

IPCC AR6 WGIII First Order Draft Government and Expert Review Comments Responses (Annex II - Definitions, units and conventions)								
If any fields are not readable, please ensure to expand relevant cells. If reading this in PDF format, please refer to the Excel format version of this document available on: <a href="https://www.ipcc.ch/report/ar6/wg3/downloads/drafts-and-reviews">https://www.ipcc.ch/report/ar6/wg3/downloads/drafts-and-reviews</a> Please note, "Annex II - Definitions, units and conventions" was previously titled "Annex B - Definitions, units and conventions", and comments and responses below may refer to "Annex B".								
Comment ID	From Page	From Line	To Page	To Line	Comment	Reviewer	Country	Response
16701	0				This spreadsheet uses the "xlsx" proprietary format from the Microsoft company. This is detrimental to people who do not want to be compelled to purchase /own / use the latest products from this company. By the way, this company jeopardizes any sort of inter-operability between people who use tools from the "free software world"... and people being the "captive customers"... of the latest Microsoft products. To fill painfully this spreadsheet, I am using a free software tool ("Libre Office"), which fortunately allows to correct this mistake. It seems to me that public services such as the UN secretariat or the IPCC TSU, should not contribute to spread /extend such a bad situation.	Raymond Zaharia	France	Noted, thank you for your comment. Your comment has been passed on to the IPCC Secretariat for consideration in AR7.
43353	3		3		The Glossary definition (Annex A is not selectable in the dropdown list on the left) of Anthropogenic removals is incomplete: Lines 3-5 should read: "Carbon capture and storage (CCS) from industrial and energy-related sources, which alone does not remove CO2 from the atmosphere, can help reduce atmospheric CO2 if it is combined with bioenergy production (BECCS) or Direct Air Capture (DACCS). It should be made clear that anthropogenic removals, negative emissions, and greenhouse gas removal are synonymous, and that carbon dioxide removal is a subcategory thereof. The 'see also' list should also include: Carbon Dioxide Removal (CDR), Greenhouse Gas Removal, Negative Emissions, Sink	Matthias Honegger	Germany	Noted, thank you. Please note that Annex A is not selectable from the dropdown list as it is not open for review. It is provided as a resource to help readers understand the underlying report.
43813	6	1			energy - joule is table A.B.3 ir repeated in table A.B.4	Hans Poertner and Elvira Poloczanska	Germany	Accepted – text revised - deleted from table A.B.4
43815	6	3			tonne-kilometer in payload-distance - is this metric tonnes are specific earlier in the table?	Hans Poertner and Elvira Poloczanska	Germany	Accepted – thanks for noting this. It is indeed different from the metric tonnes specified earlier in the table. We added a note clarifying that this is a unit of measure of freight transport which represents the transport of one tonne of goods (including packaging and tare weights of intermodal transport units) by a given transport mode (road, rail, air, sea, inland waterways, pipeline etc.) over a distance of one kilometre.
16703	6	3	6	4	In the following line of this table: "CH4 concentration or Mixing Ratio ( $\mu\text{mol mol}^{-1}$ )   Parts per billion ( $10^9$ )   ppb", there is an inconsistency between " $\mu\text{mol mol}^{-1}$ " (i.e. "micromole / mole") and what follows. I believe it should be " $\text{nmol mol}^{-1}$ " (nmol being: "nanomole") and not $\mu\text{mol mol}^{-1}$	Raymond Zaharia	France	Accepted – text revised accordingly - thank you
16705	6	3	6	4	In the following line of this table: "N2O concentration or Mixing Ratio ( $\mu\text{mol mol}^{-1}$ )   Parts per billion ( $10^9$ )   ppb", there is an inconsistency between " $\mu\text{mol mol}^{-1}$ " (i.e. "micromole / mole") and what follows. I believe it should be " $\text{nmol mol}^{-1}$ " (nmol being: "nanomole") and not $\mu\text{mol mol}^{-1}$	Raymond Zaharia	France	Accepted – text revised accordingly - thank you

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16707	6	3	6	4	In the following line of this table: "Energy Costs (e. g., LCOE) and I constant US Dollar 2015 per GJ   USD2015 /GJ and Prices I or US Cents 2015 per kWh I USct2015 /kWh" I believe that, based on the relation: 1 GJ= 277,78 kWh, the following numerical exemple: "15 USct2015 /kWh is equivalent to 41,67 USD2015 /GJ" should appear here or some where else, in the WGIII report.	Raymond Zaharia	France	Rejected - Thank you but this is outside the scope of the table. Nevertheless, should such a calculation be used in any part of the report, it will be specified.
