



**IPCC Synthesis Report
Fourth Assessment Report**

Formal Government and Expert Review of First Order Draft

EXPERT and GOVERNMENT COMMENTS – INTRODUCTION

All Batches (July 27, 2007)

IPCC Synthesis Report - Fourth Assessment Report (All comments - Introduction – July 27, 2007)

Running number	Topic - Comment	Batch	Page	Line	To Page	To Line	Comment	Considerations by the writing team
Intro-1	E-Intro-1	A	0				There are two aspects of the results of AR4. One is of course the specific findings, which are detailed in the SYR. There is, however, another aspect, which is a statement that AR4 has developed more robust findings, reduced uncertainties, increased agreements, and was based on much more evidence than before. Although this seems to be "nothing new", it should be emphasized to demonstrate the strenght of science. As this strength, and the quality of this science is questioned by some (e.g. president Klaus of the Czech Republic, calling IPCC as "junk science"), science must demonstrate commitment by scientists and progress in understanding. Then the report could say that uncertainties still exist, of course, due to the very nature of climate change science: very large dimensions, long time scales, complex systems, projections into future etc. etc. Then it becomes obvious that the remaining uncertainty should be treated. However, this "uncertainty" can also be worded as "level of certainty". I would even suggest that the report should focus on "certainty" when it is justified (e.g. very high confidence), and the word "certainty" should be used to demonstrate that, indeed, science has achieved remarkable results which are worth of serious consideration by policy makers. This is of course dealt with in Topic 6, "Robust findings...". However, I have the feeling that the introduction should very much highlight this section, and not hide this as a topic at the end. (Zoltán Somogyi, Hungarian Forest Research Institute)	Noted, specific request rejected. The word certainty is not consistent with the uncertainty guidance note as applied in the three Working Group reports. The order of the topics is determined by a decision of the IPCC Panel.
Intro-2	E-Intro-2	A	0				The Introduction is clear and sufficient (Michael Brady, Natural Resources Canada - Canadian Forest Service)	Noted – thank you.
Intro-3	E-Intro-3	A	0				message is clear. It is fine with the draft (Hisayoshi Morisugi, Japan Research Institute)	Noted – thank you.
Intro-4	E-Intro-4	A	0				general comment wich could be added here : most of the measurements are done in the Northern hemisphere. This unequal geographical distribution can produce some bias in the given values (Nicole Lenotre, BRGM)	This is a specific issue noted in topic 1 and topic 6. Introduction cannot go into specific issues.
Intro-5	E-Intro-5	A	0				Can the topics be be illustrated in Figure I.1 in addition to make clearer their relations? (Dieter Gerten, Potsdam Institute for Climate Impact Research)	This was tried but rejected because some topics cover several aspects, which would make the figure too complex.
Intro-6	G-Intro-1	A	0				There are two aspects of the results of AR4. One is of course the specific findings, which are detailed in the SYR. There is, however, another aspect, which is a statement that AR4 has developed more robust findings, reduced uncertainties, increased agreements, and was based on much more evidence than before. Although this seems to be "nothing new", it should be emphasized to demonstrate the strenght of science. As this strength, and the quality of this science is questioned by some, science must demonstrate commitment by scientists and progress in understanding. Then the report could say that	Rejected. The introduction does not cover substantive findings. The increased number of robust findings is covered in Topic 6.

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							uncertainties still exist, of course, due to the very nature of the climate system and the climate change science. (continued below) (Government of Hungary)	
Intro-7	G-Intro-2	A	0				Then it becomes obvious that the remaining uncertainty should be treated. However, this "uncertainty" can also be worded as "level of certainty". It is suggested that the report focuses on "certainty" when it is justified (e.g. very high confidence), and the word "certainty" should be used to demonstrate that, indeed, science has achieved remarkable results which are worth of serious consideration by policy makers. This is dealt with in Topic 6, however, the introduction should also highlight this issue. (Government of Hungary)	Noted, specific request rejected. The word certainty is not consistent with the uncertainty guidance note as applied in the three Working Group reports. The introduction does not cover substantive findings.
Intro-8	G-Intro-1	B	0				This section should include a paragraph pulling together the key conclusions across the three working groups - e.g. some high level statements: § Warming of the climate system is unequivocal § In the absence of effective international effort, GHG emissions will continue to grow rapidly over the coming decades § Rising temperatures will affect food and water supplies, human health, biodiversity and the economy § The costs of inaction outweigh the costs of action § A portfolio of adaptation and mitigation measures can reduce the overall risks associated with climate change § Global emissions must peak in the next decade or two and then decline to well below current levels by the middle of the century if we are to avoid dangerous climate change § A mix of policy instruments will be required (Government of United Kingdom)	Rejected. The introduction cannot provide a summary of substantive findings, this is the role of the SPM.
Intro-9	G-Intro-2	B	0				Diagrams - Comments made on the SPM will apply here too especially with respect to Figure 3.1 (see SPM -5) (Government of United Kingdom)	Comment does not seem to refer to Introduction.
Intro-10	G-Intro-3	B	0				As we have indicated above, it would be helpful to indicate in the introduction what is new and important since the publication of TAR. We also suggest that this section brings up some of the key points of the report. We suggest to insert the following points at line 10: "The report shows that the Earth's climate is changing and that this is very likely due to significant increase in atmospheric concentrations of greenhouse gases which has taken place since the industrial revolution, due to human activities. It also shows that if emissions continue unabated, the climate will change significantly by the end of the 21st century, with increasingly adverse effects on the natural world and human society. The	Rejected. The introduction cannot provide a summary of substantive findings, this is the role of the SPM.

