'existing other climate and non-climate pressures, such as ...' [Government of Netherlands]	This item has been deleted to provide more clarity.
Topic 4	101	55			Please remove the example here, it is unbalanced to highlight one specific activity, and this twice. [Government of Germany]	The sentence has been deleted from this section.
Topic 4	102	1	102	7	The information regarding the importance of an integrated approach has been previously presented in the SYR. Please straighten text. [Government of Germany]	The sentence has been deleted from this section.
Topic 4	102	5	102	6	The example '... enhanced protection of exposed assets can lock in dependence on further protection measures' needs to be more explicit, by indicating which specific assets and which specific protection measures are meant [Government of Netherlands]	The sentence has been deleted from this section.

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Topic 4	102	5	102	6	We would like to remove this sentence: For example, enhanced protection of exposed assets can lock in dependence on further protection measures. [Government of Spain]	The sentence has been deleted from this section.
Topic 4	102	10	102	11	We are happy to see that the limits of ecosystem adaptation in many cases to reducing other stressor is acknowledged and pointed out in the report. [Government of Norway]	The sentence has been deleted from this section.
Topic 4	102	11	102	11	The following part of the sentence needs clarification "...on reducing other pressure...". What kind of pressure should be reduced? [Government of Netherlands]	The sentence has been deleted from this section.
Topic 4	102	12	102	12	The following part of the sentence needs clarification 'including transformational responses'. What are transformational responses? Examples can be given for clarification. [Government of Netherlands]	The sentence has been deleted from this section.
Topic 4	102	12	102	13	The following part of the sentence needs clarification 'but their implementation faces a range of constraints'. Which constraints are faced? [Government of Netherlands]	The sentence has been deleted from this section.
Topic 4	102	15	102	15	The reasoning why focus is on these particular sectors is missing. This needs clarification as in table 4.4 (p.105) focus is on a different range of sectors (agriculture, biodiversity, coasts and water resources management). It needs to be clarified why the range of sectors mentioned in the text (p102 - 103) is different from the sectors mentioned in table 4.4. [Government of Netherlands]	The section focuses on examples of adaptation measures as reported in the underlying literature. Table 4.4 relates to trade-offs that are specific to selected sectors. The table now appears in the end to provide more clarity.
Topic 4	102	15	103	40	These examples of adaptation measures can be very useful. A more straightforward link between the adaptation measures described in the text and the adaptation categories of table 4.3. would enhance the section. Many sectors lack the adaptation option of institutional (policies, programs, regulations) and spatial and land use planning, which appear as key adaptation actions in the short term (low regrets). [European Union]	The examples highlighted are adaptation options, which are reported for various sectors in the underlying literature. Adaptation measures are implemented in a variety of ways, including via institutional and spatial planning mechanisms, which are categorised in Table 4.3.
Topic 4	102	15	103	40	<p>Include adaptation of individual and groups of buildings in examples.</p> <p>If climate change adaption strategies are considered at the outset for new build or retrofit building projects, it is possible to render buildings climate ready, in respect to thermal comfort, construction/building fabric and water management.</p> <p>Both passive and active building design strategies can be employed to enable buildings to withstand predicted future climate change and be readily adaptable into the future.</p> <p>By employing sound building physics using predicted weather data buildings can be rendered climate ready for little or no additional cost to standard construction.</p> <p>Adaptation of buildings for a warmer climate could include, correct orientation and glazing ratios, configuring building layout and fabric to allow natural cross ventilation to occur coupled with thermal mass to enable passive cooling at night without the need for energy intensive systems such as air conditioning.</p> <p>It is possible to combine both mitigation and adaptation strategies through good design.</p> <p>[David Gale, United Kingdom of Great Britain & Northern Ireland]</p>	Examples related to this aspect are captured in the last para of section 4.2 on co-benefits, synergies and trade-offs.

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Topic 4	102	15	103	40	Design guidance for future climate adaptation of buildings is needed for building designers and procurers of buildings to ensure buildings are climate ready. [David Gale, United Kingdom of Great Britain & Northern Ireland]	This aspect is captured under generic examples presented in Table 4.2.
Topic 4	102	17	103	57	On page 102, the text from line 17 and continued until page 103 is repeated on page 26, line 20 and followed. [Government of Costa Rica]	This error has been corrected.
Topic 4	102	18	102	18	Phrasing of the sentence is incorrect: as the 'hydrological changes' are due to climate change, the 'impacts due to climate change' are other impacts. The sentence might be phrased as follows 'uncertain hydrological changes and its impacts due to climate change'. [Government of Netherlands]	The sentence has been rephrased as suggested.
Topic 4	102	20	102	20	Consider the revision of "augmenting supply" as a strategy for CCA. The measure needs further clarifications as it is not reported (at least in these terms) in WGII 3.6 and 3.7) [Government of Italy]	Retained. The term is drawn from the Technical Summary, which draws on the following: 14.6.2, Table 25--7, Box 25---2]
Topic 4	102	22	102	22	Clarify which incentives are meant by 'the range of incentives' by giving some examples. [Government of Netherlands]	In the interest of space, the examples highlighted in the underlying text are collectively referred as economic incentives.
Topic 4	102	25	102	48	One of the effective risk reduction measures is to build extra capacity for infrastructure and socio-economic networks which increases the resilience. [Vahid Mojtahed, Italy]	This has been captured in Table 4.3.
Topic 4	102	30	102	30	This is a rather unconventional list of additional pressures/stressors on ecosystems. Usually the pressures identified as the five main threats to biodiversity by the Millenium Ecosystem Assessment are used, i.e. in addition to climate change (which was not identified as the biggest threat) habitat destruction and fragmentation (called habitat modification in the SPM for WGII, and the most important threat to biodiversity), pollution, overexploitation and invasive alien species. This commonly used list is used in the SPM of WGII. [Government of Norway]	Revises to ensure consistency with the SPM of WG II.
Topic 4	102	32	102	34	Suggest to replace 'migration corridors' with the term 'connectivity', which is more realistic and least subject to misinterpretation. [European Union]	Revised as suggested.
Topic 4	102	32	102	34	Assisted migration is associated with biodiversity risks as pointed out, but so is introduction of "resilient vegetation," especially if this vegetation is not endemic. [Government of Norway]	Resilient vegetation has been deleted.
Topic 4	102	36	102	39	Adaptation can reduce some of ...' is not clearly phrased. It needs to be clarified in which cases adaptation can reduce risks and it needs to be specified which of the projected damages can be reduced. [Government of Netherlands]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.
Topic 4	102	36	102	47	This is a whole paragraph on coastal adaptation - the authors need to add WGII 5.5 as suporting reference . [Government of United States of America]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.
Topic 4	102	39	102	40	Put 'hard' in quotation marks: 'Significant experience exists in 'hard' flood protection technologies ...', because it is phrased this way in the underlying reports. [Government of Netherlands]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.

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Topic 4	102	42	102	43	Clarification is needed of 'coastal outfalls can impede drainage with increased water levels', because it is phrased in too technical terms, i.e. what are coastal outfalls and how can drainage be impeded with increased water levels? [Government of Netherlands]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.
Topic 4	102	42	102	43	The statement "and coastal outfalls can impede drainage with increased water levels" is not clear what kind of outfall is being referred to, and does not seem to be referenced in section 3.3 that is noted. Coastal outfalls are not mentioned in WGII Ch.5 so it's unclear how they are a key adaptation approach for Coastal Systems fitting to this section. Please clarify. [Government of United States of America]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.
Topic 4	102	44	102	44	"protection and accommodation" of what? [Government of Netherlands]	The whole paragraph on coastal adaptation has been revised substantially, drawing on the approved WG2-SPM, WG-2TS and Chapter 5.
Topic 4	102	49	102	50	rephrase the sentence to "Marine forecasting and early warning systems as well as reducing non-climatic stressors have the potential to reduce risks for some fisheries and aquaculture industries...". [Government of Netherlands]	Revised as suggested.
Topic 4	102	50	102	51	"...but options for unique ecosystems such as coral reefs are limited". It needs elaboration on why there is limitation on unique ecosystems such as coral reefs. [Government of Netherlands]	Corals have limited adaptive capacity and hence limited options for adaptation. The elaboration is in the preceding section and underlying WG2-TS
Topic 4	102	53	102	54	"Options include large-scale translocation of industrial fishing activities and flexible management that can react to variability and change." Clarification on "Option", option of what? Approach, method, etc. [Government of Netherlands]	Revised to "adaptation option".
Topic 4	102	55	102	56	The language needs to be clarified. The items do not fit together in a list: "building social, institutional and mangrove buffers". [Government of United States of America]	Revised for clarity. Mangrove buffers removed.
Topic 4	102	56	102	56	Clarify what is meant by 'beneficial changes', i.e. which specific changes and beneficial for whom. [Government of Netherlands]	In this context, 'beneficial changes' is that which is relevant to smaller-scale fisheries and nations with limited adaptive capacities.
Topic 4	102	56	102	56	Mangrove is an error here, should this be technological? [Elvira Poloczanska, Australia]	Revised for clarity. Mangrove buffers removed.
Topic 4	103	1	103	1	We are concerned about maladaptation and wonder how much confidence supports this sentence: Expansion of aquaculture can also increase flexibility and resilience. [Government of Spain]	Sentence is deleted.
Topic 4	103	6	103	16	The first statement calls for 'strengthening institutions at local to regional levels to support gender-oriented measures'. However it is not clarified in the paragraph why and how gender-oriented measures are relevant in view of adaptation to climate change. This needs clarification. [Government of Netherlands]	The sentence has been revised and the gender aspect has been removed as it relates to impacts (discussed in an earlier section) rather than adaptation.

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Topic 4	103	8	103	9	Is this strengthening the institutions at local to regional levels to support gender-oriented measures really found as a general key finding? Is it the only kind of measure needing strengthened institutions? [European Union]	The sentence has been revised and the gender aspect has been removed as it relates to impacts (discussed in an earlier section) rather than adaptation.
Topic 4	103	11	103	11	Offsetting human and animal health impacts of food". Please add "and feed" (feed is for animals). [Government of France]	The sentence has been revised and has been removed for clarity
Topic 4	103	13	103	16	Here should also be mentioned the importance of improved health for food producing animals since they produce more, consume less and the losses due to sick and dead animals are reduced. [Government of Sweden]	This is already mentioned.
Topic 4	103	13			"Deepening agricultural markets" should be replaced by words or phrases that convey your meaning in a clearer or more understandable meaning such as "Expanding agricultural markets and integrating small farmers to the markets" [Government of Thailand]	Revised as suggested.
Topic 4	103	15	103	15	Words "in developing countries" can be omitted. The statement is correct for small-scale farms in all countries [Government of Russian Federation]	Revised as suggested.
Topic 4	103	29	103	40	The explanations of this paragraph dealing with Human health, security and livelihoods, are relevant [JACQUES ANDRE NDIONE, SENEGAL]	Agreed.
Topic 4	103	36	103	36	heat stress rather than heat systems here? [Peter Thorne, Norway]	Revised as suggested.
Topic 4	103	38	103	38	"conflict risks" what are the conflict risks? [Government of Netherlands]	Revised to "risk of conflicts over shared natural resources".
Topic 4	103	39	103	39	Remove "for the 21st century" [Government of Italy]	Revised.
Topic 4	103	39	103	40	Review the grammar of the sentence [Government of Italy]	Revised for clarity.
Topic 4	103	40	103	40	The present report should be added with elements like equity, fairness and ethics. It is suggested that "Sustainable development and equity provide a basis for assessing climate policies and highlight the need for addressing the risks of climate change." be inserted at the end of Line 40. [Government of China]	This aspect is captured in section 3.5
Topic 4	104	1	104	7	Table 4.3: In the synthesis report, which should combine the results from WGI, II and III and put them in a common context, it would be logical to also include mitigation in this table in the SYR, since it would point at the natural link between adaptation and mitigation. [Government of Norway]	Rejected; Table 4.3 has not been modified to include mitigation options, because they are discussed in detail section 4.3 of the report. The actors and entry points for mitigation are quite different at national and sub-national levels to those for adaptation as shown in the table. Hence combining mitigation into this table would not achieve synthesis but simply create a longer table, in which we would see no benefit. Mitigation is referred to in the table caption.
Topic 4	104	1	104	7	Table 4.3: This table is confusing and could probably be deleted in the interest of conciseness. For instance, it's not clear what "spheres of change" means, or why certain categories fall under different "overlapping approaches" (e.g., why is the Social category considered under "Transformation" but not "Vulnerability..."?). [Government of United States of America]	Rejected; Table 4.3 has been approved in the WG2-SPM and is relevant to this section.

