Cover letter

May 6th, 2025

Number: hess-2024-399

Manuscript Title: Impacts of Inter-basin Water Diversion Projects on the Feedback Loops of Water Supply-Hydropower Generation-Environment Conservation Nexus

Dear Prof. Pieter van der Zaag,

We sincerely appreciate the time and effort you have dedicated to evaluating our manuscript titled "Impacts of Inter-basin Water Diversion Projects on the Feedback Loops of Water Supply-Hydropower Generation-Environment Conservation Nexus". All the concerns raised have been carefully treated and an itemized reply to your comments is presented in the revision files. Our changes are marked in Red in the revised manuscript.

Thank you very much again for your kind help. Looking forward to hearing from you.

Sincerely yours,

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Number: hess-2024-399

RESPONSES TO EDITOR'S COMMENTS

Point #1

COMMENT: I appreciate the improvements made. There are however still a few remaining issues that require clarification. One is the use of the term "collaboration" that I understand to mean, in the specific context of this paper, synergy.

RESPONSE: We deeply appreciate the editor's insightful critique regarding the semantic nuances between "collaboration" and "synergy", "collaborative loops" and "synergetic loops". We fully agree that our original terminology risked conflating intentional coordination with emergent convergence phenomena. As suggested, we have:

- Replaced all instances of " ***collaboration*** " with " ***synergy*** "(Lines 60 and 564)
- Replaced all instances of "***collaborative loops***" with "***synergetic loops***" (Lines 61)

Point #2

COMMENT: Another is the statements referring to the positive or negative impacts of feedbacks. Such formulations remain unclear, as what is a negative impact for one, may be a positive impact for another. So this requires a more neutral (I mean non-normative) description.

RESPONSE: We sincerely appreciate this insightful critique regarding the potential normative connotations of "positive/negative impacts" formulations. To achieve value-neutral characterization, we have implemented the following revisions:

"With IWDPs, the water donation basins experience strengthened feedback loops, while water receiving basins experience weakened feedbacks." (Lines 22-23)

"water donation strengthens the negative feedback of S on H and E for five reservoirs." (Line 447)

"IWDPs strengthen the negative feedbacks of S on H and E for HJX, AK, DJK and WFZ and weaken the negative feedbacks of S on E for XL." (Line 451-452)

"Thus, water donation is found to strengthen the feedbacks of H on S and E, especially in low flow months. If there was only water receiving and H-Priority was set, values of LRR_1 and LRR_3 for DJK, WFZ and XL are greater

than those without IWDPs as shown in Figure 11 (b-1) and (b-2). Water receiving weakens the feedbacks of H on S and E." (Line 460-462)

"Water donation strengthens feedbacks of H on S for HJX, DJK and XL." (Line 489)

"There are both negative and positive feedbacks of the E component on H while the negative feedbacks strengthen in abundant water months." (Line 542)

"It is evident that water donation strengthens the negative feedbacks between S and H, the negative feedbacks between S and E, and the positive feedbacks between H and E, while receiving water weakens these feedbacks. Water donation results in a reduction of available water (Mok et al., 2015; Wu et al., 2022), leads to lower flow, to stronger competition for water among S, H and E, and strengthen the feedbacks. Reduced competition among S, H and E is found in water receiving areas, primarily due to the replenishment of available water resources." (Lines 564-569)

Point #3

COMMENT: I also feel that one finding of your study, which I find the most important finding, is not featuring in the conclusion nor in the abstract. It is written in the discussion section as follows: "The persistent feedback polarity with IWDPs suggests that simply increasing water supply (e.g., via compensation donations like Three Gorges-to-Hanjiang) cannot resolve inherent SHE conflicts." This conclusion is important for me, because inter-basin transfer schemes are often portrayed to solve such water conflicts.

RESPONSE: We sincerely appreciate the editor's astute observation regarding the critical finding. To elevate its prominence:

- Abstract Enhancement: Added in Line 25-27:

  "Simply increasing water receiving cannot resolve inherent SHE conflicts because of the persistent feedback polarity with IWDPs. Adaptive allocation rules are needed that account for these stable feedback patterns."

- Conclusion Restructuring: Added in Line 602-604:

  "We find that simply increasing water receiving cannot resolve inherent SHE conflicts because of the persistent feedback polarity with IWDPs. Adaptive allocation rules are needed that account for these stable feedback patterns."

Point #4

COMMENT: Furthermore there are still many minor editorial issues, which I have indicated (in track changes) in the word file that I received from the authors, and which I will return to

them via email (as this copernicus environment doesn't allow me to attach word files, while a converted pdf would obscure certain editorial details). Therein I also make several suggestions for editorial improvements. I trust the authors will be able to address the above in a hopefully final round of revisions.

RESPONSE:

We extremely appreciate your meticulous attention to editorial details and the effort invested in annotating the manuscript via track changes. We confirm receipt of the annotated Word file via email and will rigorously address all editorial suggestions. Your granular feedback has been invaluable in elevating the manuscript's professionalism. Our changes are marked in Red in the track-changes file.

We wish to express our deepest gratitude for the exceptional professionalism, patience, and intellectual rigor you have demonstrated throughout the review process.