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							<p>report shows that most severe impacts of climate change can be avoided by timely mitigation measures at relatively low cost and that the technologies and policy measures are already available to achieve this. It notes however that some level of climate change is now unavoidable and that adaptation measures are essential to minimise the damages due to climate change.</p> <p>Since the Third Assessment Report significant advances have been made in(data, analysis, modelling etc)</p> <p>There is stronger evidence that climate change over the last 50 years has been caused by human activities and that this causal link can be identified at the regional scale and for some extreme events. The impacts of climate change due to human activities can also be seen in many aspects of the natural world and in some aspects of human activity.</p> <p>The sensitivity of the climate system to greenhouse gases is greater than was reported in the TAR (from SYR p6, lines 3-8)</p> <p>The risks associated with climate change are now considered to be greater than was reported in the TAR (from p 17, line 10).This includes risks to unique and threatened ecosystems, risks from extreme events, risks to low latitude and less developed regions, greater damage costs and risks to ice sheets. (from p16, line 38 to p17 line 8)</p> <p>ADD a comparative statement on mitigation and adaptation opportunities and costs</p> <p>"possible responses in a development context" is not very clear, suggest rephrase: "steps the global society can take to mitigate the impacts of climate while, at the same time, meeting the needs and demands of the world population, particularly in the developing world"</p> <p>(Government of United Kingdom)</p>	
Intro-11	E-Intro-6	A	1	4	1	4	<p>Include (WG) after the first occurrence of Working Group; replace all subsequent occurrences with WG. A footnote may be needed for "newbies" to explain that IPCC organizes its work in WGs (and also has a separate program on national greenhouse gas inventories), and that AR4 has three separate books with the reports of the WGs. Also, it needs to be mentioned that, after summary statements of the synthesis report, references are made to relevant sections of the main reports where more details can be found.</p> <p>(Zoltán Somogyi, Hungarian Forest Research Institute)</p>	This will be covered in the preface to the report.

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Intro-12	G-Intro-4	A	1	4	1	4	"WG" could be introduced after the first occurrence of Working Group and then use this acronym subsequently. A footnote may be needed for "newbies" to explain that IPCC organizes its work in WGs and that AR4 has three separate (sub)reports from the WGs. Also, it needs to be mentioned that, after summary statements of the synthesis report, references are made to relevant sections of the main reports where more details can be found. (Government of Hungary)	This will be covered in the preface to the report.
Intro-13	E-Intro-7	A	1	4	1	6	First sentence could be changed around to "This Synthesis Report, the final integrated product of the Fourth Assessment Report, provides an updated view of climate change based on the assessments carried out by the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC)". The original text reads as if climate change can be viewed as the final integrated product of the Fourth Assessment Report. (Adrian Simmons, European Centre for Medium-Range Weather Forecasts)	Noted, text changed.
Intro-14	G-Intro-3	A	1	4	1	6	This first sentence might be better re-worded as: "This Synthesis Report is based on the assessment of climate change carried out by the three Working Groups of the Intergovernmental Panel on Climate Change (IPCC) for the Fourth Assessment Report." Otherwise, the reader: (i) must wait until well into the sentence to find out what the 'assessment' referred to, is about; (ii) wonders, if this "provides an updated view ...", whether the rest of the AR4 does not provide an updated view; (iii) wonders what an 'integrated product' is, exactly. If really necessary, there could be an addition to the second sentence: "It integrates the reports of these three Working Groups and covers the relationships ..." but we believe the sense is clear without this addition. (Government of New Zealand)	Noted, text changed.
Intro-15	G-Intro-5	A	1	5	1	6	The phrase "provides an updated view of climate change" is not particularly helpful for readers. This should be replaced with a clear statement of the cut-off dates for literature included in the AR4 to ensure that readers recognise that the AR4 doesn't contain literature published in 2007. (Government of Australia)	The cut-off date will be mentioned in the foreword. Text changed.
Intro-16	E-Intro-8	A	1	6	1	9	it should be changed into: It covers the causes of climate change, its effects and response options and other policy relevant aspects as well as their relationships, based on scientific advances since the publication of the Third Assessment Report in 2001. (Bangzhong Wang, China Meteorological Administration)	Text deleted for space reasons, material is covered in the description of the topics.
Intro-17	E-Intro-9	A	1	7	1	7	Add: "...between the causes of climate change, its effects and MITIGATION AND ADAPTATION response options..." (Cristobal Felix Diaz Morejon, Ministry of Science, Technology and the Environment)	Text deleted for space reasons, material is covered in the description of the topics.
Intro-18	G-Intro-6	A	1	7	1	7	"...its effects..." is not clear whether 'its' refers to previous phrase causes (in which case it should be "...their effects" Suggest change to "... climate change effects and response	Text deleted for space reasons, material is covered in the

