

## ***Interactive comment on “HESS Opinions “Urgent water challenges are not sufficiently researched”” by P. van der Zaag et al.***

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The paper “Urgent water challenges are not sufficiently addressed” addresses an important question and follows an interesting methodology. I am aware of the fact that the manuscript is an “HESS opinion” and not a research paper or a review paper, and that HESS opinions are meant to “stimulate an open debate among peers on new ideas, views or perceptions (. . .).” This paper can potentially do that. Moreover, I have noted that the authors aim to “merely identify the persistence of intransigent water problems as a research object in itself” and do “not aim to be exhaustive and definitive.” That being said, there are still a number of important methodological issues. Moreover, many conclusions are not yet sufficiently supported by the data and some more argumentation is needed

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1. Some more explanation is needed on the bibliometric method used. Which database(s) was (were) used: one or all of the databases on Web of Knowledge, or (probably) the Web of Science database? Which years? All? Were the titles, keywords, abstracts or full papers searched?
2. For interpreting table 2, 4, 6 and 8, it is necessary to have an indication of the total scientific production in developed and developing countries and in countries in transition. Moreover, we need to know which are the developed countries, the developing countries and in countries in transition, or at least the criteria that were used.
3. The meaning of “sanitation” is not clear. Does it include or exclude drinking water supply? Does it always include wastewater collection and wastewater treatment? How did the authors use the term “sanitation” and how did they cope with different meanings in the literature?
4. The keywords used in table 1 are not wholly appropriate. “Water AND (supply OR drinking) NOT sanitation” probably includes many papers on agricultural water supply, for which sanitation is not a very relevant issue. I suggest to skip the search term “supply” and search for “Water AND drinking NOT sanitation”. It may moreover be interesting to search with alternative words or phrases for “sanitation”, such as “wastewater” or “wastewater treatment”, and see whether this changes the picture.
5. Concerning section 3: an alternative explanation for the relatively little attention being given to rainfed agriculture is that perhaps the knowledge needs are smaller than in the case of irrigated agriculture.
6. Table 3, 5, 7 and 9: The last three columns could be skipped., “H factor” is not explained and H-factor and the citation data are not used in the analysis.
7. Section 5, first paragraph: Some references would be in order. The conclusion that the developed countries are confident that they can develop sufficient adaptive capacity is not supported by the data. In fact, ninety percent of the papers on adaptation is

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written in developed countries (table 8).

9. Table 8 does not show that developing countries have limited research capacity to critically assess policy dilemmas related to biofuel. Given the bibliometric methodology chosen, a search using the keywords “water” and “biofuel” would be appropriate. (Or if the number is still too small: a more qualitative assessment of this literature.)

10. What does the suggestive phrase “interesting subsidy scheme” (p. 1407, line 7) refer to? Either the scheme should be briefly explained, or the phrase should be skipped.

11. Section 6 is not very strong. Many authors talk about “collaboration” or “negotiation” instead of “cooperation”. Hence, Table 9 underestimates the number of papers that discuss cooperation/collaboration/negotiation. As to conflict, there is only one word for this. It could mean conflict between uses (e.g. in the case of water scarcity) or “social conflict” (bad relations, tension, litigation, armed conflict, etc.). Managing conflict and sustaining cooperation are not necessarily different things, as suggested in the section. There is already a lot of literature on collaboration in natural resources management and more generally that could be referred to.

11. The conclusions bring up a new issue that has not been discussed before in the article: interdisciplinarity. Some claims are made concerning the benefits of interdisciplinary research that are certainly defensible, but they are neither supported by bibliometric data nor by references to the literature.

12. The conclusions argue that the limited attention to the major water management challenges is the result of the limited research capacity of the global South. Yet, other interpretations are possible as well. Table 2 suggests that the papers mentioning “sanitation” produced in developing countries pay attention to supply or drinking more frequently than papers from developing countries and countries in transition. It could be argued that the papers from the developed world more frequently use an integrated approach! As to articles on adaptation to climate change, a very small percentage of

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these come from developing countries. This suggests that research capacity may be limited, but interest in the issue even more so. Finally, no information is given on the geographical origin of papers on conflict and/ or cooperation.

13. Could some more information be given of the North-South cooperations and the positive effects that they have had?

14. The authors conclude that researchers should become aware of their own biases. I fully support this, but this point should be developed further in order to be convincing, and references should be added. The authors have the difficult task of convincing skeptics that bias and good science do not have to contradict each other: research can be done from different points of view, but given a point of view it is possible to discriminate between valid and invalid science. I have tried to follow the same philosophy in my review. In my interpretation, the article argues for more research funds for developing (and transitional?) countries. It tries to do so by showing, by means of bibliometric analysis, that 1) water management research does not sufficiently address the most important water management challenges, and 2) that the challenges studied depend on the geographical origin of the authors, who are mostly from the developed world. Hence, more research money should go to the global South. I can accept that, but still the argumentation should be in order. In this respect some improvements are necessary.

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