

Review comments to **hess-2016-618: Development of a participatory Bayesian network model for integrating ecosystem services into catchment-scale water resources management** submitted by Jie Xue et al.

This paper presents an ecosystem services-based IWRM framework to develop a participatory Bayesian network model for assisting integration of IWRM, dealing with an interesting and complicated issue. Authors described the development, evaluation, and application of a participatory Bayesian network (BN) model with four participant groups involved in the Qira oasis area, Northwest China. The case analysis in the Qira oasis area demonstrated the availability of ES-based IWRM framework using the participatory Bayesian network model.

The BN developed effectively provided the integration of ES into quantitative IWMR framework via the public negotiation and feedback. The results reported that any water management measure from BN model still cannot sustain the health of suppliers of ES in the Qira oasis area. In general, the authors illustrated some merits in the methods and results. Furthermore, the authors also pointed out the contribution and challenge of their work in the Result and discussion.

This paper has a good potential to be published in the journal. However, there are some significant issues, listed below, which need to be addressed before it is ready for publication.

1. Please delete the redundant phrase “at the same time” in Page 2, Line 4.
2. The expression in Page 3, Lines 27-29 is not proper. It should be described by using two sentences.
3. The sentences in Page 6, Line 31 is confusing. Maybe that can be changed in “users of water within ecosystems are becoming increasingly competitive with other users”? Please clarify.
4. Please delete the redundant “for” in Page 8, Line 17.
5. In page 9, line 15: it should be “due to” rather than “due”.
6. I think the Section 5.1 is exchanged with Section 5.1 in Results and discussion. After a model is developed, the first thing is to evaluate the reasonability of the model. It can then model simulation or prediction, and so forth.
7. Please double check the grammatical errors in the text. For example, the word “was” should be changed in “is” in Page 5, Line 11.
8. Please change “These” into “these” in page 14, Line 11.
9. The description in Page 15, Lines 3-5 is confusing. Please clarify.
10. The accuracy of some word uses should be double checked in the manuscript. For example, the word “stakeholder” should be replaced by “participant” in the Table 1 of Page 24.