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							option, ..." (Government of United States)	description of the topics.
Intro-19	E-Intro-10	A	1	11	1	26	If topics are to be presented then they should be in bullet form for each topic and rather than discursively describing the content of each topic. (John R. Porter, University of Copenhagen)	Rejected, presentation in paragraphs helps distinguish the nature of topics 1-3 from topics 4 and 5.
Intro-106	E-Intro-1	D	1	14	1	14	replace the comma after "causes" with a semi-colon (Stephen Hawkins, Marine Biological Association of the UK)	Rejected, grammatically incorrect.
Intro-20	G-Intro-7	A	1	16	1	16	Insert "and aerosol" after "greenhouse gas" for accuracy. (Government of Australia)	Relevant text shortened which eliminates need for this clarification.
Intro-21	E-Intro-11	A	1	19			...'human induced' contradicts to the preceding paragraph (line 13-14). (Roman Corobov, Modern institute for humanities)	Rejected. Lines 13-14 refer to observed (historical) changes, whereas topic 4 deals with projected human-induced changes.
Intro-22	E-Intro-1	B	1	19			human-induced climate (Effiom Antia, University of Calabar)	Accepted.
Intro-23	E-Intro-12	A	1	20	1	20	The word "development" might be confusing - perhaps a word or two of clarification. This sentence is important to clearly convey because it represents "A major component of this Report" (David Atkinson, International Arctic Research Center, University of Alaska Fairbanks)	Text deleted for space reasons and because detailed explanation would require too much space.
Intro-24	E-Intro-13	A	1	20	1	20	Please clarify the meaning of "development context". (Dieter Gerten, Potsdam Institute for Climate Impact Research)	Text deleted for space reasons and because detailed explanation would require too much space.
Intro-25	G-Intro-8	A	1	20	1	20	remove "within a development context" (Government of India)	Text deleted for space reasons and because detailed explanation would require too much space.
Intro-26	G-Intro-9	A	1	21	1	21	replace "nexus with" by "linkages to" (Government of India)	Wording changed to clarify.
Intro-107	E-Intro-2	D	1	21	1	21	reword "nexus" (Stephen Hawkins, Marine Biological Association of the UK)	Wording changed to clarify.

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Intro-27	E-Intro-14	A	1	21	1	23	It is not clear from the text what distinguishes topic 4 and 5 (seems almost identical) (Michel Rixen, NATO Undersea Research Center)	Wording changed to clarify.
Intro-28	E-Intro-15	A	1	21			"nexus"? - reword so more understandable to a wide audience (Paula Harrison, Oxford University Centre for the Environment)	Wording changed to clarify.
Intro-29	G-Intro-11	A	1	24	1	25	It is useful for policymakers to know that the AR4 includes much greater regional detail than the TAR, however, this sentence seems misplaced. Suggest that the sentence is moved to the end of the paragraph and rephrased in the following manner: "Much greater regional detail is provided in this Report than was available in the previous assessment, and each of the above Topics has information relevant to a regional analysis of climate change". (Government of Australia)	Sentence deleted, since this referred mainly to the AR4 as a whole and not the SYR, and was therefore decided to be misleading in the context of the introduction.
Intro-30	G-Intro-10	A	1	24	1	30	The Introduction to the full SYR mentions in two places how the AR4 is an advancement from previous assessments: "Much greater regional details... previous assessment", and "Based on an enhanced understanding...and vice versa". The first statement relates to Topic 5 while the second statement is more general. For consistency across all Topics, recommend that short statements on advancements from previous assessments be included in the Introduction for Topics 1 through 5 (not just Topic 5). (Government of Canada)	Rejected. It is not meaningful to present a summary of findings within each topic, this is the role of the SPM.
Intro-31	E-Intro-16	A	1	25	1	26	Poor sentence structure (Paula Harrison, Oxford University Centre for the Environment)	Wording changed.
Intro-32	G-Intro-12	A	1	26	1	28	This would be a good place list the cross-cutting themes of the AR4, i.e. Uncertainty and Risk Management, Regional Integration, Science related to the UNFCCC Article 2 ("Dangerous Anthropogenic Interference") and Key Vulnerabilities, Water, Adaptation and Mitigation, Sustainable Development, and Technology. (Government of Canada)	These will be mentioned in the preface to the report.
Intro-33	G-Intro-13	A	1	29	1	30	This statement is ambiguous—for example, "better than" what? (Government of United States)	Wording changed and expanded to clarify.
Intro-34	G-Intro-14	A	1	29	1	30	"....this report allows better characterisation of.....". The question is, better than what? Suggest adding to end of line 30 the phrase "THAN THE TAR" (if that is what is intended). (Government of Canada)	Wording changed and expanded to clarify.
Intro-35	E-Intro-17	A	1	30	1	30	It is not clear what "vice versa" means. (Dieter Gerten, Potsdam Institute for Climate Impact Research)	Wording changed and expanded to clarify.
Intro-36	E-Intro-18	A	1				No comments. (John Nyboer, Simon Fraser University)	Noted.