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Topic 4	104	1	105	5	Table 4.3 & 4.4: These tables have too much contents and really hard to understand. Please simplify the tables and make more comprehensive. It will be better to separate tables into several smaller ones if necessary. [Government of Republic of Korea]	Rejected; Table 4.3 has been approved in the WG2-SPM and is relevant to this section. Table 4.4 illustrated examples of trade-offs common in some sectors.
Topic 4	104	1			Also this table was agreed but is better to delete payment for ecosystem services and pricing water within economic options. [Government of Bolivia]	Rejected; Table 4.3 has been approved in the WG2-SPM and is used in its entirety in this section.
Topic 4	104	1			Mitigation should be included in this table as well. This had been rejected from the draft version of the WG2 SPM because WG does not address mitigation, but can be included in the Synthesis report. [Government of Germany]	Rejected; Table 4.3 has not been modified to include mitigation options, because they are discussed in detail section 4.3 of the report. The actors and entry points for mitigation are quite different at national and sub-national levels to those for adaptation as shown in the table. Hence combining mitigation into this table would not achieve synthesis but simply create a longer table, in which we would see no benefit. Mitigation is referred to in the table caption.
Topic 4	104	6	104	6	Table 4.3: (Approaches for managing the risks of climate change through adaptation): The first example about education could include access to indigenous, traditional and local knowledge as a potentially important way to decreased vulnerability. [Pedro Alfredo Borges Landáez, Venezuela]	Rejected; Table 4.3 has been approved in the WG2-SPM and is used in its entirety in this section.
Topic 4	104	23	104	23	Add " _" after "." [Government of Italy]	Comment not relevant to the Table.
Topic 4	104		104		Table 4.3: Table reference is not correct. It is in WGII SPM final, table SPM.1 [Government of Netherlands]	It will be modified in the final version.
Topic 4	104		104		Table 4.3: For 'Spatial or land use planning' 'easements' is given as an example. Clarification is required whether it is meant that easements should be promoted or the opposite. [Government of Netherlands]	Rejected; Table 4.3 has been approved in the WG2-SPM and is used in its entirety in this section.
Topic 4	104				Table 4.3 Text in the entire table is small and faint. Consider increasing the font size as well as enhancement [Government of Kenya]	It will be improved in the final version.
Topic 4	105	1	105	1	Table 4.4: (Examples of potential trade-offs...). In the first row, last column "Real or perceived trade off", the risk to public health and safety of biotechnology should not be classified as only "perceived". There is evidence that some of the risks are real and both, real and perceived, are a source of tradeoffs. [Pedro Alfredo Borges Landáez, Venezuela]	These are illustrative examples.
Topic 4	105	1	105	5	Table 4.4: This table is mainly terrestrial, and with mainly human-infrastructure-related aspects in the category for "Coasts". Although adaptation options in the marine realm are limited, the options and problems for fisheries adaptation could be mentioned [Lena Menzel, Germany]	These are illustrative examples.

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Topic 4	105	1	105	6	Table 4.4: In the second row of "Water resources management," the authors should consider replacing the current text with "Undermines traditional water rights/allocation systems." The text as written is misleading because water is not a public good in the economics usage of the term (because it is a rival good and can also be made excludable). [Government of United States of America]	These are illustrative examples.
Topic 4	105	1	105	6	We suggest to move Table 4.4 to section 4.6. [Government of Spain]	Table moved to end of section 4.2 in line with the current narrative.
Topic 4	105	3	105	3	Replace "no specific" with a negative sentence " are not presented" [Government of Italy]	Comment not relevant to the Table.
Topic 4	105	3	105	3	Table 4.4. Please, review about protection of critical habitats addresses only secondary pressures being a trade-off. [Government of Spain]	The table in question is reproduced in this section of the SYR as it appears in the underlying Working Group II (Chapter 16 Table 16-2) where it went through multiple rounds of peer review and revision. The only difference is that the original table in WGII also contains the various references that support the information within the table. Alternations to the table at this stage would unnecessarily introduce inconsistencies with the underlying WGII assessment. It should be noted that this table was not developed to comprehensively address all potential trade-offs associated with all potential climate adaptation options, but rather to provide illustrative examples of some potential trade-offs associated with some plausible options.
Topic 4	105	3	105	4	Agriculture also includes animal production as a significant part. This is not mentioned at all but should also be focused on. See also comment no 4 above. [Government of Sweden]	As Above
Topic 4	105	3	105	4	Table 4.4. We disagree about unknown efficacy of migration corridors, there might be low evidence but we believe agreement is high. [Government of Spain]	As Above
Topic 4	105	3	105	4	Table 4.4. Sea walls impact on coastal ecosystems (in general, not only wetlands). [Government of Spain]	As Above
Topic 4	105	3	105	5	Under Sector: Coasts/Real or Perceived Trade-offs. It should be cultural identity, not identify. [Government of United States of America]	Will be corrected during the copy-edit stage.
Topic 4	105	4	105	5	Table 4.4. Desalination implies ecological impacts other than saline discharges. [Government of Spain]	In this case, it refers to the process of extracting water from the sea.
Topic 4	105	7	105	7	Need to mention behavioral change as well. Because policy can trigger behavioral responses. Also in earlier sections it was mentioned absolute reduction need behavioral changes through demand reduction so it needs mention. [Government of India]	All policies ultimately have the goal of changing behaviours, so we don't see the need to refer to behaviour change specifically here.

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Topic 4	105	9	105	10	Rewrite the sentence to "Adaptation and mitigation have the potential to be promoted by policies and depend on both policies and measures across a rang of scales." [Government of Netherlands]	The synthesis statement has been revised based on this comment but also with a view to achieving a more consistent approach across all sections.
Topic 4	105	9	105	10	This headline statement is trivial, please modify. [Government of Germany]	The synthesis statement has been revised based on this comment but also with a view to achieving a more consistent approach across all sections.
Topic 4	105	13	105	14	Referring to line 13 "Agent" consists of individual, community, company, country whereas in line 14 it mentioned "individual agent", by this in mind the role of other agent will be less or ignored. However it seems that emphasis is on the "individual" to play role in effective mitigation. Therefore , it is better to rephrase the sentence to " effective mitigation will not be achieved if agents particularly individual advance their own interests independently. [Government of Netherlands]	We don't quite see the improvement in the suggested rewording; as the existing wording is drawn from the WGIII SPM we see strong grounds for retaining it as it is.
Topic 4	105	14	105	15	This sentence should be included in the grey box above, as this is the most-most important point here. [Government of Hungary]	The headline statement refers to both mitigation and adaptation. They same common-property issues do not apply as simply to adaptation.
Topic 4	105	15	105	16	Climate change is not going to do mitigation and adaptation. Mitigation and adaptation are two activities combating climate change effects. Rephrase to "While mitigation has local co-benefits, adaptation focuses primarily on local to national scale outcomesoutcomes [Government of Netherlands]	The phrase "climate change" has been deleted in both instances as the context here is sufficiently clear.
Topic 4	105	15	105	18	This finding is much more clear and potentially useful than other statements. It could be highlighted in bold. [European Union]	The intent of this paragraph is to provide an introduction to key findings, hence we decided not to highlight any part of it as a key finding (and the particular conclusion is not novel to the AR5, it simply sets up the subsequent findings which, in part, are novel).
Topic 4	105	16			Adaptation is a problem also of an international scale, it is not good to locate this only in a national scale. [Government of Bolivia]	The text does indeed make clear that it is not only a national scale problem, but that it links across scales; no change made.
Topic 4	105				Table 4.4: the word "Agriculture" does not fully cover what is meant by AFOLU. In the GHG inventory language, "Agriculture" excludes croplands and grasslands. Thus, it is suggested that AFOLU is used everywhere as a sector. It may also be even necessary to explain what AFOLU means. [Government of Hungary]	As this table is about adaptation interactions, we do not adopt the classification from inventory systems. The statement is intended to be specific to agriculture, not AFOLU.
Topic 4	105				Table 4.4 Livestock is an important component of agriculture for adaptation (and mitigation) and could be mentioned in this table. [Government of France]	The table contains only examples, not an exhaustive treatment; to ensure consistency with the underlying report, we adopted the entries contained in the same table in WGII Chapter 16.
Topic 4	105				Table 4.4 Text used in the table is slightly faint. Consider some slight enhancement [Government of Kenya]	This was for review purposes only, the final version will be clearer.

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Topic 4	106	1	106	1	Subheadings in Section 4.5 are good. The previous sections might benefit (help guide the reader) from descriptive subheadings of what is coming next. [European Union]	Thank you, this has been considered for other sections - but most have not adopted it because they are much shorter than this one.
Topic 4	106	1			Align this section to what was decided in WGIII about international cooperation. [Government of Bolivia]	The material has been fully aligned to the approved WGIII SPM, but the synthesis report is a synthesis of the three working group reports, not only of the the three SPMs.
Topic 4	106	6			Section 4.5.11. For the purposes of streamlining and to keep consistence with the discussions at the WGIII-12, replace the section with section "5.2 International Cooperation" of the SPM of the Contribution Working Group III to the AR5. [Government of Brazil]	The material has been fully aligned to the approved WGIII SPM, but the synthesis report is a synthesis of the three working group reports, not only of the the three SPMs.
Topic 4	106	8	106	8	global commons': This jargon is extremely important to report. Deserves greater prominence in report. A clear definition should to be provided. Perhaps even a box or diagram. [scott power, australia]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.
Topic 4	106	8	106	8	Rephrase to "As a global commons problem, effective mitigation requires international cooperation." [Government of Netherlands]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.
Topic 4	106	8	106	8	The authors should delete the phrase "as a global commons problems." It is not necessary in the current sentence. Moreover, it was removed fromt he WG3 SPM. The language used in WGIII SPM could be used instead ("climate change has the characteristics of a collective action problem at the global scale") though it has already been used elsewhere in the synthesis report, so adding it here would create some redundancy. [Government of United States of America]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.
Topic 4	106	8			Clarify that international cooperation must be seen in the context of the convention of climate change and particular articles 4.7, 4.8 and 4.9 that include the provision of financial support and technology transfer from developed to developiong country Parties. [Government of Bolivia]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.
Topic 4	106	10	106	11	"These include linkages among regional, national and sub-national policies". The description does not reflect what is expressed in Chapter 13 of WGIII. What is saying in this chapter is Variety of international, tranational, regional, national, sub-national, and non-state agreements and other forms of cooperation have been emerged; they might be linked in future to improve effectiveness of international cooperation. That means linkage among these policies has not been established. [Songli Zhu, China]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.

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Topic 4	106	18	106	19	<p>Figure 4.4 rather confuses the reader and does not give additional value to the SYR. It is not clear whether the figure is based on any quantitative/criteria-based analysis or whether the examples have rather been placed in the diagram according to "gut feeling".</p> <p>Examples:</p> <ul style="list-style-type: none"> - The terms in the figure refer to very different terms and concepts. Some of them are specific elements of regimes (e.g. "Kyoto targets", "FCCC/Kyoto/Copenhagen MRV rules"), some of them are institutions ("Green Climate Fund"), some describe broader approaches ("pledge and review"; "loose coordination of policies"). - To which extent does the "FCCC objective" have a more centralized authority than the "2°C long term goal"? - Why is "global carbon tax" placed on the far right side of the diagram? Does a global carbon tax necessarily require a high degree of authority to be conferred to an international institution? - Why are "harmonized carbon taxes" placed in the middle of "cooperation over ends" and "cooperation over means" whereas the "global carbon tax" is placed much closer to "cooperation over means"? - Why are the "Kyoto-" and "Copenhagen-MRV rules" placed in the same box? Wouldn't you agree that the Kyoto MRV rules have a higher degree of centralized authority? - What is meant by "Copenhagen MRV rules?" In Copenhagen, only some very short sentences on MRV have been included in the Copenhagen Accord. In Cancun, a more detailed set of MRV rules was adopted in an official COP decision. <p>Furthermore, the distinction between "existing agreements" (blue) and "proposed structures" (pale pink) is not coherent. E.g., if the Cancun pledges are considered "pledge and review", then why is "pledge and review" displayed as a "proposed" instead of an "existing" structure?</p> <p>In conclusion, the figure does not add any substantial information to the SYR, but rather confuses the reader: please delete. [Government of Germany]</p>	<p>Figure 4.4. provides a concise and useful summary of the literature that is carefully examined in Chapter 13 of WG3. The figure intentionally includes a wide variety of modes of international cooperation, so some are specific elements of existing regimes, some are potential approaches, etc. The literature indicates that the UNFCCC objectives are a result of centralized authority, whereas the long-term 2C goal is likewise, but more diffuse. The 2C goal can be deleted from figure. A global carbon tax would be centralized by its definition; this is not harmonized domestic carbon taxes, which are by definition midway between centralized and decentralized. The breadth of the MRV rules illustrates the point made in the comment.</p>
Topic 4	106	19	106	19	<p>Regarding the Figure 4.4, beside the box "Green Climate Fund", please insert another box dedicated to "Adaptation Fund" [JACQUES ANDRE NDIONE, SENEGAL]</p>	<p>We were not able to include all existing and proposed architectures. The point of the figures is simply to demonstrate their diversity along one key dimension.</p>
Topic 4	106	23	106	23	<p>Typographical error: "by which it was" not "by which is was" [Government of Canada]</p>	<p>Revised.</p>

