

Principle review criteria

Scientific significance: 1 – Excellent

Scientific quality: 2 – Good

Presentation quality: 2 - Good

General comment

Dear authors,

The paper introduced a novel approach for combining a technical assessment and a cost benefit analysis for decisions on water supply solutions on an island. The cba is divided into a financial cba and an extended cba demonstrating the importance of accounting more than pure project internal financial consequences in decisions. The extended cba provides examples on how ecosystem services such as carbon sequestration can be monetized and thus included in a cba. The paper delivers an important and not widely covered topic of combining technical assessments into economic evaluation including monetizing effects on ecosystem services. The paper contributes to the state-of-the-art provided some amendments suggested below.

Specific comments

Row 83: The authors state, with references, that the CBA method falls short to adequately monetize ecosystems services. I would prefer it if this was described with more details, thus, in what way does it falls short and why?

Row 91: Is it reasonable to say that the aim of the result is to show financial benefits of NBS? It sounds a bit biased. Maybe it would be better to say that the result from the CBA aims at providing a systematic review of different measure alternatives where NBS is one that is compared to more traditional ones? Thus, the result should speak for itself; the aim should not be to get a certain result.

Also, I think the aim could benefit from having a few objectives as well specifying more directly what has been carried out in the study.... E.g., 1) developing the technical assessment of MAR on tropical islands, 2) developing the methodology for extended cba with ES-analysis, 3) demonstrating the method on a case study etc...

Row 170 and forward: The methodology is not sufficient enough. The criteria is not defined or explained. One table naming all the parameters / criteria used with an explanation on what data, what tools and what criteria value that were used for the evaluation needs to be explained. The MCDA is not explained in sufficient details either. Please rewrite this part and provide sufficient information on the methodology so that the reader of the text has the possibility to judge the method and understand the procedure.

Row 195: I would like to have a comment of the chosen project time/ life time of the project. 30 years seems a bit short for a large project as a drinking water supply solution.

Section 2.4-2.5: In general, it is difficult to follow the procedures and what effects that are included in what CBA. as it is now, the reader must go back to the main text in the methodology in order to be able to interpret the result shown in the CBA-tables. This makes interpreting the result difficult and time consuming. I suggest a table that clarifies the differences between the three analyses in a structured way where a summary on what parameters are included in e.g., the financial cba compared to the extended cba for both the RO, RRWH, and reforestation.

Discussion/summary/conclusions: I think the discussion of the result could benefit greatly by including a thorough discussion about the uncertainties associated with the analysis. With uncertainties I mean:

- Are the parameter values, thus the numbers used in the CBA certain or could the costs and benefits differ?
- Are the models used to determine the values of the different cost and benefit items in the CBA certain, or could other models/other ways of valuating effect have an impact on the value of the cost-benefit item and thus the overall result?
- Are there effects that have not been included in the extended cba that could have had an impact on the overall result?

Technical comments

Row 113 and 115: You do not have to refer to figure 1 once again.

Row 152: figure 3?

Figure 3 could be moved closer to section 2.4 where it is referenced.

Result section: Wouldn't it be better to have the result tables located closer to the text describing the results?