

REVIEWER #2	
Reviewer Comment	Changes made
1 404.13 "Based on a transdisciplinary sample of influential concepts" sounds vague.	Sentence changed to: "AHEAD is based on 11 representative concepts of human well-being and livelihoods and measures the adequacy of conditions of 16 elements."
2 404.13 The word "influential" here weakens the presentation. Similar persuasive rhetoric appears often in the paper, and is not helpful.	We have removed the work influential here and in other instances – please see comments #6 in the general comments.
3 408.6. I do not understand the clause, "To measure the fulfilment AHEAD." Dividing the 16 elements into 3 categories may be a prerequisite to measurement, but is not the act of measurement.	We have rephrased the sentence to reflect this more clearly: "To facilitate the measurement of AHEAD, we group the 16 elements into three categories"
4 409.7. 'However, the idea of adequacy is easily presented in linguistic categories, for example "sufficient water is available". I find this sentence to be too simple, and also tautological (i.e. "sufficient" is a synonym for "adequate" here). Does "sufficient" mean "sufficient to drink"? Or "sufficient for subsistence agriculture"? Or "sufficient for non-native landscaping"? This sentence highlights the fundamental tension between the qualitative and the quantitative in this paper. A more sophisticated and precise treatment of this tension might be needed.	We have rephrased the paragraph, in order to more clearly reflect the concept of fuzzy logic and linguistic categories. This paragraph generally introduces the fuzzy logic concept, a detailed discussion of membership functions and thresholds is given in the following Section 2.3. . With regard to the tension of qualitative and quantitative aspects please refer to the general comments. We have added a more detailed outline of the conceptual basis of AHEAD in Section 2.1, also specifying more clearly what is meant by 'sufficient', as this is an aspect that relates to all elements, not only water. "For the purpose of measuring the fulfilment of AHEAD, we want to assess whether the availability of each element is adequate to meet human livelihood needs. Adequacy in this context refers to a situation, where elements are sufficiently available in quantity and quality to meet basic needs and permit a life in dignity (Wicks2012) as recognized for example in the Universal Declaration of Human Rights (BHR 1948). "
5 412.10. These definitions of ι_1 and ι_2 should be moved to where the variables are first introduced.	Thank you for the suggestion, we have moved this to the introduction of the fuzzy logic algorithm
6 412.16. Applied fuzzification methods for each variable are motivated by scientific findings." This is vague. What "scientific findings"?	We suggest to rephrase this to "Applied fuzzification methods for each variable are motivated by results from literature as presented in Table 1."
7 414.1. "Thresholds ι_1 , ι_2 , as well as the shape of the membership function (Eqs. 1–4) to fuzzify each input dataset are motivated by relevant findings." Again, this is too vague. If I wanted to apply this methodology, this sentence would not help me.	Changed to: "Thresholds ι_1 , ι_2 , as well as the shape of the membership function (Eq.1-4) to fuzzify each input dataset, which are discussed in the following paragraphs, are motivated by results from literature (for an overview of all membership functions as well as the frequency distribution of the input data see Figure A1, Appendix)."
8 419. I feel that the discussion of the relevance of uncertainty (an important point) is needlessly complicated. The basic idea is simple: if uncertainty in the best-estimate value causes it to cross a threshold, the uncertainty is relevant.	We have revised the paragraph to convey the main principle (which is clearly simple) first. Nonetheless, we feel that the detailed discussion of this aspect is relevant to the message of the paper. If there are specific aspects which seem to be complicated, we would be very grateful for more specific comments in this regard.
9 421.8. "The approach builds upon influential concepts..." The claim here that the concepts are influential does not add to the argument, but rather detracts.	Please see comment #2
10 421.10. "The selection of indicators and data for the purpose of quantification focusses on a holistic representation of important aspects." Again, statements like this do nothing to advance the discussion.	We rephrased and reworked this paragraph in order to be more precise.
11 424.6. "Uncertainty has often been blamed for inaction in terms of climate mitigation and adaptation." Please add a reference.	Reference added
12 Table 1. What does $200/(1000 \text{ cap})^{-1}$ mean? Do you mean 0.2 cap^{-1} ? (This applies to similar units within the table.)	We have checked all units and denominators and will make sure they are correct in the proof-reading version. With regard to cancelling down, we have chosen the units of the original data publications.
13 Table 1. Some explanation for "country-specific MDER" is needed.	We have added a footnote with the definition.
14 Fig. 4. This figure is difficult to parse. I assume the middle column is meant to use the right y-axis? Why do some countries and columns have a wide vertical range of values (I assume due to different RCPs) while others have a small range? Why do the cells with a small range also have identical values for each impact model? What is the takeaway message from this figure?	We have revised the paragraph related to this figure in the results section along the remarks and questions. We have also revised the figure itself for better interpretation and will make sure that the figure is sideways or full page in the final version (depending on the format of the final paper).
15 Fig. 5. I don't understand what the hatching signifies, "changes towards the 2090".	We have revised this figure for better readability and have adjusted the caption to more precisely state the content.
16 Tables A1 and A2. It's not clear to me what these tables contribute to the paper. Consider explaining their significance in the captions.	We have updated the captions and refer to these numbers explicitly in the extended results section.
17 Table 1. Font is too small. Please use multi-page table.	We will make sure that the table is sideways or full page in the final version (depending on the format of the final paper).
18 Figure A1 too small to read.	We will make sure that the figure is sideways or full page in the final version (depending on the format of the final paper).