

## ***Interactive comment on “Contribution of the Multi Attribute Value Theory to conflict resolution in groundwater management. Application to the Mancha Oriental groundwater system, Spain” by B. Apperl et al.***

**Anonymous Referee #2**

Received and published: 17 December 2014

### General Comments

The paper provides an interesting contribution to water resource planning theory through the realistic application of MAVT to a planning problem. Whilst the basic technique has been demonstrated in other water planning contexts, the paper makes a good contribution to the literature as it attempts to tease out how the tool can be used to realistically aid the planning process. In contrast, many MAVT studies do not move beyond the basic theory of application to demonstrate how the results can be used to

C5721

assist in conflict mediation.

The paper is well structured and generally clear however some improvements could be made. Some sections which require improvement to presentation quality are discussed below however this is not a comprehensive listing.

Specific comments relating to the content of the paper:

1. The paper undertakes a sensitivity analysis to test the effect of uncertainty in attribute scores and stakeholder attribute valuation. This aspect of the paper requires some improvement. For example: \* There is insufficient detail on how the uncertainty analysis was conducted. For example, how was uncertainty in attribute scores quantified? \* No results have been presented for the effect of uncertainty in the consequence matrix \* The conclusion that the ecologists stakeholder group had the greatest divergence in results has not been supported with presentation of results \* Figure 8 illustrates a box whisker with indication that the full range includes a zero score for all alternatives; is this correct or an error in presentation?
2. The paper concludes that: “The acceptance of the method is quite high, because of its simplicity” This conclusion is presented with reference to another paper. It would have been useful if the study could have incorporated feedback from the stakeholders to verify that the method was accepted.
3. The paper highlights the need to balance complex evaluation methods with the need to ensure that the method is suitable for the stakeholders. The paper explores the value of one method (MAVT), however it would be useful, if feasible, to compare two or more methods from the stakeholder perspective. This approach would seek to obtain feedback from stakeholders on the transparency and usefulness of the alternative methods. I recognise however that this is likely beyond the scope of the paper.

Specific comments relating to presentation quality:

1. “In addition to the elicitation of the value function and weights, stakeholders were

C5722

questioned some general qualifying hits, to capture the interviewee's holistic preferences." Is 'qualifying hits' a typo? Were the holistic preferences evaluated iteratively through interview questions or were the stakeholders asked to document their holistic ranking of all options?

2. "Other measures just showed efficiency if there were no additionally increase of the water use." The meaning of this sentence is not clear to me.

3. "For instance, ecologists neglect a full implementation of groundwater substitution, which is preferred by agricultural representatives and some administrations, if there is no impediment of further extension of irrigation water use by water use restrictions." Based on my interpretation of what is meant here I suggest the following: For instance, the option of full implementation of groundwater substitution is assigned a low ranking by ecologists unless the option also includes water use restrictions to prevent an overall increase in irrigation.

4. "Static external variables (Scenario 1) give results more accurately, but maybe do not represent the future reality." I suggest that it would be more appropriate to use the term 'precisely' rather than 'accurately'.

5. "Figure 7 shows changes in ranking for the three best evaluated scenarios 1." Please clarify how the three best options were chosen. The chosen options do not appear to be logical to me based on my interpretation of Figure 5. For example, why has 24a been chosen when 24b appears to be superior on the basis of Figure 5?

6. "However, a further aggravation of the water problem would question the obtained results." The meaning of this sentence is not clear to me.

7. "The big advantage of the MAVT method is the possibility to create a complex structure of measures and objectives. This allows a more detailed analysis of the alternatives, not reproducible by holistic rankings and consequently giving much better information." Creating a complex structure does not sound like an advantage. I sug-

C5723

gest the following type of change may be a more concise conclusion: In comparison to an holistic ranking of options, the MAVT method has the advantage of creating a more detailed evaluation framework which enables more informative analysis to be undertaken. This includes a more detailed analysis conflict potential and the ability to undertake uncertainty and sensitivity analysis.

---

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 10235, 2014.

C5724