9941	12	25	13	7	It is hard to comment on the Guidance, as it is yet unclear whether the same (2014) Guidance will be released in AR6. A first comment on the AR5 risk and uncertainty framing is that, even in the context of this coordinated assessment with clear guidance, there exist several different interpretations of risk and uncertainty. This is potentially a spill-over from economics, which is among the most influential disciplines in this research area of climate–economy interactions and modelling, but where no one standardised understanding of either concept is provided.  Uncertainty can be framed as a broad concept that refers to a general lack of knowledge or agreement upon possible outcomes and their probabilities. Risk can thus be defined as a negative possible outcome that stems from an uncertainty and largely depends on the focus of the study, regardless of whether it can be accurately quantified as a probability or be attributed a qualitative likelihood, e.g. based on stakeholders' experience.  - Doukas, H., & Nikas, A. (2020). Decision support models in climate policy. European Journal of Operational Research, 280(1), 1-24.  An extensive discussion on the AR5 risk and uncertainty classification can be found in: - Hanger-Kopp, S., Nikas, A., & Lieu, L. (2019). Framing risk and uncertainty associated with low-carbon pathways S. Hanger-Kopp, J. Lieu, A. Nikas (Eds.), Narratives of Low-Carbon Transitions: Understanding Risks And Uncertainties, Routledge, Abingdon  This framing is consistently used throughout Hanger-Kopp, S., Lieu, J., & Nikas, A. (Eds.). (2019). Narratives of Low-Carbon Transitions (Open Access): Understanding Risks and Uncertainties. Routledge.  It is also used throughout recent applications, e.g. the Environmental Innovations and Societal Transitions Special Issue on "Assessing risks and uncertainties of low-carbon transition pathways" ( <a href="https://www.sciencedirect.com/journal/environmental-innovation-and-societal-transitions/special-issue/10WRR56KFM8">https://www.sciencedirect.com/journal/environmental-innovation-and-societal-transitions/special-issue/10WRR56KFM8</a> ).	Haris Doukas	Greece	Thank you for your comment. We have now revised the risk guidance in consultation with authors from all three WGs. This guidance is passed to the authors to ensure the term risk is used consistently throughout the AR6 report
43819	12	26	12	29	This should specify that the guidance on risk was developed across WG	Hans Poertner and Eivira Poloczanska	Germany	Accepted. This is now added

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43821	12	34			Footnote and in reference list - the citation for the risk guidance note is not clear (2014? AR6?), and does this count as grey literature? This appears in conflict with the footnote on the last page of the guidance note 'This document contains informal guidance prepared for internal use by IPCC authors in preparation of reports. The IPCC has not formally endorsed or approved this guidance or any recommendations or conclusions contained herein. This document has not been subjected to formal IPCC review.'	Hans Poertner and Elvira Poloczanska	Germany	Accepted. Revised as suggested
28635	12	34	13	7	From the introduction I did not understand the meaning of "risk" to be followed by AR6. My initial thought for improvement was to differentiate (1) physical risks (=uncertainty of adverse impact of climate change), and (2) economic risks (=uncertainty in decision parameters in particular in investment decisions). One could distinguish a third category relevant for WGIII: policy risk, which can consist of two elements: (A) risk of policy-makers to survive next elections, (2) risk related to uncertainty about responses to a policy. Later in DOs and DONTs there comes a useful explanation, but it is contradictory to the introduction as amongst DONTs there is not to use risk to describe physical hazards (my point (1)). Or does it mean: physical hazard should be stated as "impact" and risk describes the uncertainty related to this impact. My proposal is to modify lines 36 to 37 not mentioning the physical risk to avoid the misunderstanding that physical hazard risks can be subsumed as part of the discussions on risks in WGIII. Meaning also that risks in WGIII would be primarily used for economic risks and policy risks (which are basically related to various forms of uncertainty). You may assess better if this proposal would cause a (too) massive adaptation need of WGIII-AR6 and thus should not be considered.	Wolfgang Schade	Germany	Partially accepted. The guidance distinguishes two kinds of risks relevant for mitigation. Physical risks and transition risks. In response to the comment, we have added a description of physical risks to provide more clarity. For the purpose of this report, physical risks includes risks from climate change including risk to facilities and infrastructure, impact on operations, water and raw material availability and supply chain disruptions. Therefore these are not physical hazards.