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Intro-37	E-Intro-19	A	2	6	3	30	The Box should not be a box as it is a critical issue (it is not referenced in the main text anyway). The Introduction chapter should include two sub-headings: one probably with Scope, and the second as Treatment of uncertainty. Here the first sentence could be e.g. that "The treatment of uncertainty is an integral part of providing scientific information on climate change." and then the current text can begin. (Zoltán Somogyi, Hungarian Forest Research Institute)	Rejected – use of a box provides clearer traceability for references from other parts of the SYR.
Intro-38	E-Intro-20	A	2	6	3	30	Strongly support Box 1.1. (Nick Campbell, ARKEMA SA)	Noted, Thank you
Intro-39	E-Intro-22	A	2	6	3	30	Box 1.1: This box is missing a fundamental point in relation to uncertainty and it is that uncertainty can refer to both accuracy and precision and in Box 1.1 these are confounded. Accuracy refers to the degree to which a fact is true or false; precision refers to how confident one is in this conclusion. Thus Box 1.1 needs to be presented as deliberately covering both these aspects of uncertainty. As it stands at the moment, Box 1.1 will be misused to show that the IPCC report is shaky and full of uncertainties and it is a weakness that will be misused that different WGs used different approaches to uncertainty. (John R. Porter, University of Copenhagen)	No specific change suggested and the reviewer's definition of precision is non-standard. No change made.
Intro-40	G-Intro-15	A	2	6	3	30	Quantitative uncertainties are nearly always preferable to qualitative descriptors such as those used here (very high/medium/very low confidence and high/medium/low agreement, etc.). Box 1.1 for the most part provides the "roadmap" to understanding quantitatively what the descriptors mean. The one exception is the descriptors used by WG3. While admittedly these descriptors are inherently qualitative, there should be an effort to place them in a more quantitative context. For example, if the amount and quality of the evidence indicates "high agreement," does this mean an effect is verified in >50, >70, >90% of results in peer-reviewed (hence, of sufficient quality) studies? Similarly, does "much evidence" mean that the effect was a definitive finding (vs., say, an inconclusive finding) in >50, >70, >90% of the literature studies? The italicization of the uncertainty descriptors is highly effective and should remain in the report to remind readers of the rigor that went into determining the uncertainties. (Government of United States)	Noted – quantitative uncertainties are provided where there is a basis for doing so in the underlying WG reports.
Intro-41	E-Intro-21	A	2	6	3	31	It should be explained that there are no genuine scientific or statistical measurements of uncertainty anywhere in the report. All the "uncertainty" levels are based on the opinions of "experts", most of whom have a conflict of interest as they have a financial interest in the results. (Vincent Gray, None)	Rejected – sources of all uncertainty statements are traceable. Use of expert judgment is clearly acknowledged. No evidence for bias is provided by reviewer.

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Intro-42	G-Intro-16	A	2	8	2	8	It is not clear that the IPCC uncertainty guidance note "defines a consistent framework". One of the key messages from the WG reports (and which noted in the next paragraph) is that due to the different disciplines of each of the WG reports a consistent treatment of uncertainty is not possible. Suggest to avoid any implication of contradiction, delete "consistent". It is very important that the discussion of the treatment of uncertainties is highlighted and the authors explain that to a large degree uncertainty levels contained in the AR4 are based on the expert judgement of the authors as it is useful for policy makers to have a better sense of the subjectivity contained in the uncertainty language. (Government of Australia)	Moderate the language claiming that treatment defined in UGN provides consistency across WGs – as they have not adopted same schemes.
Intro-43	E-Intro-23	A	2	11	2	11	Use 'scientific' rather than 'underlying'. (John R. Porter, University of Copenhagen)	Accepted
Intro-44	G-Intro-18	A	2	11	2	11	Add the following text “ a diversity of approaches to deal with uncertainty... (Government of India)	Accepted
Intro-45	E-Intro-24	A	2	11	2	13	In the sentence "The nature of data, indicators and analyses used in the natural sciences is often different from that used in the social sciences." it would be correct to use "are often" not "is often" as data are plural. (Bruce McCarl, Texas A&M Univesity)	Reject – subject of sentence is ‘nature of..’ not ‘data’.
Intro-46	G-Intro-17	A	2	11	2	13	Use “are often” not “is often” as data are plural (Government of United States)	Reject – subject of sentence is ‘nature of..’ not ‘data’.
Intro-47	E-Intro-25	A	2	11			approaches to uncertainty drawn from the underlying literature. Please add "approaches to uncertainty drawn from the underlying data, model or literature. (Christof Appenzeller, Federal Office of Meteorology and Climatology MeteoSwiss)	Rejected – added words would not add value and emphasis should be on use of literature.
Intro-48	E-Intro-26	A	2	13	2	13	WG needs to be spelled out - don't assume that policy people know IPCC acromyms: what do 'former' and 'latter' refer to? Unclear. (John R. Porter, University of Copenhagen)	Rejected – acronym WG is extensively used throughout the report. It will be defined at first use and then used consistently.
Intro-49	G-Intro-19	A	2	13	2	13	WG3 covers technological sciences. Is this field normally encompassed in the term 'social sciences'? (Government of Australia)	Accepted – change ‘social sciences’ to ‘assessing technology development and social sciences’
Intro-50	E-Intro-27	A	2	16	2	16	Insert: "and within" after "Choices among". The same criteria that are used to decide which of the uncertainty approaches to use are used to decide what level of uncertainty to assign. It is important that policymakers be told this explicitly. The rest of the box explains which terms are used, but not how judgments about level of confidence or likelihood are assigned. (Robert Siveter, IPIECA)	Accepted.