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Topic 4	106	25	106	28	The status of the United Nations Convention on Climate Change (UNFCCC) is suggested to be evaluated with words from Paragraph 1, Page 33, WG III SPM: 'The United Nations Framework Convention on Climate Change (UNFCCC) is the main multilateral forum focused on addressing climate change, with nearly universal participation. Other institutions organized at different levels of governance have resulted in diversifying international climate change cooperation.' [Government of China]	Changed.
Topic 4	106	26	106	26	It is not clear what the term "activities" refers to in that sentence. Suggest simplifying to: "but since 2007 an increasing number of institutions and other arrangements contribute to international climate change cooperation". [Government of Canada]	Text has been revised to clarify the meaning of activities.
Topic 4	106	28	106	28	This sentence could be understood to have a negative connotation and could be further explained, preferably with emphasis on regime effectiveness, and with appropriate evidence. [Government of Norway]	Text reflects approved WG III SPM language, which provides a strong basis to be retained as is.
Topic 4	106	31	107	7	This paragraph should be kept as it is because the evaluation of Kyoto Protocol and lessons learned are quite important for integrative discussion of the synthesis report. [Hirofumi Kazuno, Japan]	Accepted.
Topic 4	106	31	107	7	This para is generally unclear and we propose that it is rewritten if it is to be kept in the report. E.g. it is not clear when it refers to the Kyoto commitments and when it refers to the CDM-mechanism under the Protocol, which is only one instrument for the Parties in their fulfillment of their commitments. Furthermore, it is not possible to evaluate the success of the Protocol in relation to the fulfillment of the Conventions ultimate goal since 1) the commitments under the Protocol is limited to developed countries and thus represent only a limited amount of the global emissions; 2) This is even more clear because not all did ratify the Protocol in the first period and more countries have now dropped out in the second commitment period and the developing countries contribution to the global emissions has increased considerably. We also think it is unclear if the text refers to Kyoto II or Kyoto I. We generally feel that the text is unbalanced both related to Kyoto Protocol and to CDM. [Government of Norway]	The text is balanced, referring both to the strengths and the limits of the Kyoto Protocol, based on the literature. However, the text has now been revised.
Topic 4	106	31	107	7	I suggest to review the paragraph because its meaning is not clear. [Government of Italy]	We have reviewed and revised the paragraph.
Topic 4	106	31	107	37	The role of the Kyoto Protocol (KP) is not stated in a balanced or objective manner. KP is mandated from the Convention. As an agreement to implement the Convention principles and objectives, it regulates the Parties concerned in terms of emission reduction targets and means in a balanced and reasonable fashion. It failed to reach the desired goal because of the insufficient participation by developed countries, the inadequate reduction by developed Parties under KP and insufficient or ineffective performance of their obligations. It is suggested to further improve the statement. [Government of China]	Paragraph has been revised to state descriptive facts regarding the Kyoto Protocol from the scientific literature.

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Topic 4	106	33	106	35	Revise to ..." but the Protocol also credited..." [H-Holger Rogner, Austria]	Sentence has been revised to make the phrase more clear.
Topic 4	106	33	106	35	I suggest to review the sentence, which is not clear. Did the KP credited itself too much reduction? [Government of Italy]	Revised. See above.
Topic 4	106	33	106	35	The authors should consider deleting this sentence. It is not clear what the sentence actually means. It appears like an attempt to say the KP succeeded but also failed. [Government of United States of America]	That is correct, the outcome has been mixed, but the paragraph has been revised to make it clearer.
Topic 4	106	33	106	35	Suggest revision. The phrase "but the protocol credited emissions reductions that would have occurred even in its absence" appears to be taken from WGIII 13.1.1 (first sentence of 3rd paragraph on p 60). In the SYR it potentially implies a general over-crediting of Annex B Parties' emission reductions in the first commitment period. The phrase could be revised to "but the Protocol credited some emissions reductions that would have occurred even in its absence". [Government of Australia]	Revised. See above.
Topic 4	106	33			to reconsider what is written, because the emission reduction commitments of Annex I countries, why should evaluate the contents of this paragraph are not. (See UNFCCC in the degree of compliance with Annex I countries). [Government of Nicaragua]	Do not understand the comment.
Topic 4	106	34			Please add the word "also": "... but the Protocol also credited emissions...". [Government of Germany]	Done.
Topic 4	106		106		Figure 4.4: Rephrase to "2°C, long term goal", if it is so. [Government of Netherlands]	OK, can do
Topic 4	106		109		WG3 is quite vague on the role and instruments of international cooperation. The full chapter on international cooperation does not provide a thorough analysis of how to make international agreements more effective, which would have been a much-needed contribution to more ambitious climate action. As a result, neither does the SYR. Similarly, it is not made sufficiently clear that new coal fired power plants without CCS are incompatible with 2°C scenarios, because the cumulative CO2 emissions budget consistent with 2°C has been used up already too much to allow for such long lived coal fired power plants. [European Union]	This comment refers to the scenarios in the SYR.
Topic 4	106				Figure 4.4. Figure 4.4 should be deleted, since it might give an impression that AR5 recommends the indicated policy measures among various ones. Otherwise, following revision should be made, i) unify color of all policy measures since the classification of agreed ones and not-agreed ones are vague and ii) add the following note: "This figure is not exhaustive, as it is a compilation of policy measures/frameworks which are subjects of study in many articles. Also, this figure doesn't indicate priority of each of the measures/frameworks." [Government of Japan]	In revised version, we make clear that the proposals are not policy recommendations, but policy architectures that appear in the literature. The text for the figure has been revised.
Topic 4	106				Figure 4.4. Text used is faint. Consider some slight enhancement [Government of Kenya]	Thank you. If figure remains, copy editors will address this.

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Topic 4	106				Lack of consistency with approved texts as appeared in adopted SPMs (WGII, WGIII) • SYR should be based on adopted 3 SPMs (WGI, WGII, WGIII) and should use approved texts as much as possible in order to assure successful outcome of AR5. This will avoid not re-negotiating texts in SYR. [Government of Saudi Arabia]	In revised version, the text from SPMs has been used when possible, but the synthesis report is required to represent a synthesis across the full assessment reports not only their SPMs.
Topic 4	106				Lack of consistency with approved texts as appeared in adopted SPMs (WGII, WGIII) • Examples of in-consistent texts include under sections 4.5.1 [106](Mitigation Policies) [Government of Saudi Arabia]	In revised version, the text from SPMs has been used when possible.
Topic 4	107	1	107	3	Suggest to add "while dramatically lowering the compliance cost of developed countries" after "July 2013". [Songli Zhu, China]	The underlying literature, reviewed carefully in WG3 Chapter 13, does not support such a broad claim.
Topic 4	107	3	107	5	In baseline scenarios, GHG emissions are projected to grow in all sectors, except for net CO2 emissions in the AFOLU sector (robust evidence, medium agreement). In 2010, 35% of direct GHG emissions were released in the energy supply sector, 24% in AFOLU, 21% in industry, 14% in transport and 9 6% in buildings. Exact reference to the estimations should be reflected, see for instance page 37 line 8-14 in SPM SYR [Government of Sweden]	This comment does not seem to refer to this section of the SYR.
Topic 4	107	3	107	5	Suggest deletion or revision. The assertion that the environmental effectiveness of the Clean Development Mechanism (CDM) "has been mixed" implies a conclusion about the CDM itself, whereas the "concerns" cited relate to individual CDM projects. It is not possible to extrapolate from concerns at the project level to draw conclusions about the overall effectiveness of the CDM. If text revision preferred, could use: "Its environmental effectiveness has been questioned by some due to concerns...". [Government of Australia]	Text has been revised.
Topic 4	107	4	107	4	The phrase "additionality of projects" is jargon that the authors should clarify here. [Government of United States of America]	Done.
Topic 4	107	4	107	5	The recent credit price decreases are due to changes in demand and supply. CDM has been successful in generating issued credits while demand has dropped due to external economic and policy-related reasons. Recent credit decreases therefore has nothing to do with the environmental integrity of the CDM. [Government of Sweden]	Done.

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Topic 4	107	5	107	6	The sentence "CDM projects were concentrated in a limited number of countries." can easily mislead the reader and gives a skewed representation of the current status of CDM. There are currently CDM projects registered in over 60 countries around the world. Moreover, a comparison between CDM single projects and Programmes of Activities shows that PoAs there is a greater number on PoAs in "other countries" than in any of the few countries to which a large share of CDM single projects are concentrated (UNFCCC; http://cdm.unfccc.int/Statistics/Public/index.html). Therefore, delete or rephrase as follows: "CDM projects have been registered in a large number of countries. The majority of single CDM projects are concentrated to a limited number of countries while Programmes of Activities are more evenly distributed." [Government of Sweden]	Done.
Topic 4	107	5	107	6	small edit to "Furthermore CDM projects..." as the current sentence has no clear link to the previous paragraph [Government of Italy]	Revised.
Topic 4	107	9	107	10	It is not clear what is meant by saying that the UNFCCC negotiations since 2007 have lead to an increasing number of institutions etc.. If it is the GCF, technology mechanisms etc. that is referred to, this should be mentioned - otherwise this is very difficult to understand for someone who is not familiar with the negotiations. [Government of Denmark]	Additional explanation added to sentence.
Topic 4	107	9	107	19	Bold sentence is not the appropriate summary of this paragraph which gives examples of Cancun agreement and Durban Platform. The following sentence might be more appropriate: Recent UNFCCC negotiations have sought to include enhance the actions under the convention including substantial new and additional financial support to developing countries. [Government of China]	Done.
Topic 4	107	9	107	19	1) The bold sentence of this paragraph is as same as the second half of the bold sentence from Line 25 to 29 on Page 106. One of the them should be removed. 2) The bold sentence is not the appropriate summary of this paragraph which gives examples of Cancun agreement and Durban Platform. The following sentence might be more appropriate: Recent UNFCCC negotiations have sought to include more ambitious contribution from countries listed in Annex B of the Kyoto Protocol, mitigation contribution from a broader set of countries than those covered under Annex B, ad substantial new and additional funding. [Songli Zhu, China]	Revised, as above.
Topic 4	107	12	107	15	The conclusion that the evolving financial mechanism goes beyond scientific assessment lacks a basis. According to relevant conclusions in WG III TS, it is suggested to reformulate it as "The distributional impacts of the agreement will depend, in part, on sources of financing for developing-country emission plans, including the successful fulfillment by developed countries of their expressed joint commitment to mobilize \$ 100 billion per year by 2020 for climate action in developing countries." [Government of China]	Relevant text was removed for reasons of space constraint.

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Topic 4	107	12	107	15	1) I wonder if the assessment conclusion with "low evidence; low agreement" should be included in this Synthesis report; 2) the sentence could be changed into following: The distributional impacts of the agreement will depend, in part, on sources of financing for developing-country emission plans, including the successful fulfilment by developed countries of their expressed joint commitment to mobilize \$ 100 billion per year by 2020 for climate action in developing countries. [Songli Zhu, China]	Relevant text was removed for reasons of space constraint.
Topic 4	107	12	107	15	There is little value-added from this statement. Moreover, it is associated with "low evidence" and "low agreement." Therefore, we suggest deleting it altogether. [Government of United States of America]	Relevant text was removed for reasons of space constraint.
Topic 4	107	13			In which way does the distributional impact depend on the "sources" of financing? This could be misunderstood as a reference to private vs. public funding. It would seem more logical to state that they depend on the "regional distribution of finance". [Government of Germany]	Relevant text was removed for reasons of space constraint.
Topic 4	107	15	107	18	The agreement on the Durban platform agreed in 2011 does not include language stating it would include 'substantial new financial support' [Government of United Kingdom of Great Britain & Northern Ireland]	Relevant text was removed for reasons of space constraint.
Topic 4	107	16	107	16	Editorial: delete ... between "all Parties under" [Government of Russian Federation]	Relevant text was removed for reasons of space constraint.
Topic 4	107	16	107	17	It is suggested to use the original text of the Durban Platform decision, that is, to replace 'delegates agreed to craft a future legal regime that would be 'applicable to all Parties ... under the 16 Convention' with 'delegates agreed to "launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties"'. [Government of China]	Relevant text was removed for reasons of space constraint.
Topic 4	107	16	107	18	This statement seems inaccurate. The COP decision on the Durban Platform doesn't state that the new agreement "would include substantial new financial support and technology arrangements to benefit developing countries". This part of the sentence seems to make reference to commitments made under the Copenhagen Accord. Suggest reviewing. [Government of Canada]	Relevant text was removed for reasons of space constraint.
Topic 4	107	16			Change "delegates" to "countries" or "governments" as "delegates" does not indicate the level at which the decision was taken. [Government of New Zealand]	Relevant text was removed for reasons of space constraint.
Topic 4	107	17	107	17	The authors should remove the phrase "and would include substantial new financial support and technology arrangements to benefit developing countries, but the delegates did not specify means for achieving those ends." No such statements exists on "substantial new financial support" in the Durban Platform. The authors need to take great care in accurately reflecting the decisions and outcomes in the UNFCCC and other international fora, without pre-judging - and certainly not prescribing - what future decisions will be. [Government of United States of America]	Relevant text was removed for reasons of space constraint.

