Natural Hazards and Earth System Sciences Discussions

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
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Comment on nhess-2022-193

Anonymous Referee #1

Referee comment on "Holistic planning of human, water, and environmental impacts for regional flood management: A case study of aging dam infrastructure" by Cyndi Vail Castro and Hanadi Said Rifai, Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2022-193-RC1, 2022

The authors brought up an important and timely topic: aging dams, their potential failures in flood events, and the need for life-protection strategies. However, their current version of the manuscript requires a fundamental review of the concepts, followed by adjustments and improvements in the methodology. I recommend major revision and reconsideration in the future.

Specific comments:

- Line 105: What means the expression: "tripartite coupling of human-water-environmental systems"? What is the "environment system" in the manuscript context? Perhaps, this new expression is not suitable and results in misunderstanding. I suggest remove it.
- Line 111-113: The definition of risk in these lines is different from that depicted in Equation 1.
- Line 116: "Hazard represents a shock that may be triggered by flooding, and which poses a negative consequence to regional health" and Figure 1 uses "toxic hazard". Are hazards associated with floods, dam failures, or general pollutants? How do measure shock? Flood hazards should be related to the flood characteristics, for instance, return period, water level, velocity, …
- Line 119 and Line 384: The definition of risk is very confusing. Risk is expressed differently in Equation 1 and Equation 7. In the current version, the term was used in different senses causing misunderstandings for the reader.
- Table 4: Is social vulnerability one of the eight social impact factors? The concept of vulnerability also is confusing. What variables are really included in social vulnerability? Is Risk analysis about vulnerability or environmental and social impacts?

Some points:

- According to the NHESS guidelines, abbreviations need to be defined at the first instance in the text, for instance, SAW and ABRS.
- Some citations should be re-formatting.
- Line 386: “food inundation boundary”, it would be “flood inundation boundary”?