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Intro-51	G-Intro-20	A	2	16	2	16	Insert “and within” after “Choices among”. The same criteria that are used to decide which of the uncertainty approaches to use are used to decide what level of uncertainty to assign. It is important that policymakers be told this explicitly. The rest of the box explains which terms are used, but not how judgments about level of confidence or likelihood are assigned. (Government of United States)	Accepted.
Intro-52	E-Intro-28	A	2	18			"about as likely as not 33% to 66%" - this does not make sense. I assume that the latter figure should read 50% to fit with the previous category "more likely than not >50%". The description of the range 33% to 66% is not clear - surely this should be less likely than not? (Paula Harrison, Oxford University Centre for the Environment)	Rejected – the standard likely ranges are deliberately allowed to overlap to provide necessary flexibility. Likely ranges can not be changed at this stage after the WG reports have been approved.
Intro-53	E-Intro-29	A	2				Text in white in Figure1.1 (bad contrast) (Michel Rixen, NATO Undersea Research Center)	Colour scheme improved.
Intro-54	E-Intro-30	A	2				I find Fig. I.1 confusing. The attribution of "elements" and "links" has not been well thought out. This figure seems to illustrate that everything is linked to everything and vice versa. Not very useful, in my opinion. Besides, the figure is only briefly referred to in the text. I suggest redrafting the conceptual model so that it is more instructive or leaving it out. (Marc Schallenberg, University of Otago)	Text on page 1 changed to clarify.
Intro-55	E-Intro-31	A	2				Figure I.1: The figure generally is helpful, but it is not clear to me what the arrow FROM climate process drivers TO socio-economic development says. How do GHG concentrations or emissions affect development, directly? Of course they have an indirect effect, but that is via climate change and its impacts, which threaten to undermine development. So the direct link may bear re-examination. (Harald Winkler, Energy Research Centre, University of Cape Town)	Text on page 1 changed to clarify.
Intro-56	E-Intro-32	A	2				Figure I.1: the black box in the middle should be shown just like the other two boxes to the left and right: to be partly on the Earth system, and partly on the Human system. Land use and land use change should be within this black box on the Earth system side to better reflect the fact that LULUCF is indeed very much affected by both systems. (Zoltán Somogyi, Hungarian Forest Research Institute)	Drivers box specifically refers to direct human-induced drivers, not impacts. Box integrated into “socio-economic development” box to make this clear.
Intro-57	E-Intro-33	A	2				Figure I.1: The background colour of the figure divides the 'Earth Systems' from 'Human Systems'. This has consequences also for the understanding of other elements in this figure, e.g. the one on the right called 'Impacts and vulnerability'. At the upper part, and thus referring to the Earth Systems, 'Ecosystem' and 'Water resources' are mentioned. At the bottom, 'Human health' and 'Food security' are properly placed. But 'Biodiversity' in my opinion should not refer fully to the 'Human systems' (it is now placed at the bottom left of	Placement and wording of entries modified based on several comments.

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							the box 'Impacts and vulnerability'). 'Biodiversity' should be placed at the left, but half way up so that the word is placed at the transition from 'Human Systems' to 'Earth Systems'. (Gian-Reto Walther, University of Bayreuth)	
Intro-58	E-Intro-34	A	2				Figure I.1: Explain the colours of the arrows. If the colour is meaningless, make them all the same colour. (Dagmar Schröter, Umweltbundesamt GmbH)	Accepted.
Intro-59	E-Intro-35	A	2				Figure I.1: Box "Socio-Economic development". Is "transport" covered under the heading "production and consumption patterns"? Would adding "lifestyle" be a valuable addition or superfluous (since some of the aspects of lifestyle are already mentioned in the box)? (Dagmar Schröter, Umweltbundesamt GmbH)	Rejected, covered under energy consumption and production and consumption patterns.
Intro-60	E-Intro-36	A	2				Figure I.1: "Socio-economic determinants of change": It would be good to specify this title: "change of what?" It seems a little awkward that there are no direct arrows from this box to "emissions/concentrations", although this box seems more directly linked to "emissions/concentrations" than the elements listed under "Socio-Economic development". (Dagmar Schröter, Umweltbundesamt GmbH)	Rejected, unnecessary complication.
Intro-61	E-Intro-37	A	2				Figure I.1. Box "Impacts and Vulnerability": I suggest putting "ecosystem services" instead of "ecosystem". "Biodiversity" in my understanding covers everything from complexity within ecosystems to species richness, to ecosystem diversity, so that "ecosystem" does not have to be mentioned by itself. However, ecosystem services should be mentioned, since they link the environment to human welfare (see Millennium Ecosystem Assessment). (Dagmar Schröter, Umweltbundesamt GmbH)	Changed to "ecosystems". Deleted biodiversity as is included under ecosystems.
Intro-62	E-Intro-38	A	2				FIGURE I.1. - Comment: should a more encompassing definition of ADAPTATION be considered (please see comment N° 1 [TSU note: See Comment E-0-134-A]), an additional arrow, linking down Impacts and Vulnerability with Adaptation, would be required. (Maria Rosa Paiva , Universidade Nova de Lisboa [New University of Lisbon])	Rejected, unnecessary complication.
Intro-63	E-Intro-39	A	2				Figure I.1 - this figure is a slightly different version of TAR Figure SPM-1. I would recommend inserting "Human settlements" in box "Impacts and Vulnerability" (same term as used in TAR). The socio-economic boxes should refer to determinants of adaptive and mitigative capacity, and the indicators identified in Topic 4. The phrase "socio-economic development" does not speak to developed countries, and as such would be very unfortunate if the AR4 was perceived as only or primarily speaking to developing country issues. (Donald Lemmen, Natural Resources Canada)	Accepted.