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Topic 4	107	17	107	18	Delete "would include substantial new financial support and technology arrangements to benefit developing countries, but the delegates did not specify means for achieving those ends". New financial support and technology arrangements are not part of the decision on the Durban Platform. Paragraph 5 of decision 1/CP.17 (Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action) lists finance and technology development and transfer as included, but is silent on how these elements are to be addressed. [Government of New Zealand]	Relevant text was removed for reasons of space constraint.
Topic 4	107	17	107	18	Please delete "and would include substantial new financial support and technology arrangements to benefit developing countries, but the delegates did not specify means for achieving those ends". This substantial new financial support and arrangements have not been specified in the Durban Agreement". Or where in the decision establishing the Durban Platform do you see an agreement on "substantial new financial support and technology arrangements"? There is no such statement. [Government of Germany]	Relevant text was removed for reasons of space constraint.
Topic 4	107	17	107	18	Suggest deletion. The assertion that under the Durban Platform delegates agreed that the new legal regime "would include substantial new financial support and technology arrangements" is not supported by the text of the relevant UNFCCC decision 1.CP/17. [Government of Australia]	Relevant text was removed for reasons of space constraint.
Topic 4	107	18	107	18	It is strongly suggested to delete the last part given that there are ongoing negotiations under the Durban Platform and the result, a global agreement, will only be delivered by Dec 2015 according to the agreed schedule. [Government of Austria]	Relevant text was removed for reasons of space constraint.
Topic 4	107	21	107	21	This section deals with climate policies at international level. Appropriate evaluation criteria are essential to the choice of a sound policy. As highlighted in WG III Chapter 13, they include environmental effectiveness, distributional impacts, economic performance and institutional feasibility. But here they are just confined to 'burden sharing'. It is suggested to replace this paragraph with appropriate words from ES, WG III Chapter 13 – "Climate change policies can be evaluated using four criteria: environmental effectiveness, aggregate economic performance, distributional impacts, and institutional feasibility. These criteria are grounded in several principles: maximizing global net benefits; equity and the related principles of distributive justice and common but differentiated responsibilities and respective capabilities; precaution and the related principles of anticipation, and prevention of future risks; and sustainable development. These criteria may at times conflict, forcing tradeoffs among them. [13.2.1, 13.2.2]" [Government of China]	This paragraph makes a different point than the text quoted from WG3 Chapter 13. We would be happy to include the text quoted from Chapter 13 in another finding, but because of space, it has not been included.

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Topic 4	107	21	107	21	burden sharing? I believe AR5 prefers to effort sharing. [Songli Zhu, China]	Both phrases -- effort sharing and burden sharing -- are used in Chapter 13, where they are identified as being essentially equivalent. However, the underlying literature more often refers to burden sharing.
Topic 4	107	21	107	21	The bold sentence could be rewritten to remove the word "equitable," since it implies a value judgement. Instead, it should read, "Several models for burden sharing..." [Government of United States of America]	Done.
Topic 4	107	21	107	24	The phrase "equitable burden sharing" could be replaced by "equitable effort sharing", if we talk to international cooperation agreement, more positive both for developed and developing countries. [Shiming Ma, China]	Both phrases -- effort sharing and burden sharing -- are used in Chapter 13, where they are identified as being essentially equivalent. However, the underlying literature more often refers to burden sharing.
Topic 4	107	21	107	24	Some examples would help understanding better the meaning and relevance of the paragraph [Government of Italy]	Space considerations do not permit adding examples.
Topic 4	107	23	107	23	The term "equity" could be confused with the its financial meaning of equity capital. Better replaced with "fairness" [Government of Italy]	Equity is the word used for this more often in the relevant literature reviewed in Chapter 13 of WG3.
Topic 4	107	24			The statement that "the manner in which developing countries' emissions plans are financed." is unclear: to what kind of "emission plans" is the text referring (NAMAs)? An what does "manner" mean? [Government of Germany]	The statement is factual. Distributional impacts obviously depend upon who pays for what.
Topic 4	107	26	107	26	It seems strange to me that the effect of the Montreal Protocol on reducing is emissions is mentioned (it could be more quantitative) but there is no discussion about the extent to which the commitments under the Kyoto Protocol have been met. This seems a rather more important issue in the context of SYR and some comment could be made as to the extent to which emissions by Annex 1 countries are now less than they were in 1990. [Keith Shine, United Kingdom]	Paragraph deleted.
Topic 4	107	26	107	27	"has achieved significant reductions in global greenhouse gas emissions" should be changed into "has achieved side effect of reductions of global greenhouse gas emissions". [Songli Zhu, China]	Paragraph deleted.
Topic 4	107	26	107	30	The discussion on the Montreal Protocol (MP) in this paragraph is inaccurate or isolated. The word "significant" used here is not supported with sufficient research findings. It is suggested to reword "achieved significant" as "made contribution to". In addition, it is our view that the contribution by MP to the Convention mechanism is rather reflected with its financial and technological support. Based on relevant chapters of WG III, therefore, it is suggested to add the following: "Lessons learned from the Montreal Protocol, for example, the effect of financial and technological transfers on broadening participation in an international environmental agreement, could be of value to the design of future international climate change agreements." [Government of China]	Paragraph deleted.

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Topic 4	107	26	107	30	The bold sentence believes MP achieved significant reduction in global GHG, however, in the following text it seems to say the function of MP in GHG reduction is mixed. Please keep consistent. [Songli Zhu, China]	Paragraph deleted.
Topic 4	107	26	107	30	Clarify whether the Montreal Protocol disciplines emissions of other GHG gases, such as HFC, that substitute ozone depleting ones [Government of Italy]	Paragraph deleted.
Topic 4	107	32	107	33	what adaptation benefits? [Stewart Cohen, Canada]	Cooperation on flood protection, for example.
Topic 4	107	32	107	33	This is a point highlighted throughout all AR5 documents - and we can only say there is "medium agreement"? [Government of United States of America]	Yes, this was the judgment of the authors of WG 3 Chapter 13.
Topic 4	107	32	107	37	Policy linkages across scales seems to be focused on market linkages or trade linkages. However, linkage through NAMAs of sub-national and national policies to the UNFCCC process appears a useful linkage and worthy of mention. [Government of India]	This is a different point.
Topic 4	107	34	107	36	Since the word of "objective" in the sentence of "such as embodying mitigation objectives in trade agreements or the joint construction of infrastructures that facilitate reduction in carbon emissions " may mislead readers, I suggest to replace it by "element". [Songli Zhu, China]	"Objectives" more accurately reflects the intended meaning of the sentence.
Topic 4	107	36	107	36	Consider revising final sentence in this para to read: "Potential benefits include..." [Government of Canada]	Done.
Topic 4	107	37			Revise if carbon markets actually contribute to reducing GHG emissions. Taking into account development strategies that take place within countries voluntarily and contribute to mitigation climate change at the same time [Government of Nicaragua]	Do not understand the comment.
Topic 4	107	40	107	42	This sentence is not sufficiently nuanced, and should discuss what kind of policies would be more effective and under which circumstances. [Government of Norway]	Revised accordingly.
Topic 4	107	41	107	41	It is suggested to delete "geographical" before "regions" because in the context of AR5 regions should always refer to the "global" regions identified in WG II report. [Government of Austria]	Done.
Topic 4	107	44	108	1	Delete. This was not been agreed in previous SPM of WGII and WGIII. [Government of Bolivia]	Rejected; the report is a synthesis across the Working Group reports, not merely a compilation of the WG SPMs.
Topic 4	107	44	109	1	<Section 4.5.1.2: National and Sub-National Policies> This section should be revised totally to the content in the approved WG3 SPM. Adopting the information in the old version draft at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	Revised for consistency with SPM

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Topic 4	107	44			4.5.1.2. The current text does not reflect the Plenary-approved version of WG3 report. SYR is supposed to synthesize the findings across WG1, 2, 3, but is not supposed to override the wordings of individual WG. The followings, at least, have to be redrafted by reflecting the WG3 report: 4.5.1.2: the description regarding national policy have to use wordings in WG3 report. [Taishi SUGIYAMA, Japan]	Revised for consistency with SPM
Topic 4	107	46	107	46	add "an" before "increased" [Government of Italy]	Accepted
Topic 4	107	46	107	48	Headline/text box: In addition to "national [to] sub-national" spatial dimension, consider also noting policies' sectoral to economy-wide scope. Immediately underlying text and Topic 4 (e.g., p. 107, l. 50-55) content highlight the ongoing shift, since AR4, from national economy-wide policy towards sub-national sectoral actions. WG3 SPM also makes this point (pp. 30-31). [Government of United States of America]	The text that follows discusses adequately the range of policies. For purposes of brevity, no change.
Topic 4	107	47	107	48	Statement of "inadequate evidence to assess [plans' and strategies'] impacts on emissions" is inconsistent with SPM's assertion that "these policies have helped to reduce emission intensity" (p. 24, l. 53). The authors need to reconcile this discrepancy. [Government of United States of America]	The suggested sentence for addition is from the draft SYR SPM, which is likely to be re-written. The existing text is consistent with the WG III SPM and hence has been retained.
Topic 4	107	50	107	50	Suggest adding "market-based" after "economy-wide" as per AR5 WG III page 84 and because it would be more correct. [Government of Italy]	The distinction is between sector and economy-wide. Market based is one type of economy wide policy, and needlessly restricts the scope of the point. Rejected.
Topic 4	107	50	107	55	Regarding this paragraph about sector-specific policies and economy-wide policies, suggest revising to follow the text approved in the WGIII SPM. This text improves the balance of this topic by referring to the drawback and advantages of these policies. We recommend adding to the end of the paragraph, "The latter]may be better suited to address barriers or market failures specific to certain sectors, and may be bundled in packages of complementary policies." (from WGIII SPM p. 31 lines 5-7.) [Government of Canada]	Accepted
Topic 4	108	1	108	1	The description of "Carbon pricing regimes have been implemented in a diverse set of countries." should be deleted completely because it is not from the approved WG3 SPM or WG3 TS Final Draft. Adopting this discarded part at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	Rejected. The paragraph combines points from various paragraphs sourced from the approved SPM. Changes have been made to ensure consistency of each underlying point with the SPM.
Topic 4	108	1	108	4	Should be deleted. Lacks description of evidence to back this statement, further bulks all cap and trade schemes (their different design) into one overall judgement of effectiveness and "loose caps". [Government of Sweden]	Rejected. Based on approved WGIII SPM.

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Topic 4	108	14		17	This paragraph should also note that these two concepts (energy efficiency regulations and labelling programs) can go hand in hand. Labels can indicate that certain products meet or exceed certain efficiency regulations, for instance. [Government of Canada]	Rejected. While this is a salient point, it is not currently mentioned in approved WG3 SPM text.
Topic 4	108	19	108	20	The bolded text here could use some improvement since "play important roles" is not really defined - by what metric? The authors should consider clarifying the text to read something to the effect of: "Sub-national climate policies ARE EMERGING AS ONE OF MANY POLICY APPROACHES, both in countries with national policies and in those without..." [Government of United States of America]	Accepted. Revised to take into account comments.
Topic 4	108	19	108	27	Wonder if it is appropriate to refer to specific domestic measures as the merely reference to such examples do not seem to be persuasive about how they "play important roles". [Government of Japan]	Accepted. Revised accordingly
Topic 4	108	19	108	27	This paragraph should be deleted completely because it is not from the approved WG3 SPM or WG3 TS Final Draft. Adopting this discarded paragraph at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	This paragraph was added as it contains important information from the underlying report on action below the sub-national level. It adds substantively and materially to the report and hence is included.
Topic 4	108	19	108	27	Suggest avoiding lists of examples of sub-national policies. This approach does not support a regionally balanced perspective. [Government of Canada]	Accepted. Revised accordingly
Topic 4	108	22			Delete the word "ambitious" as this is a value judgement. [Government of Germany]	Accepted. Reference to specific examples deleted.
Topic 4	108	23	108	23	Incorrect statistic: In China, seven (not six) pilot emissions trading schemes have been launched - Shenzhen (launched in June 2013), Shanghai (November 2013), Beijing (November 2013), Guangdong (December 2013), Tianjin (December 2013), Hubei (April 2014), and Chongqing (April 2014). [Government of United States of America]	Reference to specific examples deleted.
Topic 4	108	23	108	24	"Likewise, in China, six local, pilot CO2 cap-and-trade scheme have been launched.", which is not accurate, is suggested to be reformulated as "Likewise, in China, seven local CO2 emission trading pilots have been launched." [Government of China]	Reference to specific examples deleted.
Topic 4	108	24	108	24	It is suggested to substitute "scheme" by "schemes". [Government of Austria]	Reference to specific examples deleted.
Topic 4	108	24			Change "scheme" to "schemes" [Government of New Zealand]	Reference to specific examples deleted.
Topic 4	108	29	108	33	Request revision of paragraph to be based on approved AR5 WGIII SPM text (p32, line3-) about interactions among multiple policy measures. [Government of Japan]	Paragraph replaced by approved WG3 SPM para. Accepted.
Topic 4	108	29	108	33	The bold text does not capture the point in the bullet. The bold text is on coordination. The examples in the bullet are on interaction. The lack of additive effects of a cap and trade versus a cap are not going to be changed by coordination. They are inherent to the nature of the instrument. The bold text should be changed to more accurately reflect the point. [Government of India]	Accepted. Text changed.