43817	12	4	12	6	should this say compare or contrast two different years? Not decades?	Hans Poertner and Elvira Poloczanska	Germany	Accepted – text revised

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13707	13	34	14	30	<p>The definition of the concept of risk should be clarified and guidance to authors could be made clearer.</p> <p>At the moment, according to the definition "potential for adverse consequences" (Annex B, page 13-14 but also Annex A, page 33-34) – seems to imply that risks is both about the magnitude of the impact and its likelihood. For example, "very risky" could mean a large scale negative impact or a likely but small scale impact. I recommend making explicit that risk is either about the magnitude of the impact or its likelihood or both.</p> <p>The text cites Reisinger et al., 2019 as providing guidance about the definition of risk – but I could not retrieve this article.</p> <p>The guidance for authors regarding the term risk in Appendix B is quite unclear. For example the guidance recommends not to use the term "risk" as a generic term for 'anything bad that may happen in future' – but this is the essence of the definition that was described above. Instead of labelling this a "don't" I would explain to authors in more details how they should specify the particular type of threat they are referring to (e.g., risk of landslide).</p> <p>In the examples given, I would stress whether they are good or bad examples – it is not obvious – and I recommend that you also explain why they are examples of good practice.</p> <p>The first example seems to be a "good example (page 13, line 21-22) "Climate-related risk to food security arises from multiple drivers" – this is a good examples where the author specifies what is being risky).</p> <p>The second example (page 13, line 23-26) seems to be a "bad" example, as "risk" is used as a generic umbrella term: "In the context of responses to climate change, drivers of risk include the". Here the authors provide more details about the drivers of the risk, but "risk" is still a very vague unspecified concept.</p> <p>I would be happy to discuss any of those comments further to clarify, explain and provide</p>	Marie Juanchich	United Kingdom (of Great Britain and Northern Ireland)	Accepted in part – we added the word "objectively". We didn't mean that certain risks are not amenable to quantification in principle, but simply that the knowledge to do this quantification in an objective and transparent manner may not exist at this point in time.
254	14	10	14	14	<p>Comment: the idea that some consequences and risk cannot be quantified, is a misconception. Using subjective probabilities all risk and unknown quantities (consequences) can be quantified, the problem is however that the knowledge supporting this quantification can be weak.</p>	Terje Aven	Norway	Noted.
16709	14	43	14	43	<p>In this line 43, I read: "Finally, it should be noted that this decision is also inline with the Paris Agreement rulebook." This seems a very useful statement. However, it should deserve more detailed reference on what is the "Paris Agreement rulebook", &amp; where it can be found. (Otherwise, the reviewers may not be able to assess &amp; comment its value.)</p>	Raymond Zaharia	France	Response: Accepted; the revised version of this text now provides the complete reference
13861	15	11	15	11	<p>There is a typo line 11 : "Ata [...]" instead of "At a [...]"</p>	Alexandre Bizeul	France	Accepted – text revised accordingly - thank you
16711	15	31	16	1	<p>What is the meaning of indicating "(biom)", for codes such as 1A1ax2 (or, 1A1ax5 and others) ? How it compares with "(biomass)"?</p>	Raymond Zaharia	France	Noted. "biom." is the biomass component of each emissions source. Thanks for pointing out this needed clarification. We leave these descriptions as they currently are, since they come from the data provider (EDGAR) directly. However we add a note to explain

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16531	16		17		Low forest cover countries (LFCs) which are country with less than 10% forest cover comparing with total land could be considered, because of their potential for plantation and their role on mitigation.	Mostafa Jafari	Iran	Noted.
