

Interactive comment on “A social-economic-engineering combined framework for decision making in water resources planning” by E. S. Chung and K. S. Lee

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General comments

As far as I understand, the authors have made a study of the Anyangcheon River, trying to answer the question of how it would be better to spend a given amount of money for environmental protection related to the river. I say “as far as I understand”, because the presented material is difficult to follow, and I find myself confused. Part of the confusion is because of carelessness on behalf of the authors related to usage of certain terms, but I think that there is a more general problem: the authors attempt to

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present a “new methodology”, and then they present the application of the methodology to Anyangcheon as a case study. The presentation of methodology is thus made on a too abstract level, without any examples, and is very difficult to grasp. It might be better if, instead, they talked about Anyangcheon straight from the beginning, explaining exactly what the problems are before explaining how they go on to solve them. I will illustrate the difficulties with some examples from the abstract.

The abstract begins by saying that the study presents a methodology for, among other things, evaluation of willingness-to-pay for the “improvement of hydrological vulnerability”. Later on, it says that “the hydrological vulnerability consists of potential stream-flow depletion (PSD) and potential water quality deterioration (PWQD).” The phrase “improvement of hydrological vulnerability” does not make any sense. “Reducing the hydrological risk” might be better.

The next period is even more confusing: “PSD and PWQD not only provide survey respondents with sufficient site-specific information to avoid scope sensitivity in a choice experiment but also support the standard of dividing the study watershed into six sub-regions for site-fitted management.” I cannot understand how a potential risk can provide someone with information, nor how a potential risk can divide a region in six sub-regions, or how a potential risk can “support the standard” of making such a division, or what kind of standard such a division can be. Furthermore, until this point, the authors have not mentioned the Anyangcheon River, but are only describing a “new methodology”. Therefore, is the number “six” significant in this new methodology and would apply to any kind of watershed? If yes, why?

This is almost half the abstract. The rest of the abstract does not make any more sense. Maybe this is because the first half of the abstract has not successfully created the necessary context. I don’t know.

The main text of the paper is better than the abstract, but it is still problematic. In Section “Specific comments” below, I give some specific comments, but they should be

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treated as examples of why the text is incomprehensible rather than as problems that would solve the problem if corrected. The paper should be totally revised, resubmitted and re-examined, because the substance cannot be assessed as it is.

Therefore, I recommend rejection of the current version of the paper.

Specific comments

Examples that show why the text is hard to understand: In 2819/6, “the studies or models are about the stakeholders”: what does this mean? In 2819/27, “From these reasons”: what reasons? In 2820, 4-9: what does this paragraph mean? In 2832/11, it is claimed that “the structure of the selected criteria is shown in Fig. 2”, and the caption of Fig. 2 talks about “indices”. What are the criteria and what are the indices in Fig. 2? Elsewhere the text talks about “indicators”: is “indicators” and “criteria” the same thing, as implied in 2839/6? What is the parameter b in Table 1? In 2833/9, “The attributes should be selected”, what attributes are we talking about? In 2833/19 it says that the attributes were selected from “components that represent PSD and PWQD”, but Table 2 implies that PSD and PWQD are the attributes. What is “SAS Macro OPTEx” and “D-efficiency design” (2834/18)? What is meant by “orthogonal design” (2834/19)? What are the “two indices” in 2837/4? What is a_i in Eq. 8 (2838)? Why is j termed “effectiveness” (2839/1)? And so on.

Another problem is the quotation of Yoo et al. (2008) following 2824/25. The authors have copied verbatim a large part (about one HESSD page) of Yoo et al. (2008). Although they do mention that they did so, the part copied should be inside quotes or indented, so that one can see immediately what the copied part is. (In addition, for copying such a large part, I think that they need to obtain permission from the publisher; a practice with which I disagree for scientific literature, but it is the law—and on this issue I congratulate HESS for using a Creative Commons license.)

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