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Topic 4	108	30	108	30	Please, explain abbreviation "R&D" at first place it appears [Government of Russian Federation]	Text changed
Topic 4	108	30	108	30	The authors need to revise the text for clarity - it is unclear what is meant by "innovation market failures." [Government of United States of America]	Text changed
Topic 4	108	30	108	33	Language is very policy maker unfriendly. What does additivity or absence of it mean to policy maker? [Government of India]	Text changed to be more clear
Topic 4	108	30	108	33	The non-additivity of policies nested under a quantity-based system is not very clear and would need more explanation [Government of Italy]	Text changed to be more clear
Topic 4	108	31	108	32	As written, the sentence is not clear. Can this be elaborated a bit to make it more understandable? [Government of United States of America]	Text changed to be more clear
Topic 4	108	31	108	33	The statement on the additionality of policies in the case of an ETS can be misunderstood. The SPM of WG3 states: "By contrast, if a cap and trade system has a binding cap (sufficiently stringent to affect emission-related decisions), then other policies such as RE subsidies have no further impact on reducing emissions within the time period that the cap applies (although they may affect costs and possibly the viability of more stringent future targets) (medium evidence, high agreement). In either case, additional policies may be needed to address market failures relating to innovation and technology diffusion." Please add this information. [Government of Germany]	Accepted. Text changed to be consistent with WG3 SPM
Topic 4	108	35	108	35	Table 4.5: (Sectoral Policy Instruments): Policies related with agroecological approaches, recognition and incorporation of indigenous, traditional and local knowledge, increase agrodiversity (and hence resilience and efficiency) through recovery and preservation of local varieties, are missing. [Pedro Alfredo Borges Landáez, Venezuela]	The suggestions seem related to objectives of policy (eg. recognition of traditional knowledge) rather than policy instruments. Also, the box draws on the underlying chapter, and the SYR cannot introduce new material at this stage. Rejected.
Topic 4	108	35	108	36	Table 4.5. AFOLU column. Suggest reframing/correcting - A credit line is not a policy. [Government of Italy]	It may indeed be a policy to provide access to credit lines. Rejected.
Topic 4	108	35	109	0	Table 4.5 should be replaced by WG3 TS P87 Table TS.8. "Voluntary agreements" is supposed to be in policy instruments of energy sector. [Yuta SASAKI, Japan]	Accepted. Original TS Table inserted.
Topic 4	108	35	109	1	<Table 4.5> This table should be changed to the "Table TS.8" in the WG3 TS Final Draft. Especially, "Voluntary agreements" should be described in the row of "Voluntary Actions" and the column of "Energy". Adopting this table at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	Accepted. Original TS Table inserted.
Topic 4	108	35	109	35	Table 4.5 none of the policies are targeting at behavioral change. If that is not available in literature that also needs mention somewhere. [Government of India]	Rejected. Several policies also can have the effect of behavioural change, including price changes and information.

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Topic 4	108	35	109	35	Table 4.5 none of the policies are targetting at behavioral change. If that is not available in literatire that also needs mention somewhere. [Government of India]	Rejected. Several policies also can have the effect of behavioural change, including price changes and information.
Topic 4	108	35	109		Table 4.5, Regulatory approaches – Buildings: There is evidence that many jurisdictions are creating disclosure laws for energy use in buildings, so mandatory and building labelling is missing (It shows up under “voluntary actions”, but there are several places where this is now the law). Also, equipment labelling in many jurisdictions is regulated as well as voluntary. On that note, home energy use disclosure and home labelling is also missing on the Human Settlements front, as more and more municipalities, states and provinces move towards mandatory disclosure. Consider reviewing and revising. [Government of Canada]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108	35	109		Table 4.5, Information Programmes - Buildings: Under buildings, recommend adding benchmarking and rating programs for buildings as well as equipment and appliance labelling programs. Equipment and appliance labelling programs can also go under the human settlements section. [Government of Canada]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108	35	109		Table 4.5, Voluntary Actions - Transport, Buildings, Human Settlements: (1) For Transport, suggest adding voluntary agreements on fuel efficiency targets / emission reduction targets. This is consistent with policy measures outlined in IPCC AR5 WGIII section 15.3.5. (Voluntary Actions) and section 8.10 (Sectoral Policies). Voluntary agreements between government and industry can be driven by: (a) potential for cost savings due to fuel savings and thereby enhance competitiveness and ability to adapt; (b) providing adjustment period prior to introduction of future regulations; (c) social license to operate when citizens see industry assuming environmental leadership. Voluntary measures in the transport sector can be more cost effective than regulations and can help inform future rule making. (2) For Buildings, recommend adding efficient procurement policies, as well as voluntary agreements on energy targets. (3) For Human Settlements, suggest adding voluntary labelling programmes for efficient homes. [Government of Canada]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108	36	109	1	Table 4.5: line "Regulatory Approaches"; column "AFOLU" " ...including monitoring, reporting and verification" could be deleted because MRV (measuring, reporting and verification) and NFMS (National Forest Monitoring System) are inherent parts of REDD+. [Government of Germany]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108				• Delete Table 4.5 [P108] (sectoral policy instruments) [Government of Saudi Arabia]	Table is drawn from WG3 TS and reflects the underlying report. No reason pertaining to inaccuracy is provided for deletion.

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Topic 4	108				(table 4.5) although according to 2006 IPCC Guideline for National Greenhouse Gas Inventories, Agriculture Forestry and Other Land Use are integrated in AFOLU sector. But for clearly understanding, the sectoral Policy Instruments of Agriculture should be separated from Land use, Land use change and Forestry. [Government of Thailand]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108				Table 4.5: "Protection of forest" is listed in the row for "Government / Provision of public goods or services". The term "Protection of forest" needs to be more precise. According to IPCC (WG III) the mitigation option for protection is "conservation of existing carbon stocks that would otherwise be lost"(as by deforestation). We assume this does not mean "protection of forests against sustainable forestry" since sustainable forestry is listed in the row for "Economic Instruments, subsidies" on the previous page. Please consider adding "protection of forest that would otherwise be lost or degraded" to the text. [Government of Norway]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108				Table 4.5. "Economic instruments-taxes" / "Industry": Include tax on other climate gases such as HFC tax on import and production. [Government of Norway]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	108				Table 4.5. Consider including legal instruments (e.g. climate laws, energy law, pollution control etc.) in this table. [Government of Norway]	No changes made to the table because we have retained the WG3 TS table to ensure consistency with the report.
Topic 4	109	2	110	23	noting that 4.5.1 offers a considerable amount of information and detail on mitigation policies at different scales, it would seem strange that there is much less text on adaptation policies in 4.5.2; perhaps there could be discussion on specific instruments that have been used as entry points for adaptation at different scales; for example, some local governments have incorporated adaptation within Official Community Plans or sustainability plans, with the potential to also modify building codes and land use zoning [Stewart Cohen, Canada]	The section has been bolstered by importing some material previously in Topic 1, and has also been expanded. Note that some material such as "entry points for adaptation" is in (now) section 4.2 on adaptation measures.
Topic 4	109	2			Align this section to what was decided in WGII about adaptation in this issue. [Government of Bolivia]	This has been done as far as feasible, given the different and more focused perspective on policies here compared to the broader and higher level coverage in the WGII SPM.
Topic 4	109	4	109	4	It is suggested to substitute "construction" by "development". [Government of Austria]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.
Topic 4	109	4	109	5	Suggest changing from "embedding in planning processes" into "embedding climate risk management in planning processes". [Government of Italy]	The boxed statement has been deleted since the author team collectively agreed to have only a single boxed statement per section in each topic.

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Topic 4	109	10	109	29	Global collective action has been emphasized to address climate change in more than one instance in the report, but national cooperation in the field of adaptation has not been well discussed. It is suggested to add appropriate words based on the conclusion in ES, WG III Chapter 13 – “While a number of new institutions are focused on adaptation funding and coordination, adaptation has historically received less attention than mitigation in international climate policy, but inclusion of adaptation is increasingly important to reduce damages and may engage a greater number of countries (robust evidence, medium agreement).” [Government of China]	International dimensions of adaptation have been shifted to a synthesis section on international action across adaptation and mitigation, and this point is now indeed addressed there (section 4.4.1).
Topic 4	109	12	109	14	The examples regarding the UNFCCC only address financial issues: please add other activities, see https://unfccc.int/adaptation/items/4159.php . [Government of Germany]	The paragraph has been re-worded to ensure that the focus is not only on financing mechanisms.
Topic 4	109	14	109	15	It is not the directives of the European Commission that have fostered the creation of national adaptation strategies in the European memberstates. But the memberstates implements the directives from the European Commission, which might be of benefit to national work on adaptation. [Government of Denmark]	The paragraph has been re-worded to avoid this semantic difference.
Topic 4	109	20	109	22	Suggest replacing "Current approaches to adaption are..." with "Current approaches to adaption policy are..." In many sector (e.g., agriculture) you will see plenty of adaption being taken now on the ground - but it is not due to climate change policy, rather agents adapting to new conditions. [Government of United States of America]	The paragraph has been deleted and replaced by material more focused on policy dimensions, in part for the reasons given in this and other comments.
Topic 4	109	20	109	27	Suggest reframing as misleading. Emphasis on defensive infrastructure has been documented in a number of early adaptation plans, as cited in WGII 15.6. The majority of actions to date, however, has been on the development of adaptation plans and frameworks, capacity building and, with regard to infrastructure, the development/ammodernization of hydrometeorological nextworks. Enhanced availability of information could help to take more informed and efficient adaptation decisions. [Government of Italy]	The paragraph has been deleted and replaced by material more focused on policy dimensions, in part for the reasons given in this and other comments.
Topic 4	109	22	109	28	Consider adding WGII 5.5 as a supporting reference. [Government of United States of America]	The paragraph has been deleted and replaced by material more focused on policy dimensions.
Topic 4	109		109		Please change “Forest law to reduce deforestation” into “Forest law to reduce deforestation and prevent degradaton” in the sixth column and the sixth line in Table 4.5 [GUOBIN ZHANG, China]	Rejected. It is implicit that 'Forest law to reduce deforestation' also refers to the prevention of soil degradation and erosion controls.
Topic 4	109		109		Table 4.5: In SYR mentioned “vehicle procurement” whereas in fifth row of Transport column in WGIII Table 15.2 mentioned “Low emission vehicle procurement” [Government of Netherlands]	Rejected. Low emission vehicle procurement provides more context
Topic 4	109				I added the words which marked with red:Table 4.5 Regulatory Approaches line: Forest law to reduce deforestation and illegal logging [Eray Özdemir, Turkey]	Rejected. Illegal logging is included in forest laws to reduce deforestation

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Topic 4	109				I added the words which marked with red:Table 4.5 Regulatory Approaches line: Forest law to reduce deforestation and illegal logging [Government of Turkey]	Rejected. It is implicit that 'Forest law to reduce deforestation' also refers to the prevention of soil degradation and erosion controls.
Topic 4	109				table 4.5, line6 and column 7, "Forest law to reduce deforestation and prevent degradation" instead of "Forest law to reduce deforestation" [Chaozong Xia, China]	Rejected. It is implicit that 'Forest law to reduce deforestation' also refers to the prevention of soil degradation and erosion controls.
Topic 4	110	2	110	2	It is suggested to add "foster" because adaptation actions are usually decided at the sub-national level. The decisions are very much dependent on the specific context. [Government of Austria]	The paragraph has been split in two to provide more detailed perspectives on the national and sub-national and private levels. Where relevant we adopted the wording from the WGII SPM.
Topic 4	110	2	110	4	You may consider to replace 'National governments' by 'Higher governance levels', to comprehend regional (e.g. in federal countries), national and supranational (e.g. the EU) governments that actually have to play the same role. [European Union]	Supra-national initiatives are now discussed in the section on international cooperation, where the role of regional (supra-national) governments is included.
Topic 4	110	11	110	11	"..or the effectis of adaptation" - should probably read 'or the effectiveness of adaptation' [H-Holger Rogner, Austria]	Paragraph has been re-worded and comment no longer applies.
Topic 4	110	11	110	11	correct "effectis" [Government of Italy]	Paragraph has been re-worded and comment no longer applies.
Topic 4	110	12	110	20	This text sends a rather different message from what has been lifted up from WGIII chapter 16 into the WGIII SPM. Suggest to stay as closely to agreed text as possible, i.e. replace by: "There is no widely agreed definition of what constitutes climate finance, but estimates of the financial flows associated with climate change mitigation and adaptation are available. Published assessments of all current annual financial flows whose expected effect is to reduce net GHG emissions and / or to enhance resilience to climate change and climate variability show USD 343 to 385 billion per year globally (medium confidence) [Box TS.14]. Most of this goes to mitigation. Out of this, total public climate finance that flowed to developing countries is estimated to be between USD 35 and 49 billion / yr in 2011 and 2012 (medium confidence). Estimates of international private climate finance flowing to developing countries range from USD 10 to 72 billion / yr including foreign direct investment as equity and loans in the range of USD 10 to 37 billion / yr over the period of 2008 – 2011 (medium confidence). [16.2.2]". [Jochen Harnisch, Germany]	It seems the comment applies to page 111 not 110. We agree with the comment - this may send the message that climate finance is only about developing country investments - it is global. Text has been reworded (and WGIII SPM wording adopted as appropriate) to ensure this is communicated.
Topic 4	110	16	110	17	This is a tenant of economics - it is safe to characterize this as "high confidence." If you keep it as "medium confidence", how do you explain the statement on page 116 lines 8-9 as being "high agreement"? [Government of United States of America]	This is the confidence level given by WGII and accepted in its SPM. The more moderate confidence level given here is justified because fostering adaptation is not the same as achieving economically efficient outcomes; page 116 refers to mitigation outcomes, this para is about adaptation outcomes.

