

Peer review report 1 on “A participatory approach to determine the use of road cut slope design guidelines in Nepal to lessen landslides”

1. General Comments

After careful reading the pre-print, it is recommended to revise Manuscript egosphere-2024-1300 from the NHESS section. The manuscript showcases the application of various participatory methods to evaluate the usability of different road cut slope design guidelines in Nepal in the context of landslides prevention, which is of relevance to the field of natural hazards. The study addresses issues in existing design guidelines in relation to road cut slope failures, which are prevalent in Nepal due to a combination of natural factors and inadequacies. It involves engineers from various governmental levels, consultants, and academics to get a comprehensive understanding of the on-ground challenges and the applicability of the current guidelines. While the article provides valuable insights for the context of Nepal, it would be important to reflect on the discussion how participatory approaches can enhance other existing standards by comparing other similar studies.

The manuscript contributes to the understanding of landslide prevention in Nepal by highlighting the gaps in current practices and proposing ways to address them from the participants' perspectives. The scientific quality of the manuscript is fair, with the methods and data collection being well-explained and appropriate for the research questions posed. However, the manuscript could benefit from a more detailed explanation of the thematic analysis of qualitative data, e.g., how themes were derived from the data. A clearer outline of the limitations of the applied participatory methods would strengthen the manuscript too.

The presentation quality is acceptable, with the manuscript being susceptible to major improvements in the structured (content and flow), the use of tables and figures, and a better presentation of results. The manuscript is generally clear but some sections, particularly those dealing with technical aspects, could be simplified to make them more accessible to a broader audience. This is particularly important given the diverse audience of NHESS. The description of the methodology could be enhanced by adding a figure of how all these different methods were integrated and results analysed. Also, a table or figures summarizing clearly the results described in text in the section could significantly enhance the readability of the article. The manuscript could benefit from a more robust discussion on, for instance, how these findings could be generalized to other low-income countries facing similar challenges, or by reflecting on the relevance of the outcomes to the disaster risk management field (academia, policymaking, or practice), or examining the implications and correlations in the landslide's prevention in Nepal. For this, it might benefit from the inclusion of more recent studies on landslide prevention and road construction in other low-income countries, to provide a broader context for the findings. The conclusions are substantial and directly tied to the findings of the study. The main conclusion, development of new guidelines, needs however more elaborating and supporting information. Additionally, the key recommendations of the study should be more general recommendations to the field rather than specific recommendations for new guidelines. Likewise, for the next steps, it would be good that the suggested outlook is framed around the implementation of participatory approaches for

lessen landslides, or any other scientific relevant gap, rather than next steps for developing specific guidelines.

More specific suggestions are detailed in the section below.

Principal criteria	Excellent (1)	Good (2)	Fair (3)	Poor (4)
Scientific Significance: Does the manuscript represent a substantial contribution to the understanding of natural hazards and their consequences (new concepts, ideas, methods, or data)?			X	
Scientific Quality: Are the scientific and/or technical approaches and the applied methods valid? Are the results discussed in an appropriate and balanced way (clarity of concepts and discussion, consideration of related work, including appropriate references)?			X	
Presentation Quality: Are the scientific data, results and conclusions presented in a clear, concise, and well-structured way (number and quality of figures/tables, appropriate use of technical and English language, simplicity of the language)?			X	

2. Specific comments

ABSTRACT

Line 12: the suggestion of having a training program with "all" Nepali road engineers might be too ambitious.

INTRODUCTION

Line 16: need to include the context of the construction and widening of roads, since the statement is not true for every topography. For example, saying "in mountainous regions".

Line 24: when talking about limitations, it would be beneficial for the reader to include some examples of these limitations mentioned by Paudyal et al and Robson et al.

Line 25: it is important to enhance the justification and background of participatory studies in relation with the study's scope. Add why and how participatory approaches can help with as referred in the abstract: "... improved road cut slope designs to prevent these failures.... And assess the efficacy of the current guidelines..."