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Intro-64	E-Intro-40	A	2				Figure I.1 - I imagine a great deal of thought has gone into this figure, but I would add one arrow, pointing in one direction only, going directly from the "Climate Change" box at the top to the "Socio-economic determinants of change" box. Why? Because there are climate change impacts that do not have an opportunity to operate through ecosystem change. You have "extreme events" listed - one extreme event can leave a group of people on a short-term basis fleeing for their lives. Via the disruption causes, that then becomes a major driver that feeds back along the pathways indicated in the diagram. (David Atkinson, International Arctic Research Center, University of Alaska Fairbanks)	Rejected; no indication that impacts go only through ecosystems.
Intro-65	E-Intro-41	A	2				Figure 1.1: Looks like a plan of the London underground - with arrows going in every direction and looks muddled. The small print in the boxes should be removed as it is very hard to read. In a sense the Figure tries to say everything and thus says nothing. It would be more useful to reframe the Figure in terms of the work of the three WGs and thus provide a connection to the rest of the IPCC reports. (John R. Porter, University of Copenhagen)	Explanatory text improved, colour scheme improved.
Intro-66	E-Intro-42	A	2				Figure 1.1 can be illustrated in a better sense, with all the variables visible clearly. (Ramachandran Srikanthan, Physical Research Laboratory)	Colour scheme improved.
Intro-67	E-Intro-43	A	2				Fig. I.1, Climate process drivers box: This box also needs "land surface changes," and indications of natural processes, including solar variations. (Alan Robock, Rutgers University)	Rejected, land surface changes are not a major driver on the global scale.
Intro-68	E-Intro-44	A	2				Fig. 1.1 small items in the blocks hard to read, moreover, their location might be understood as in some connection with the origin or direction of the arrows, which is not exactly correct quite often (Tomas Halenka, Charles University, Prague, Faculty of Mathematics and Physics)	Colour scheme improved.
Intro-69	E-Intro-45	A	2				Fig I.1: We suggest to add 'disaster risk' in the "socio-economic determinants of change" box, and "human settlements/infrastructure" and "livelihoods" in the 'Impacts and vulnerability' box. (Silvia Llosa, International Strategy for Disaster Reduction)	Included human settlements. Disaster risk too specific.
Intro-70	E-Intro-46	A	2				Comment on Figure 1.1. The colour scheme does not work well. It is very difficult to read some of the text, for example white text on orange/yellow background. (Lynda Chambers, Bureau of Meteorology Research Centre)	Colour scheme improved.
Intro-71	G-Intro-21	A	2				The information in the figure are not quite complete and in the terms that have been used not all seems to be consistent: in the "impacts and vulnerability" - box the term "economy" and also "infrastructure" is missing. Chapter 4 however provides in table 4.1 examples for infrastructure adaptation measures. Between the box of "Climate change" and of "adaptation" and also between the box of "Climate Change" and "mitigation" should exist direct links.	Added human settlements to impacts box. Additional arrows not justified – adaptation is in response to impacts, and mitigation operates through emission reductions.

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							(Government of Germany)	
Intro-72	G-Intro-22	A	2				The Box should not be a box as it is a critical issue (it is not referenced in the main text anyway). The Introduction chapter should include two sub-headings: one probably with Scope, and the second as Treatment of uncertainty. Here the first sentence could be e.g. that "The treatment of uncertainty is an integral part of providing scientific information on climate change." and then the current text can begin. (Government of Hungary)	Reject – use of a box provides clearer traceability for references from other parts of the SYR
Intro-73	G-Intro-23	A	2				In Figure 1.1, Human Systems should be represented within the Earth systems. This image is misleading, because it makes it appear as if though human systems are at a par with Earth systems, when in fact they are not. Furthermore, the impacts of the Earth system to the human system seem 'external' to human systems. The diagram should show in some way that the ultimate repercussion of impacts to water, ecosystems, and biodiversity is a reduction in the "goods and services" that the Earth system provides the human system. The issue is not nature versus humans, but humans damaging their support system. (Government of United States)	Rejected. Separation is intended to show areas of direct human influence (emissions, socio-economic drivers) compared to responses of natural systems to human influences.
Intro-74	G-Intro-24	A	2				In Fig 1.1, Box "Socio-Economic Development" there are 8 expressions. Two of them (Technology and Equity) could also be in the box above it ("Socio-economic determinants of change") since at least the detailed characterization of the SRES scenarios both are mentioned as factors of the difference between the ghg-emission paths. On the other hand, it is not obvious why definitely these 8 expressions are displayed in the lower box. If the present expressions also have a similar official and agreed origin, then their source could be mentioned in the Figure caption. Otherwise it is recommended to change the present expressions to those accepted by the UN in 2000, with abbreviations, of course. They are (according to the Executive Summary of "Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable", issued by United Nations Foundation and Sigma XI on February 28 2007 - page 8, Box ES.1.) 1. 1. Eradicate extreme poverty and hunger; 2. Achieve universal primary education; 3. Promote gender equality and empower women; 4. Reduce child mortality; 5. Improve maternal health; 6. Combat HIV/AIDS, malaria and other diseases; 7. Ensure environmental sustainability; 8. Develop a global partnership for development. (See http://www.un.org/millenniumgoals/index.html .) (Government of Hungary)	Deleted box "socio-economic determinants of change". Included population in "Socio-economic development box". All other entries from deleted box are already covered in "socio-economic development" box.
Intro-75	G-Intro-25	A	2				Figure I.1: the black box in the middle should be shown just like the other two boxes to the left and right: to be partly on the Earth system, and partly on the Human system. Land use and land use change should be within this black box on the Earth system side to better reflect the fact that LULUCF is indeed very much affected by both systems.	Drivers box specifically refers to direct human-induced drivers, not impacts. Box integrated into "socio-economic development"