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Topic 4	110	21	110	21	Suggest adding "and implementation" after "major design challenges". The alternative sentence would be: "attention to major design and implementation challenges". [Government of Italy]	Rejected; this wording has been approved for the WGII SPM and we see insufficient justification to modify this here.
Topic 4	110	25	110	46	Align to the work done in the context of WGII and WGIII in this topic. [Government of Bolivia]	The revisions of text in response to various comments take care of this concern
Topic 4	110	27	110	29	It is important to acknowledge the relevance of the development and enhancement of endogenous technologies for both mitigation and adaptation. Change suggested: "Technology development, deployment and diffusion, including development and enhancement of endogenous capacities and technologies of developing countries, can be important components of mitigation and adaptation efforts, but face varying challenges in terms of scale, integration with existing systems, and integration in local context." [Pedro Alfredo Borges Landáez, Venezuela]	Accepted
Topic 4	110	35	110	36	The authors should consider changing the phrase, "is often a public good," to "has aspects of a public good, absent government policy such as patent protection," which would be a more accurate statement. [Government of United States of America]	Agreed
Topic 4	110	40	110	46	This paragraph lacks a discussion on the importance of technology transfer at international level that has been instrumental to a better national participation in international cooperation on climate change as an important concern in the field of mitigation and adaptation measures. It is suggested to make an appropriate reformulation based on ES of WG III Chapter 13 – "Technology policy can help lower mitigation costs, thereby increasing incentives for participation and compliance with international cooperative efforts, particularly in the long-run. Equity issues can be affected by domestic intellectual property rights regimes which can alter the rate of both technology transfer and the development of new technologies. [13.3, 13.9, 13.12]" [Government of China]	Accepted
Topic 4	110	42	110	43	Suggest revision. 'Unlike mitigation, where low-carbon technologies are often new and protected by patents' should be revised to read: "Adaptation technologies are often familiar and already applied". Patents and the entire international intellectual property rights regime are a sensitive issue within climate change discussions. There are two broad positions; (i) patents are an enabler to tech transfer (encourages a return on investment), and (ii) patents are a barrier (can't afford licenses etc). Deleting this language will avoid conflict between the two positions without detracting from the message this paragraph is conveying. It also aligns the language with the WGII report, which does not mention intellectual property or patents in chapter 15. [Government of Australia]	Accepted
Topic 4	110	44	110	44	The authors need to change the word "requires," which is policy prescriptive, to "may involve." [Government of United States of America]	Accepted

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Topic 4	110	50	110	52	Rephrase to "Effective mitigation and adaptation efforts require both changes in patterns of investment in developed and developing countries, and increases in financial support for developing countries." [Government of Netherlands]	Refraining from sounding prescriptive
Topic 4	110	50	110	52	The first bold sentence is policy prescriptive. The authors need to edit it to say, "Effective mitigation and adaptation efforts may entail changes in patterns of investment in all countries and increases in financial flows to developing countries." [Government of United States of America]	The evidence suggests not that it may - but that it does
Topic 4	110	50	110	54	Please rephrase to: "Effective mitigation and adaptation efforts require changes in patterns of investment in all countries. To achieve this, appropriate and stable enabling environments are necessary encompassing effective regulatory policy (e.g. standards), policy incentives (e.g. financial support or carbon pricing) as well as behaviour and lifestyle changes (e.g. shifts in consumption patterns)." Justification for change: Current sentence is imbalanced. Financial support is only one element of the incentive schemes necessary to shift to low carbon growth. The WG3 SPM therefore also describes a range of different policy measures that can be effective (p. 30-32). Also, financial support is one key element of this policy mix in both developed and developing countries. After replacing this sentence, last sentence might not be necessary. [Government of Germany]	Agree that statement needs balance
Topic 4	110	51	110	51	"...increases in financial support for developing countries" Taking into consideration the text in section 4.5.4, numbers and figures presented, it is discussing not only developing countries, but all ones of the non-OECD group, which also includes countries with economy in transition. Therefore we suggest to replace "developing countries" with "developing regions".The same for comment #8 [Government of Russian Federation]	Would prefer to stick to the common language used throughout the report
Topic 4	110	52	110	53	Suggest to also mentioning "policies", which are key to support and drive sustainable investments in mitigation and adaptation. [Government of Italy]	Agree
Topic 4	110	56	111	4	Is there a reason why the estimations for investments and their assumptions are not further expressed here? For instance compare the same text to TS WG3 as well as SPM WG3 and underlying WG3 report. [Government of Sweden]	Agree
Topic 4	110	56	111	10	This text and figure should be included also section 4.2 of the SPM. [Jochen Harnisch, Germany]	Agree
Topic 4	110	57	111	3	It is not clear if this projection is for a business as usual, for a 430-530 or some third scenario. This should be specified, otherwise the sentence could be read to mean that these shifts in investments will happen without further action. [Government of Denmark]	The information is there- 430-450 ppm scenario
Topic 4	110	57	111	3	Suggest to insert between "annual investments" and "in conventional fossil;"in extraction of Fossil Fuels". According to fig 4.5 is the reduction in investment in extraction of fossil fuels much bigger than in fossil fuel power plants for mitigation scenarios that stabilize concentrations within 430-530 ppm CO ₂ -eq by 2100. [Harold Leffertstra, Norway]	Rejected. See comments below for explanation on these figures

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Topic 4	110	57	111	3	Assume that this sentence is valid only for mitigation scenarios that stabilize concentrations within approx 430-530 ppm CO ₂ -eq by 2100 and not for a base line scenario. In that case the sentence should be changed. [Harold Leffertstra, Norway]	Correct
Topic 4	111	0			Figure 4.5 : Use () around units, use yr ⁻¹ [Thomas Stocker/ WGI TSU, Switzerland]	Agree
Topic 4	111	3	111	3	The authors need to specify the emission scenario. [Government of United States of America]	Agree
Topic 4	111	3	111	4	It does not make sense to give only one number (1200 bio \$) without context - please delete. If kept, please specify whether the 1200 investments in the energy system only encompasses energy supply side and also specify whether it is only electricity supply side or also heat. [Government of Germany]	This number includes only energy supply of electricity and heat and respective upstream and downstream activities. Energy Efficiency investment or underlying sector investment is not included.
Topic 4	111	5	111	5	On fig. 4.5, the total electric generation is potentially helpful, but confusing. Presumably, this doesn't include the change in fossil fuel extraction, and is just capital investment? That should be clarified. Also, is the effect on efficiency reflected in the totals (that is, efficiency means less investment in generation needed). What would the total delta be in these studies with all effects put together? [Government of United States of America]	Yes, this is only capital investments. The columns on "Total electricity generation" do not include fossil fuel extraction nor energy efficiency. The averages/medians cannot meaningfully be added because of different number of studies included, partial coverage of energy technologies in the viewgraph and because of differences in the treatment of energy efficiency measures across models.
Topic 4	111	5	111	10	Figure 4.5 : This figure is copied from WGIII Figure SPM.9 rather than WGIII Figure 16.3. Because the WGIII Figure 16.3 is treated just for World and Non-OECD countries. Please correct the indication. [Government of Republic of Korea]	Agree
Topic 4	111	5	111	10	Please use wording from WG3 SPM given that the uncertainty associated with numbers is explained more clearly. [Government of Germany]	Accepted

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Topic 4	111	12	111	12	<p>This paragraph completely fails to relate the need for financial transfer to the overall objective of managing climate change on a global scale and contains no relevant science-based information. Moreover, the rough division of the world's countries into "developed" and "developing" countries is imprecise and is not useful for a scientific discussion. The bold section of the para needs to be rewritten so that it is clearly based on scientific evidence whereby the resolution would need to be greater than describing the world in imprecise and somewhat arbitrary terms such as developed and developing countries.</p> <p>The IPCC is not intended to dwell on matters such as the need for renewable energy technologies in certain parts of the world economy, unless it is clearly linked to climate change. The IPCC should provide a comprehensive and scientifically founded knowledge base concerning climate change. In this para, it should therefore be highlighted what science tells us about the allocation of resources from the perspective of maximising the climate change mitigation benefit. [Government of Sweden]</p>	Accepted
Topic 4	111	12	111	12	<p>The bold sentence is policy prescriptive but could be made more neutral by editing it to say, "Increased financial support from developed to developing countries could stimulate investment..." [Government of United States of America]</p>	Accepted
Topic 4	111	12	111	13	<p>Suggest mentioning also "climate-resilient"/"adaptation" investment, a key concern of developing countries and of the international climate finance community. This is for instance exemplified by the recent decision to allocate 50% of the Green Climate Fund's resources to adaptation. [Government of Italy]</p>	Agree with comment
Topic 4	111	12	111	14	<p>The text here includes inappropriate expression such as "Increased financial support from developed to developing countries will be needed". "Climate finance" has not really been defined under the UNFCCC. And also it is veru unclear if this is referring to specific Annex II commitments under the UNFCCC,</p> <p>The reference should at least state as approved in WG3 SPM(p.29) "There is no widely agreed definition of what constitutes climate finance, but estimates of the financial flows associated with climate change mitigation and adaptation are available (...)" [Government of Japan]</p>	Accepted
Topic 4	111	12	111	14	<p>Please insert at beginning of sentence "Alongside a stable and ambitious enabling policy environment," Justification: Chapter 16 as well as SPM III highlight the importance of international finance as one component for mitigation and adaptation actions. [Government of Germany]</p>	Agree with comment

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Topic 4	111	14	111	15	Please delete the reference to the 100 bio \$ as it is unbalanced to cherry pick single decisions of the UNFCCC. If kept, please insert "in the context of meaningful mitigation actions and transparency on implementation" after "developing countries". Justification: Reflects wording from Cancun Agreements/Copenhagen Accord. [Government of Germany]	Agree with comment
Topic 4	111	14	111	16	Suggest revision. The reference to the commitment by developed countries "to a goal of jointly mobilizing US\$ 100 billion per year from various sources by 2020 for adaptation and mitigation in developing countries" is incomplete, omitting key language The text must be revised to indicate the commitment is "in the context of meaningful mitigation actions and transparency on implementation", consistent with Copenhagen Accord para 8 and UNFCCC decision 1/CP.16 para 98. [Government of Australia]	Agree with comment
Topic 4	111	17	111	18	Please delete phrase: "Bilateral and multilateral institutions typically provide public climate finance to developing countries as concessional loans and grants." This informaton does not seem very robust. [Government of Germany]	Agree with comment
Topic 4	111		111		Fig.4.5: Not the same graph as in "WGIII Figure 16.3" that is on page 28. [Government of Netherlands]	Agree
Topic 4	111				Figure 4.5 colour key labels at the bottom as well as the time horizon labels are very small and faint. Consider enhancement as well as increasing the font size [Government of Kenya]	Done.
Topic 4	111				Difficult to follow. Should "Total electricity Generation" be sum of "Nuclear", "Power Plants with CCS", "Fossil fuel power plants" and part of "Renewables"? If so graph doesn't seem to add up. If not, then graph is ambiguous. [Government of Netherlands]	The individual 'bars' depict min and max values from the models assessed and are not supposed to add up as they interrelate, i.e.a model with a lot of RE might have little nuclear or little fossil fuel power plants w/o CCS. The final viewgraph from WGIII report comprises clarified terminology for categories
Topic 4	112	1	112	1	Figure 4.6 The authors should match the height of middle column of the other four heights. [Government of United States of America]	Yes accepted
Topic 4	112	1	112	1	Fig. 4.6: Define REDD here unless there is an acronym table or it has been defined previously. [Government of United States of America]	Defined in Glossary
Topic 4	112	1	112	2	Figure 4.6 : This figure is originated from WGIII Figure 16.1. Please make the indication of the figure correct rather than {WGIII Figure TS.4.5}. [Government of Republic of Korea]	Agreed
Topic 4	112	5	112	19	Delete this paragraph because is biased to the provision of financial resources through private means and instruments. [Government of Bolivia]	Not accepted
Topic 4	112	5			Delete REDD+ as the unique alternative. Put in the context that REDD+ is among different alternatives for improving sustainable development. See discussion in this issue in WGIII. [Government of Bolivia]	Not applicable to this paragraph
Topic 4	112	6	112	7	Rephrase to "Within appropriate enabling environments, the private sector, along with the public sector play an important role in financing mitigation and adaptation." [Government of Netherlands]	Accepted

