

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2  
<https://doi.org/10.5194/hess-2021-400-RC2>, 2021  
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## **Comment on hess-2021-400**

Anonymous Referee #2

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Referee comment on "Future upstream water consumption and its impact on downstream water availability in the transboundary Indus Basin" by Wouter J. Smolenaars et al., Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-400-RC2>, 2021

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The paper provides a comparative analysis of the impact of upper Indus water usage on downstream water availability under future climate change and socio-economic development. The analysis was done in sub-basin scale and under seasonal variability which is potentially interesting. Though the analysis is done on transboundary basin, there is no discussion how the results can add value on transboundary water management.

- I found the method and material section complex and difficult to follow. May be using separate sections for data and scenarios will help.
- In the discussion section the current water management needs to be discussed. Moreover, the novelty of this analysis needs to discuss clearly. Future of the upper Indus basin's water availability is highly uncertain in the long run, mainly due to the large spread in the future precipitation projections. Despite large uncertainties in the future climate and long-term water availability, basin-wide patterns and trends of seasonal shifts in water availability are consistent across climate change scenarios.
- There is no mention of green water and its importance, nor is the capacity of green water to partially substitute for blue water needs ignored. At least in the discussion section this limitation must be discussed, and the possible implications for the findings.
- In this study Greenhouse emission and socioeconomic development scenarios are decoupled, which can introduce further uncertainty to the results, acknowledging that including SSPs is a strong point of this study. Maybe a discussion can help potential users.
- In Table 2 results are presented in number, while in the text it is in percentage. It will be better to adopt one method to avoid confusion.
- In the discussion section a separate section on limitation of the analysis will be benefited