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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Determining regional limits and sectoral constraints for water use under climate change" *by* T. K. Lissner et al.

Anonymous Referee #2

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Authors develop an integrated approach to assess the adequacy of water resources. They present the methodology to assess the adequacy for each of the major water sectors (i.e., the domestic, industrial and agricultural sectors, and the environmental water requirement) and to aggregate the sectoral adequacy using fuzzy logic. They implement case studies applying this approach to two countries (South Africa and Indonesia) under scenarios on climate and population changes.

General comment: The approach to assess the water adequacy from the viewpoints of not only water availability but also water access and quality is valuable for an improvement of water security and sustainable development. They broadly present the fuzzy logic approach clearly. However, they don't necessarily provide conclusions for their objectives in the case studies. For instance, they don't explicitly show the impacts on

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the water adequacy due to population growth in the future, although they state that “we further assess the impacts of climate change and population growth on the adequacy of water resources”. Furthermore, the conclusions for “limits and constraints under climate change” is unclear. In summary, I find this manuscript suitable for publication after revisions to make clear the conclusions for these objectives.

Specific comment: P4699, L17-18; Is a higher development status more associated with economic growth and improvement of infrastructures (including water infrastructure) rather than increasing per capita water use? P4704, L19; I recommend you to show the year for water quality (Vörösmarty et al. 2010a,b) to clarify the suitability of the data for this study as current and future water quality. P4707, L20-21; How do you distribute the water availability to the three sectors? How do you take into account cascading water? P4708, L8; The description in the text, “current conditions of water availability (HADbase)”, is not consistent with the caption in Figure 2, “availability data from the GFDL-ESM2M model under current (GDFLbase”).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 4695, 2014.