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Topic 4	112	12	112	12	delete "._" after "limited" [Government of Italy]	Accepted
Topic 4	112	12	112	12	". ." [Akihiko Murata, Japan]	Not clear
Topic 4	112	15	112	15	Suggest to add "financial arrangements" after "dedicated policy instruments". The alternative sentence would be: "dedicated policy instruments and financial arrangements". This because e.g. Power purchase agreements are no policy instruments per se. [Government of Italy]	Accepted
Topic 4	112	15	112	16	Power purchase agreements are not polciy instruments but just contracts. The policy instrument is the public guarantee on the PPA by a government, or the subsidy that is embedded in a PPA whose electritivity price is above market levels. [Government of Italy]	Accepted
Topic 4	112	16	112	17	Not just lowering risk but also (or instead) improving revenues. Problaby better to phase is as "improving risk/return profile of the investments" or "improving the return adjusted for the risk" [Government of Italy]	Accepted
Topic 4	112	17	112	18	Suggest reframing. As such written, the sentence is unclear and not well linked to previous parts of the paragraphs. This sentence would appear to emphasize the role of e.g. public-private partnerships (PPP) in reducing the risks and, therefore, stimulating/enabling private investments. The current sentence, however, does not well communicate this. An alternative could be: "Public-private risk reduction initiatives and economic diversification are examples of adaptation actions enabling and relying on private sector participation". To enhance readers' understanding, authors may consider of mentioning the role of public-private initiatives in the context of insurance systems as per WG II chapter 10. [Government of Italy]	Accepted
Topic 4	112	17	112	18	"Large...participation" the sentence is not very clear and it should refer to a more explicit example. There are many examples of public-private risk reduction and economic diversification that work well with mitigation investments [Government of Italy]	Not accepted
Topic 4	112	21	112	22	Suggest revision to align language with WGII SPM p3 to make clear the connection between "limited evidence" and "medium confidence". [Government of Australia]	Accepted
Topic 4	112	21	112	25	The authors should use the approved language from the WG2 SPM verbatim here. The first sentence as written can be retained as is. But, the rest of the paragraph needs to be revised. Specifically, p. 24 of the SPM reads "There is a need for better assessment of global adaptation costs, funding and investment. Studies estimating the global cost of adaptation are characterized by shortcomings in data, methods and coverage (high confidence)." [Government of United States of America]	Accepted

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Topic 4	112	24	112	25	The sentence beginning 'Adaption finance...' while it is lifted straight from the WGII 14.2.5_para2, is not understandable when it is cited without context - it's too specific and not specific enough - using 'probably' here gives the impression that we don't really know. Is there a more general message we can convey from this paragraph? Something along the lines of ... Adaption finance is currently limited and when adaption is being financed the money is going into capacity building, stand alone projects or pilot programs, there is a deficit in adaption finances and as a result in the expertise required for adaption assessment and implementation (?) [European Union]	Accepted
Topic 4	112	24	112	25	The last sentence ("Adaptation finance made up probably only a fifth of initial allocations of fast-start funding.") is not backed by the quotes from the underlying reports and their chapters. Thus it should be deleted. [Government of Germany]	Accepted
Topic 4	112	24			The use of "probably" seems rather imprecise without any explanation. Perhaps could be rephrased: "It is estimated that adaptation finance made up only a fifth...." [Government of New Zealand]	Accepted
Topic 4	112	25	112	25	The term "fast-start funding" needs some further explanation for those readers of the SPM less familiar with the UNFCCC process. It is suggested to include a footnote. The following wording is suggested: Developed countries agreed under the UNFCCC to deliver USD 30 billion in new and additional 'fast-start finance' (FSF) between 2010-2012 to developing countries, as a step towards mobilizing USD 100 billion per year from public and private sources by 2020. [Government of Austria]	Accepted
Topic 4	112	25			Expression: The indication, {WGII 14.2, 17.X}, would be better to clarify relevant sub-sections of section 17 otherwise delete '.X'. Maybe better to common expression of it in the underlying report. [Government of Republic of Korea]	Accepted
Topic 4	112	27			Section 4.6. Please consider to merge findings from this section together with section 3.1. Rationale: We believe that findings from this section is very policy relevant and should therefore be seen together with section 3.1 "Human responses: an integrated response". [Government of Norway]	This section has been re-written to focus on integrated responses, and material on interlinkages has been shifted to relevant sections
Topic 4	112	38	112	38	{WGII 8.5, 11.5} appear not to be the relevant sources. {WGII 23.8} appears to be a more relevant source. [Government of Netherlands]	references changed to reflect shifted text
Topic 4	112	38	113	3	Please delete example, the text is unbalanced as it singles out one specific activity. Please provide balanced texts. [Government of Germany]	examples deleted
Topic 4	112	38	113	6	Examples could be better introduced and typified by using the three components 'Economic, Social and Environmental' as categorized in table 4.6 and addressed in {WGII 20.4.1., Resolving Tradeoffs between Economic and Environmental Goals (the component social was actually left out of the paragraph title, but is comprehended in the text of the paragraph)}. [Government of Netherlands]	examples deleted

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Topic 4	112				Figure 4.6 Text used is small and unreadable. Consider increasing the font size [Government of Kenya]	Table will be formatted
Topic 4	113	1	113	2	How is "carbon storage" different from "sequestration"? It seems redundant. Please clarify. [Government of United States of America]	examples deleted
Topic 4	113	4	113	6	Request to delete ": or facilitating payments under REDD+ can affect rural areas by increasing income and employment opportunities, but may also lead to the expropriation of land, the loss of livelihoods, or food insecurity", because REDD+ is not included in the referenced WGII 23.8 nor Table 25-7. [Government of Japan]	examples deleted
Topic 4	113	5	113	6	There are safeguards" but may also lead to the expropriation of land, the loss of livelihoods, or food insecurity, if implemented properly". There are REDD+ safeguards to prevent these negative impacts. Please adapt your statement. [Government of Germany]	examples deleted
Topic 4	113	9	113	10	for adaptation, WGII 2.4.3 supports this statement [Stewart Cohen, Canada]	Noted
Topic 4	113	12	113	12	It appears there is not a paragraph 4.8 in WGII (Chapter 4. Terrestrial and Inland Water Systems) [Government of Netherlands]	Noted
Topic 4	113	13	113	13	To keep consistence with the discussions at the WGII-10 and WGIII-12, replace "low-income countries" with "developing countries with low income". [Government of Brazil]	text deleted
Topic 4	113	13	113	14	The conclusion: "The scope for co-benefits may be greater in low-income countries, where complementary policies for other objectives, such as air pollution, are often weak. {WGIII 5.7, 6.6, 15.2}" is not precise. What is actually said in WIII 6.6 is that: "The literature assessed in AR4 focused on air pollution reductions in individual countries and regions, pointing to large methodological difference." and, as result of those differences, "the near-term air pollution co-benefits of mitigation could be greater in the poorest countries." [Government of Netherlands]	text deleted
Topic 4	113	16	113	20	Figure 4.X : This paragraph has an indication of the Figure 4.X. Which is the Figure 4.X in underlying report? [Government of Republic of Korea]	bullet re-written
Topic 4	113	30	113	30	Fuzzy wording. Suggestion: Adaptation by means of integration measures in planning and decision-making is a way to generate synergies and development. [Government of Netherlands]	sentence re-worded to be applicable to both mitigation and adaptation.
Topic 4	113	30	113	31	WGII 2.5 supports this statement [Stewart Cohen, Canada]	noted
Topic 4	113	30			Should it not be "sustainable development"? [Government of Germany]	accepted
Topic 4	114	0			Table 4.6. I understand the motivation to be even-handed by presenting the adverse side effects of mitigation, but it should be stressed in the text that these negative impacts can be reduced or eliminated, whereas the positive impacts are a bonus to the mitigation actions. Policymakers should not be given the impression that negative impacts will necessarily cancel out positive side benefits. [Joseph Alcamo, Germany]	Accepted. The text specifies that the balance of positive and negative effects must in principle be computed, although in practice this is complex. The caption now mentions that it depends on local circumstances.

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Topic 4	114	1	114	4	Caption of table is incomplete: what is Table III.6.7, Sections XXX? [Haroon Kheshgi, United States of America]	Accepted. This was a typo.
Topic 4	114	1	115	1	Delete the whole table 4.6 because is not in SPM agreed reports of WGII and WGIII. [Government of Bolivia]	The table comes from the underlying report, and conveniently synthesizes the sectoral co-benefits tables from the TS.
Topic 4	114	1	115	1	This table is so complex with the use of color; it's message is unclear and not understandable to the general public and to the policymakers. The authors should consider deleting it. [Government of United States of America]	Rejected. There are only two colors (red is often used in balance sheets to indicate losses).
Topic 4	114	1	115		<Table 4.6> This table should be deleted completely because it is not from the approved WG3 SPM or WG3 TS Final Draft. Adopting this discarded table at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	The table comes from the underlying report, and conveniently synthesizes the sectoral co-benefits tables from the TS.
Topic 4	114		114		Table 4.6, the row for RE, column for Environmental impacts. Also hydro and bioenergy have landscape and wildlife impact (not only wind). [Government of Sweden]	Accepted.
Topic 4	114		114		Table 4.6, the row for compact urban form, the column for environmental impacts. A more compact form could imply loss of green spaces in cities and loss of urban ecosystem services. [Government of Sweden]	True but not in the original table (see also table III.12.6), we cannot add new items at this stage.
Topic 4	114		115		This table is too complicated for the SYR, it has too much information in it. It might be to give just a reference and a couple of examples if needed. [European Union]	The table includes important information and we believe it is worth the complexity
Topic 4	114		115		General reflection: Changes in the energy system, as a result of climate change, may have an effect on the security of supply. As expansion of wind and solar power (for example) has a positive impact from a greenhouse gas perspective, they also require an expansion of regulatory power (hydro or nuclear power) to balance the unequal production such as wind and solar power brings. [Government of Sweden]	This is mentioned in the table ("extra measures to match demand").
Topic 4	114		115		Table 4.6: Nuclear/economic effects: Please add "cost" after "legacy". RE / economic effects: the phrase " higher use of critical metals for PV; direct drive wind turbines" is rather an environmental than an economic effect, or? Please move it to the correct column. [Government of Germany]	Accepted for "cost". Rejected for critical metals (it is indeed both an environmental and an economic issue)
Topic 4	114		115		Table 4.6: AFOLU/ social effects": ...sustainable forest management" Please remove brackets from the word - sustainable. [Government of Germany]	Accepted.

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Topic 4	114		115		Table 4.6: Nuclear/environmental effects: Use the full information given in WG3 SPM: "Nuclear energy could make an increasing contribution to low-carbon energy supply, but a variety of barriers and risks exist (robust evidence, high agreement). Those include: operational risks, and the associated concerns, uranium mining risks, financial and regulatory risks, unresolved waste management issues, nuclear weapon proliferation concerns, and adverse public opinion (robust evidence, high agreement). New fuel cycles and reactor technologies addressing some of these issues are being investigated and progress n research and development has been made concerning safety and waste disposal." Some of the environmental aspects are currently mentioned in the column "social", please check. [Government of Germany]	The SPM refers to barriers and risks, which are not the same as adverse side-effects. However, almost all items listed in the comment appear in the table (the missing two are financial and regulatory risks and adverse public opinion, which cannot be considered a "side-effects").
Topic 4	114				Table 4.6 It does not reflect the Plenary-approved version of WG3 report. SYR is supposed to synthesize the findings across WG1, 2, 3, but is not supposed to override the wordings of individual WG. The followings, at least, have to be redrafted by reflecting the WG3 report: table 4.6 should be replaced by WG3 SPM or TS. [Taishi SUGIYAMA, Japan]	The table comes from the underlying report, and conveniently synthesizes the sectoral co-benefits tables from the TS.
Topic 4	114				Table 4.6. In the column "Sectoral mitigation measures" under "Energy Supply" we suggest changing from "Fossil CCS replacing coal" to "Fossil energy with CCS replacing coal". [Government of Norway]	Accepted.
Topic 4	114				Table 4.6. I understand that the motivation is to be even-handed by presenting the adverse side effects of mitigation, but it should be stressed in the text that these negative impacts can be reduced or eliminated, whereas the positive impacts are a bonus to the mitigation actions. Policymakers should not be given the impression that negative impacts will necessarily cancel out positive side benefits. [Tabaré Arroyo Currás, Mexico]	Accepted. The text specifies that the balance of positive and negative effects must in principle be computed, although in practice this is complex. The caption now mentions that it depends on local circumstances.
Topic 4	114				In Table 4.6, under Energy Supply (nuclear replacing coal power, RE replacing coal, fossil CCS replacing coal and CH4 leakage prevention): If costs are increased or decreased (capital costs, costs of energy production, etc.) through any of these switches, recommend noting this as positive or negative effects. [Government of Canada]	This comment is correct but is about direct costs, whereas the table is about indirect effects.
Topic 4	115	1	115	3	Table 4.6 : In line 3, there is an odd expression with its caption, 'see Sections XXX {WGIII. 3.9, 6.3.6, 14.4.2}. This expression seems not suit and please put it in right format. In addition, this table is not easy to understand as it is too much informative and complicate. We would like to suggest dividing the table into a couple of smaller table with supplementary explanation. [Government of Republic of Korea]	1) It was a typo. 2) The table has been greatly simplified compared to the original table.
Topic 4	115		115		Table 4.6, the row for retrofitting of buildings,the column for environmental impacts. There is a risk for health risk via insufficient ventilation, but it can be avoided. [Government of Sweden]	True, many risks can be avoided with suitable measures, but without such measures they may be realized.

