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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Review article: Quantifying the human impact on water resources: a critical review of the water footprint concept" *by* J. Chenoweth et al.

Anonymous Referee #1

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The authors review a set of literature related to water footprint (WF) and attempt to meta-analyse the strengths and weaknesses of the WF concept based on the survey.

Comments: The first main comment to authors is a strong suggestion to include the following article that was one of the first to point at major economic limitations of the WF concept.

Verma, S., D.A. Kampman, P. van der Zaag and A.Y. Hoekstra, 2009. Going against the flow: A critical analysis of virtual water trade in the context of India's National River Linking Program. Physics and Chemistry of the Earth 34: 261-269

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The paper attempts to provide an exhaustive review of literature. The authors have cited relevant literature on neoclassical criticism of the WF concept and metaanalysed (or critically reviewed) them in this regard. Meta-analysis of this type unfortunately appears only towards the end of the paper, often mixed with personal opinions of the authors. The remainder of the paper including the introduction, section 2 on top-down vs bottow-up, water colors, impacts of water use, full blown LCA and spatio-temporal scale of analysis purely read as a literature review documenting the research done on affiliated topics rather than a critical review that provides a meta-analysis based on cited research.

While I appreciate the literature review on impacts of water use as alternative impact oriented approaches to water accounting and use, I wonder whether impact oriented approaches makes water accounting more subjective. For example, the authors' reference to articles that downplay the role of green water appear to be subjective. Naturally a different set of assumptions on the use of water footprint concept would lead to different water (use) accounting mechanisms.

Many examples and references such as those used in water colors (see for eg in lines 15 onwards on page 9397) and spatiotemporal scale of analysis (on page 9405) appear obvious; hence their value in a critical analysis of literature on WF appear to be redundant.

Overall, most of the review and its critical analysis (meta-analysis), where available, appears to be well known (for eg Wichelns critique). So I wonder what is new with this review that claims to be critical. Given that neoclassical criticism of Wichelns and others has recently dominated the WF review, I wonder if the authors should make an effort to provide an alternative framework to review the WF concept, providing an opportunity for a balanced assessment. This I believe is only possible if the validity of the assumptions underlying prominent WF concepts are rigorously (critically) analysed

based on the evidence/commentary available in literature. This is what is missing in the paper, in my opinion. Without this, the critical review may still give the impression of a biased meta-analysis or of a compendium of related literature. It may be that a more structured assessment (which is less subjective) of the validity of underlying assumptions in the light of available literature may still yield a similar outcome but atleast it would be more transparent, thereby allowing for a balanced debate.

Final comments: I think the length of the paper can be reduced by removing nearly obvious example that show what is by definition. The authors also need to structure their paper a bit more so that counter arguments to famous critique of Wichelns and others can be brought to the fore. The paper misses these counter-arguments and hence it is not as critical a review as it claims to – resulting in a biased assessment in the end.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 9389, 2013.