16713	16	2	17	1	What is the meaning of indicating "(fos)", for codes such as 1A4c1 or 1A4d ?	Raymond Zaharia	France	Noted. "Fos" and "Foss" are the fossil components of each emissions source. We leave these descriptions as they currently are, since they come from the data provider (EDGAR) directly. However we add a note to explain
16715	18	2	18	3	What is the meaning of indicating "(foss)", for code 1A3b ? How it compares with "(fos)" for code 1A3c ?	Raymond Zaharia	France	Noted. "Fos" and "Foss" are the fossil components of each emissions source. We leave these descriptions as they currently are, since they come from the data provider (EDGAR) directly. However we add a note to explain
28637	18	2	18	3	Also SUBSTANTIVE: I am wondering about the categories for biomass (biom.). As far as I know in UNFCCC Kyoto principles the CO <sub>2</sub> - / GHG-emissions of biofuels used in transport are zero. The emission will be accounted for in other sectors (e.g. bio-refineries). Now there are even 5 specific emission categories for biomass. I can understand that there is a reason e.g. in a life-cycle perspective to report about biomass fuel based emissions and not set them to zero. However, the same would hold to the new category of Power-to-Liquid (PtL) or Power-to-Gas (PtG) based fuels (in short and summarized as PtX, i.e. electricity-based synthetic transport fuels). In the transport sector these PtX would be accounted as zero, independent if they would be produced from coal based electricity or renewables based electricity. In a life-cycle perspective it would make a difference if PtX is produced from coal or RES. So, the question is: why differentiate biomass based fuels (lets say BtX) and not PtX in this table? For both the rules should be the same. ALSO: I made a quick search through several of the chapters (not comprehensively through all of them) and I did not find any mention of PtX apart from the transport chapter. However, the mentioning there is very limited (1-2 paragraphs), while at least in Germany, but also in Europe and even in some Arab countries it seems that PtX from green electricity is expected to become the largest source for decarbonisation at least for air and ship transport, some argue even for truck transport. So, the point is: why BtX categories in the table (and probably also in many chapters) and no PtX categories?	Wolfgang Schade	Germany	This is a good question. We have contacted the data provider (EDGAR) on this issue, who confirmed that there is insufficient underlying activity and energy data to distinguish power to fuel sources in their current global accounting methodology. The emissions data described here is primarily for tracking global, regional, country and sector trends, and will be insufficiently detailed for the reviewer's recommendation. However, the transport chapter may wish to present additional data for a smaller set of countries that could cover this request. I recommend that you get in touch with them directly.
16717	20	1	20	1	In the table above line 1 of page 20, what is the meaning of "uncontrolled MSW burning" ?	Raymond Zaharia	France	Noted. "MSW" stands for municipal solid waste. We add an explanatory note to the table.
16719	21	1	22	22	It seems to me that these references should be related to info or statements given in page 1 to 20 of Annex B.	Raymond Zaharia	France	Noted - Already the case
9435					ok	ANNA LAURA	Italy	Noted
43355					The Glossary (Annex A is not selectable in the dropdown list on the left) is missing definition of Solar Radiation Modification (SRM) as introduced in SR1.5 and SRM being utilized throughout several Chapters of AR6.	Matthias Honegger	Germany	Accepted. The definition of solar radiation modification will be added to the glossary for the SOD

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43357					<p>The Glossary (Annex A is not selectable in the dropdown list on the left) introduces a novel term for DACCS/DACS; the most common term for the combination of direct air capture with CCS is "Direct Air Carbon Capture and Storage"</p> <p>The term introduced (Direct Air Carbon Dioxide Capture and Storage) is more accurate, yet a bit cumbersome and hasn't to date been used in the literature (at least not to my knowledge); if the IPCC authorship would like to coin this term (and there may be good reasons to do so, including notably a clearing up of misconceptions around the Carbon-Balance of individual components DAC or fossil-CCS separately) it should absolutely ensure that this is used consistently across all chapters (this is not currently the case).</p>	Matthias Honegger	Germany	Noted, thank you for your helpful comment. The use of the term will be harmonised throughout the chapters, and the glossary definition checked.