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Topic 4	115		115		Table 4.6, the row for materials efficiency, recycling, the column for environmental impacts. Informal recycling of for example WEEE in developing countries can lead to significant emissions of hazardous substances [Government of Sweden]	Good point, but unfortunately absent from the report.
Topic 4	115		115		Table 4.6, the row for compact development, the column for environmental impacts. Can also lead to loss of open space in cities of the development means building on for example green spaces. . [Government of Sweden]	Good point, but unfortunately absent from the report.
Topic 4	115		115		Table 4.6, AFOLU. If bioenergy is replacing fossil fuels it will have positive impacts from avoiding negative impacts of extraction of fossil fuels including energy security, decreased conflicts around fossil fuels, decreased impacts of landscape and wildlife, local land competition etc. [Government of Sweden]	Yes, all this is mentioned in the RE row.
Topic 4	115		115		Table 4.6 on potential co-benefits and adverse side-effects from mitigation measures is a bit difficult to read for the AFOLU part. We have many different mitigation measures and it difficult to see how the different co-benefits and adverse sideeffects relates to the different measures. [Government of Denmark]	Yes, but unfortunately detailing all these things would be very repetitive. This synthetic version comes from the original table and the AFOLU chapter.
Topic 4	115		116		This section should also talk about subsidising renewables and making clean energy more affordable by using subsidies. [European Union]	This is the meaning of the RE row.
Topic 4	115				albedo in the last column of the AFOLU section: page 53 of Chapter 4 of the WGII report reads: "Where low-albedo forest canopies replace higher-albedo surfaces such as soil, grassland or snow, the resultant increase in net radiative forcing counteracts the benefits of carbon sequestration to some degree (Arora and Montenegro, 2011). Where the cloud cover fraction is low and the albedo difference is large, i.e. outside the humid tropics, the long-term net result of afforestation can be global warming (Bala et al., 2007; Bathiany et al., 2010; Schwaiger and Bird, 2010)" - it seems from this that afforestations may not bring co-benefits, rather, adverse effects [Government of Hungary]	This issue is not relevant to the table because it is about the direct effect of afforestation on the climate, not about co-benefits or adverse side-effects.
Topic 4	115				Table 4.6 First column, first line add after "Nuclear replacing coal" the words "and other fossil fuels" [Government of France]	Accepted.
Topic 4	115				Table 4.6 Second column, first line, add as a Favorable economy aspect: "much less ground transportation. For 1 GWe plant 30 tons of used fuel/yr, 4 million tons/yr for coal plant" [Government of France]	True but this is an intermediate effect, the ultimate relevant impact is on air pollution and health (listed in the table).
Topic 4	115				Table 4.6 Third column, first line add as a favorable social aspect: "smallest number of death par 1000 TWh: 90 for nuclear energy, 170000 for coal, 4000 for gas, 1400 for hydroelectricity, 24000 for biomass, 140 for PV. Small number of immediate traceable deaths by nuclear catastroph: 0 for TMI, 50 for Chernobyl, 3 for Fukushima" [Government of France]	This issue is discussed in the report (III.7.9.3) but not highlighted in the synthesis table by the authors. Note that immediate deaths are only a small part of the health impact of nuclear catastrophes.
Topic 4	115				Table 4.6 Fourth column , first line add as a favorable environment aspect: "very small surface impact: nuclear 8TWh/y for 1 km2, PV: 25 km2, Biomass: 2500km2, wind: 100 km2" [Government of France]	This is not discussed in the report.

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Topic 4	115				(table 4.6)The mitigation measures of each sub categories in AFOLU sector are combined together. It would be difficult to differentiate the impact of one measure from the other measures. [Government of Thailand]	Yes, but unfortunately detailing all these things would be very repetitive. This synthetic version comes from the original table and the AFOLU chapter.
Topic 4	115				Table 4.6, AFOLU: It is very difficult to entangle which trade-off belongs to which measure. Please consider dividing them up similar to what is done for the other sectors. [Government of Norway]	Yes, but unfortunately detailing all these things would be very repetitive. This synthetic version comes from the original table and the AFOLU chapter.
Topic 4	116	1	116	43	It was removed from SPM the whole discussion of carbons and prices. We suggest to delete these paragraphs to be aligned with previous SPM reports. [Government of Bolivia]	This section draws from approved WG3 SPM text. However, for editorial and narrative reasons, the section has been deleted, and relevant bullets have been moved to other sections, notably 4.5 as specified in detailed comments below.
Topic 4	116	1	116	45	An effective mitigation policy in emergent countries is developing green public transportation at a faster pace. In mega cities in emergent countries there is a high tendency is using individual vehicles for transportation. Often the vehicles are old and use a high amount of fossil fuels and pollute more due to low quality diesel or gas. Developing sustainable transportation policies can larrgely reduce the consumption of gas and reduce pollution in local areas. [Vahid Mojtahed, Italy]	Point noted. Not directly relevant for this section.
Topic 4	116	8	116	8	The phrase "GHG-related activities" could be confusing, since it might refer to either GHG emitting or mitigating activities. The authors should consider editing it to say "GHG-emitting activities." [Government of United States of America]	Rejected. Retain approved WG3 SPM language. Bullet moved to 4.4.2.2
Topic 4	116	8	116	9	It is suggested to copy this very important statement to the SPM, P 22, including the notion of negative social costs. [Government of Germany]	Will take into account in re-drafting of SPM.
Topic 4	116	8	116	9	Synchronize the characterization of this statement (high agreement) with that on page 110 lines 16-17. [Government of United States of America]	Page 110 refers to impacts, this sentence to mitigation. Recommendation not clear.
Topic 4	116	8	116	20	The notion of "at negative social costs" is missing, that is mentioned in the WG3 TS P 88 ("Reduction of subsidies to fossil energy can achieve significant emission reductions at negative social cost (very high confidence).") [Government of Germany]	Rejected. Retain approved WG3 SPM language
Topic 4	116	8	116	20	Fuel taxes along with subsidies are common as stated in WGIII 15.5.2. Suggest that both subsidies and taxes be considered in this paragraph. Some overview of the net effects which differ by country and fuel, and the reasons for these differences would provide important context. [Haroon Kheshgi, United States of America]	Taxes are discussed in the bullet immediately preceding, since the bullet is moved to 4.4.2.2
Topic 4	116	18	116	18	The expression "a large fraction" is used in the SYR. It would be better to quantify eych time this fraction. [Government of Switzerland]	Rejected. Retain approved text. Bullet moved to 4.4.2.2
Topic 4	116	20	116	20	It appears there is not a paragraph 14.32 in WGIII (It should probably be 14.3.2 Energy and Development) [Government of Netherlands]	Changed. Bullet moved to 4.4.2.2

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Topic 4	116	22	116	29	This section needs to be rewritten. Currently it is not clear. The main problem here is that mitigation policies can reduce fossil fuel prices and make using fossil fuels more attractive again. [European Union]	Reject. Retain approved text from WG3 SPM. Bullet moved to 4.4.2.2
Topic 4	116	22	116	29	Figure SPM 5 and Table 7.2 of Chapter 7 seems to be a pair of information when we told about the devaluation of fossil fuel asset. Table 7.2 is better to be added here. [Takashi Hongo, Japan]	Rejected space constraints.
Topic 4	116	22	116	37	These paragraphs are imbalanced as they give the impression that mitigation of climate change has many effects. The information in the first paragraph (L22-29) on disadvantages for fossil fuel exporters must be complemented by information on the economic benefits for the providers of renewable energies, see WG3 Chapters 7.8 and 7.9. The information on disadvantages for energy access in the second paragraph (L31-37) must be complemented by information on co-benefits, see e.g. WG3 Table 7.3., see also the first para on P 30 of WG3 SPM. [Government of Germany]	Bullet moved to 4.4.2.2. This provides more overall balance, as that section includes discussion on co-benefits, incentives for renewable energy and the full range of economic policy instruments.
Topic 4	116	24	116	24	". ." [Akihiko Murata, Japan]	Changed. Bullet moved to 4.4.2.2
Topic 4	116	26	116	27	Consider revising to "The availability of CCS would reduce the adverse effect of certain mitigation actions on the value of fossil fuel assets". [Government of Canada]	Rejected. Retained approved WG3 SPM text. Bullet moved to 4.4.2.2
Topic 4	116	31	116	33	Higher energy service prices are most likely in the short run but not necessarily in the longer run. There may even be a rebound effect - not only for the rich but also for the poor. Another observation: The draft avoid the terms externalities or internalizing externalities. Mitigation of CC is just an internalization issue. [H-Holger Rogner, Austria]	There are indeed short run versus long run issues. However, in the short run, prices are likely to be higher. This is more salient to the point being made here given the urgency of and agreed need for enhancing access to energy. Bullet reverted to SPM WG3 approved text. Bullet moved to 4.4.2.2 to be consistent with narrative.
Topic 4	116	31	116	34	Too vaguely formulated, remove .Whole para lacks explicit reference in report [Government of Sweden]	Rejected. Basis for bullet exists in WG3 SPM5.1 and several other places in WG 3 [4.3, 6.6, 7.9, 9.3, 9.7, 11.13.6, 16.8]
Topic 4	116	31	116	34	These two statements, taken together, say: we have little confidence that mitigation policies have negative impacts but medium confidence that we could address them, if they exist, with other policies. The authors need to address this apparent illogical succession of statements. How can we have more confidence in a solution than in the "low confidence" problem in the first place? [Government of United States of America]	Reject. We don't see the inconsistency. There is not full confidence that this is always a problem. But if and when it is, the solutions are at hand. And although there is low confidence that this issue is a problem, the access challenge is significant enough and widespread enough that it is worth paying specific attention to even if confidence levels are low.
Topic 4	116	39	116	39	It mentions "About 1.3 billion people". WGIII chapter 4, paragraph 4.3.6, page 25, line 23 mentions 1.4 billion. [Government of Netherlands]	Bullet deleted and integrated into other point in 4,6
Topic 4	116	39	116	43	The para does not discuss mitigation nor does it discuss prices. It is hence misplaced and should be removed. [Government of Sweden]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response

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Topic 4	116	39	116	43	Wonder if placement of this paragraph is appropriate as subsection 4.6.2 should discuss interactions between energy and mitigation through prices. Request reconsideration of placing of paragraph. [Government of Japan]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	39	116	43	This paragraph should be deleted completely because this description does not exist in the approved WG3 SPM. Adopting this discarded information at this stage neglects the efforts of summarizing the contents of WG3 full report into SPM and TS. [Hirofumi Kazuno, Japan]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	39			If there is information available about which forms of RE could play the biggest role in energy access, it could be added to this paragraph. [Government of Canada]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	42	116	42	It mentions "for achieving nearly universal access are between US\$ 65-86 billion per year until 2030". WG III, chapter 16, paragraph 6.8, page 41, line 10-11 says USD 72-95 billion per year until 2030. [Government of Netherlands]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	42	116	42	The text needs editing for clarity: universal access to what? Presumably electricity - but it is not clear. [Government of United States of America]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	42			"costs" or "investment"? [Government of Germany]	Bullet deleted and integrated into another point in 4.6 to emphasize integrated response
Topic 4	116	47	116	48	This bolded statement is not relevant to the audience. Consider revising. [Government of Canada]	Bold text removed
Topic 4	116				Lack of consistency with approved texts as appeared in adopted SPMs (WGII, WGIII) • Examples of in-consistent texts include under sections 4.6.2 [P116] (interaction between energy and mitigation through prices) [Government of Saudi Arabia]	Section completely revised and sub-section 4.6.2 removed for reasons of consistent narrative
Topic 4	116				no comments [Government of United Kingdom of Great Britain & Northern Ireland]	ok
Topic 4	117	5	117	8	Please clarify this phrase. [Government of Germany]	Phrase unclear and so deleted
Topic 4	117	9	117	9	We suggest to replace "resilient infrastructure systems" for "resilient urban systems" [Government of Spain]	Rejected. We refer to infrastructure systems. Source is approved text in WG2 SPM B-2
Topic 4	117	47	117	50	This headline contains statements on the integrated approach that have been previously mentioned, please shorten the text and improve structure. [Government of Germany]	headline removed