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							(Government of Hungary)	box to make this clear.
Intro-76	G-Intro-26	A	2				Figure I.1 - should better convey the impacts and vulnerability of human systems. We suggest adding the word "Infrastructure" or "Built Environment" to this box. (Government of Canada)	Human settlements added to impacts box.
Intro-77	G-Intro-27	A	2				Figure 1.1 The box "Impacts and vulnerabilities" mentioned as affected sectors ECOSYSTEMS AND BIODIVERSITY . The Biodiversity concept includes all living organism and ecosystems (from genes to biomas), then the text is redundant. It should said BIODIVERSITY (see glossary attached to the Synthesis Report). I would be good to included in the text BIODIVERSITY and THE ECOSYTEM GOOD AND SERVICES, they would be impacted by the climate change. (Government of Cuba)	Replaced both entries by "ecosystems" as overarching concept.
Intro-78	G-Intro-28	A	2				Figure 1.1 - consider replacing the title "Socio-Economic Development" with "Adaptive and Mitigative Capacity", and altering the associated white text revised slightly to reflect broadly the terms used in Topic 4 (Topic 4, p. 2, l. 23-26). This would more clearly communicate the importance of enhancing capacity - which can be done by all countries - and reduced the focus on increasing development, that does not resonate strongly in developed countries. (Government of Canada)	Rejected, too narrow. Socio-economic development influences climate change not only through mitigative and adaptive capacity.
Intro-79	G-Intro-29	A	2				"Albedo" is missing from Figure 1.1. It could be added to the Climate Process Drivers box. (Government of United States)	Rejected; this is a climate system feedback rather than a driver. The figure presents only a schematic of anthropogenic drivers, including feedbacks would make it too complicated.
Intro-80	E-Intro-2	B	2				Levels and definitions of certainty and likelihood would be best illustrated in a clear and straightfoward table format; the certainty/likihood defintions are one of the most important pieces to communicate clearly and simply to the media and layperson (Kevin Grandia, DeSmogBlog)	Rejected to limit space requirements for introduction section.
Intro-81	G-Intro-1	C	2				Figure I.1. Could add clouds to boxes of climate process drivers and climate change" (Government of Belgium)	Rejected; this is a climate system feedback rather than a driver. The figure presents only a schematic of anthropogenic drivers, including feedbacks would make it too complicated.
Intro-82	G-Intro-2	C	2				Figure 1.1 : It looks like all arrows have equal importance but this is not correct. Most counter clockwise arrows are less important, with the exception of the socio -> impacts. In	Rejected, arrows depict qualitative conceptual

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							addition, some arrows that are not shown, in particular from impacts to co (Government of Belgium)	relationships only.
Intro-83	E-Intro-47	A	3	1	3	1	relative': relative to what? (John R. Porter, University of Copenhagen)	We believe the sense is clear that these uncertainty terms are relative to one another. No change made.
Intro-84	E-Intro-49	A	3	2	3	2	Alternative word to 'signs' (too vague; e.g. pointers, evidence?? (David White, ASIT Consulting)	Accepted – 'Signs' will be deleted.
Intro-85	G-Intro-30	A	3	2	3	2	It is unclear in this context what "signs" means, suggest it is deleted. (Government of Australia)	Accepted
Intro-86	E-Intro-48	A	3	2	3	3	what is 'information or signs' from theory. Theory enables deductions to be made or indications to be given. Theory and models are also the same thing - don't need both in the sentence. (John R. Porter, University of Copenhagen)	Accepted – 'Signs' will be deleted.
Intro-87	G-Intro-31	A	3	4	3	4	The authors should consider whether the phrase "has been selected" is the right characterisation for the WG3 use of qualitative uncertainty assessment. From the discussions at the WG3 Plenary it seems that of the three choices to assess uncertainty, it was the only appropriate option for the disciplinary underpinning of WG3. suggest that "has been selected" is replaced with "was used by". (Government of Australia)	Accepted
Intro-88	E-Intro-50	A	3	4			Concurrence or 'occurrence'? (Michel Rixen, NATO Undersea Research Center)	'Concurrence' is intended – no change made.
Intro-89	E-Intro-51	A	3	5	3	6	"high agreement, much evidence; high agreement, little evidence" should be "high agreement, much evidence; low agreement, little evidence" ? (Tsuneo Ono, Hokkaido National Fisheries Research Institute, Fisheries Research Agency)	This is just a list of examples but it is accepted that the second one may be difficult to understand without a specific context. Will be changed to 'medium evidence'.
Intro-90	E-Intro-53	A	3	6	3	6	"high agreement" is mentioned twice (to be deleted here) (Harald Pauli, University of Vienna & Austrian Academy of Sciences)	Reviewer has missed the significance of the separating semi-colons. No change made.
Intro-91	E-Intro-52	A	3	6			"high agreement" repeated in the line before; no 5. (Ben Muirheid, International Fertilizer Trade Association (IFA))	Reviewer has missed the significance of the separating semi-colons. No change made.

