

Nat. Hazards Earth Syst. Sci. Discuss., community comment CC1
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Reply on RC1

Ehab S Gnan

Community comment on "Freeboard Life-Cycle Benefit-Cost Analysis of a Rental Single-family Residence for Landlord, Tenant, and Insurer" by Ehab Gnan et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-222-CC1>, 2022

We are grateful to the reviewer for the insightful comments. Below is a point-by-point answer to the comments and suggestions raised by the reviewer.

[1] Enhance motivation and readership of the introduction part of this work, ie. include works from severely affected flood locations of the world

Thank you for pointing this out, we think this is an excellent suggestion. Accordingly, we have added the following to Section 1. (Introduction):

"Flood is considered as one of the most destructive natural hazards, which causes injuries and fatalities, social disruptions, infrastructural damages, and economic losses across the world (Das and Gupta, 2021; Rosser et al., 2017; Termeh et al., 2018). These losses are projected to increase worldwide as a combined result of climatic change, rapid urbanization, and improper land use managements (Caruso, 2017; Hino and Hall, 2017; Mangini et al., 2018; Zadeh et al., 2020)."

References:

(India) Das, S., & Gupta, A. (2021). Multi-criteria decision based geospatial mapping of flood susceptibility and temporal hydro-geomorphic changes in the Subarnarekha basin, India. *Geoscience Frontiers*, 12(5), 101206.

Termeh, S.V.R., Kornejady, A., Pourghasemi, H.R., and Keesstra, S. (2018). Flood susceptibility mapping using novel ensembles of adaptive neuro fuzzy inference system and metaheuristic algorithms. *Sci. Tot. Environ.*, 615 (2018), pp. 438-451

Rosser, J.F., Leibovici, D.G., and Jackson, M.J. (2017). Rapid flood inundation mapping using social media, remote sensing and topographic data. *Nat. Haz.*, 87 (1), pp. 103-120

(Canada) Zadeh, S.M., Burn, D.H., and O'Brien, N. (2020). Detection of trends in flood magnitude and frequency in Canada. *J. Hydrol. Reg. Stud.*, 28 (2020), Article 100673

(Europe) Mangini, W., Viglione, A., Hall, J., Hundecha, Y., Ceola, S., Montanari, A., Rogger, M., Salinas, J.L., Borzì, I., and Parajka, J. (2018). Detection of trends in

magnitude and frequency of flood peaks across Europe. *Hydrological Sciences Journal*, 63 (4) (2018), pp. 493-512

(South America) Caruso, G.D. (2017). The legacy of natural disasters: The intergenerational impact of 100 years of disasters in Latin America. *J. Dev. Econ.*, 127 (2017), pp. 209-233

Hino, M., & Hall, J. W. (2017). Real options analysis of adaptation to changing flood risk: Structural and nonstructural measures. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 3(3).

[2] If you did not derive all equations in this manuscript, delete them and just cite original sources in the texts

We agree with the reviewer. Accordingly, we have revised Section 2.1.3 (NFIP Freeboard Benefit). Citing the original source in line 332, and removing the equation from line 233.

[3] Separate discussion section from results and compare your findings with similar works in USA or other areas

You have raised an important point here. Although we agree that it is important to compare our findings with similar works, in our work, this would not be possible because this is the first and only study to apply life-cycle cost-benefit analysis for the landlord, tenant, and insurer. We agree that this is a potential limitation. Therefore, we have added the following to Section 5. (Summary and Conclusion):

While acknowledging the limitations, the methodology proposed in this study provides a novel framework for quantifying life-cycle benefit of freeboard for single-family rentals through LCBCA. "To the best knowledge of the authors, there are no studies available applying a life-cycle cost-benefit analysis for the landlord, tenant, and insurer."

Also, lines 47 to 56 in Section 1. (Introduction) further emphasizes this point.

[4] Conclusion section is a bit scattered, be focus and convey key messages to your readers

We appreciate the reviewer's suggestion, as it forced us to re-evaluate the structure of our "5. Summary and Conclusion" section. In so doing, we found that the reviewer is correct in this comment. In response, we made the following revisions:

- We removed all references in the section, as Summary and Conclusion sections really should not introduce new literature. This involved removing the last two sentences of the first paragraph along with the reference to Moser (1985) and the reference to Mostafiz et al. (2022c). Instead we now cite Mostafiz et al. (2022c) earlier in the paper where the concept of actionable information is introduced. Note, however, that because this reference precedes the other two Mostafiz et al. (2022) papers, this paper became "2022a" and the others were relabeled as "2022b" and "2022c" both in the text and in the reference list. We also moved the entire paragraph (which included references to Warren-Myers et al. (2018) and Hollar (2017)) following our bulleted points; the first two sentences were moved to Section 4.1.1 (Landlord Freeboard

Benefits) and the last three sentences were moved to Section 4.1.2 (Tenant Freeboard Benefits). These moves are appropriate because the original paragraph contained new information that should not have been introduced in the Summary and Conclusion section. Finally, we removed the reference to Mostafiz et al. (2021b) because we felt that this information is general and did not need to be referenced.

- We clarified the fourth bullet point to remove ambiguity.
- We tightened language elsewhere in the paragraph.

The net result of our changes, length-wise, was a consolidation of the section from 624 to 416 words. Again, we thank the Reviewer for this suggestion.

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2022-222/nhess-2022-222-CC1-supplement.pdf>