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Intro-92	E-Intro-54	A	3	8	3	11	Write ' When assessing the precision of data, models and analyses we use (NB use active voice) a scale of confidence with eleven levels: 9-10, very high confidence; 8, high confidence; 5-7, medium confidence; 2-4, low confidence; 0-1, very low confidence.' The rest of Box 1.1 needs to be rewritten with the same clarity and simplicity. (John R. Porter, University of Copenhagen)	Rejected - the suggested revision would lose the focus on the overall assessment of uncertainty replacing this with an assessment of some component inputs. Also the proposal is incorrect to say that we have 11 levels of confidence.
Intro-93	E-Intro-55	A	3	8	3	12	"...1 out of 10." for better understanding you may mention studies, analyses, models again at the end of the paragraph (Markus Erhard, European Environment Agency)	The suggested text revision would be incorrect as the confidence level applies to the chance of the finding being correct.
Intro-94	G-Intro-33	A	3	10	3	10	Insert "a finding" after "chance of" for clarity. (Government of Australia)	Accepted
Intro-95	G-Intro-32	A	3	10	3	12	The statements "very high confidence at least 9 out of 10; high confidence about 8 out of 10;..." are not sufficiently clear, and would be improved by placing a colon after each occurrence of 'confidence'. Thus "very high confidence: at least 9 out of 10; high confidence: about 8 out of 10;..." (Government of New Zealand)	Existing use of italics seems to achieve the required clarity.
Intro-96	G-Intro-34	A	3	14	3	15	Suggest this sentence is amended to read: "Where uncertainty is assessed in terms of subjective assessment of authors as to correctness of underlying data" (Government of Australia)	Partly accepted – reference to 'expert judgment' will be added but it would be inappropriate to emphasise 'subjectivity' in cases where those assessments are based on bodies of evidence that can be treated probabilistically.
Intro-97	G-Intro-35	A	3	14	3	15	replace "can be...likelihood levels" by: "is assessed in terms of likelihood levels, using expert judgement of statistical evidence (e.g. observations or model results) (Government of Netherlands)	Accepted that reference to expert judgment should be added - will use slightly shorter wording than suggested
Intro-98	E-Intro-56	A	3	17			"more likely than not" is within the same percentage range as "about as likely as not" (Peter Convey, British Antarctic Survey)	The standard likely ranges are deliberately allowed to overlap to provide necessary flexibility. No change made.

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Intro-99	E-Intro-57	A	3	21	3	22	In the sentence it starts with "Working Group II have" I would use has ditto for sentence below. (Bruce McCarl, Texas A&M Univesity)	Accepted.
Intro-100	G-Intro-36	A	3	21	3	22	Change Working Group II "have" to "has". Same for sentence below. (Government of United States)	Accepted
Intro-101	G-Intro-37	A	3	22	3	25	To avoid confusion these sentences on the uncertainty intervals presented in the report should be separated from the discussion of likelihood and confidence assessments. Suggest that these sentences form their own paragraph at the end of the Box. (Government of Australia)	Accepted – will reorder remaining sentences in last two paragraphs for better logical flow.
Intro-102	E-Intro-58	A	3	27	3	27	underlying'?: which WGs? - if all then say so. (John R. Porter, University of Copenhagen)	Rejected – in the context of the SYR it is clear that all three WGs are contributing.
Intro-103	E-Intro-59	A	3	27	3	30	Again this is almost apologetic in tone. Write 'Where we have synthesised information from more than one WG, we have used the most relevant of the three representations of uncertainty described above.' (John R. Porter, University of Copenhagen)	We do not see an apologetic tone in the text. However, some aspects of the suggested language have been adopted for more clarity.
Intro-104	G-Intro-38	A	3	27	3	30	This statement is confusing. How does the reader know which variant was used? For what statement? (Government of United States)	Rejected – the variant used will always be clear because the forms of language for the three different uncertainty treatments are quite distinct.
Intro-105	E-Intro-60	A	3	28			Synthesised or 'synthesized'? (Michel Rixen, NATO Undersea Research Center)	Typographic – spelling will be dealt with during copy-editing.