Lines 35-44: After reading the article, this paragraph seems irrelevant for the content and discussion, and cuts the flow of the reading. I would suggest removing it.

Lines 45-48: Those are two strong statements that claimed to be true for every LIC/LMICs, which may or may not be fully true. If there is evidence of this refer to it. Please revise and clarify if it applies to every LIC/LMICs or just some of them.

Lines 56-69: I would suggest moving it up in the section, as it provides directly context of Nepal. It could be the 1st or 2nd paragraph of the introduction.

Lines 83-93: I would remove that as such a detailed context is not very relevant for the remaining parts of the manuscript and would enhance the readability.

Line 98: See my comment regarding Lines 45-48 and include this line there.

Line 100: See my comment regarding line 24 and include those limitations there.

Figure 2: It is irrelevant for the results and discussion of the paper. It would rather go as a suppl. Material.

Lines 107-108: authors mention repeatedly the issue of new guidelines, but they don't include major context about. Are there any plans to produce new guidelines in the country? If yes, included in the context of Nepal. If not, suggesting that it is an abrupt conclusion considering the study is looking at whether the guidelines are used or not. Revise, clarify and correct. Also along the entire text.

Lines 109-110: authors state the aim of the study is to determine effectiveness of the current road cut slope design guidelines in Nepal. This is inconsistent with the abstract that mention "efficacy" which is a different criterion, so please harmonize this along the text. Moreover, the "effectiveness" or "efficacy" to lessen landslides is not evaluated, or at least, it is not very clear how. I would recommend, in overall, to take this part from the scope and aim of the study.

Lines 112-114: This is part of the methodology.

METHODOLOGY

Line 121: The descriptors *fair* and *representative* should be removed, as presented in Table 1, they do not seem to be as such. Additional reasons of why employed different qualitative methods can be included here instead. This would enhance the scientific validity.

Line 135: it would be beneficial to include the details of the presentations and respective discussions as supplementary material.

Line 141: information in brackets might be irrelevant for the reader. I would suggest deleting it.

Lines 141-146: It doesn't mention which local government units participated and how it was distributed among the participants. Also, it doesn't mention how people were invited and based on what (e.g., reputation, experience, current work, specialization). The selection approach based on the availability of engineers is a bit weak for a FGD.

Lines 166-169: Improve the description by providing numbers instead of words such as, *majority*, *some*, *others* included in the lines.

QUESTIONS AND RESEARCH OUTCOMES

Figure 3: Number of records in the figure is not clear. Add numbers on each response to understand better the figure. Also move the figure below the text referencing it.

Figure 4: It is hard to identify the number of responses of percentage. Add labels to understand it better.

DISCUSSION

Line 377: The aim of the study here is different from the ones mentioned before in the text. Harmonize it accordingly.

Lines 385-387: these findings are not discussed. Implications of the rule of thumb in the context of landslide must be more elaborated.

Lines 436- 441: This information was not presented in the results section. Adjust either the results or remove this part of the discussion.

Lines 442-446: It is not clear from where these suggestions come from as are not part of the scope and any presented results seem to support enough these recommendations. Suggest removing this.

Lines 466-470: This information seems to be irrelevant for the scope and issues dealt within the study. The suggested Canadian guidelines seem to be artificially integrated. If that is just an example, I would recommend introducing it as such and not as prescriptive as it is read.

CONCLUSIONS

Line 521: it refers again to effectiveness, which was not clearly evaluated in the study. Remove it.

RECOMMENDATIONS:

Lines 554-560: these two paragraphs are out of the blue, considering the results and discussion. Remove them.

3. Technical Corrections

Line 51: Consider providing a brief explanation or example of "rule of thumb" for international readers who may not be familiar with the term.

Line 148: Reference is misplaced.

Line 154: Appendix B is introduced first than Appendix A. I would suggest to swap the nomenclature (Appendix B → Appendix A, and viceversa).

Line 164: reference there is odd. What does it exactly supporting?

Line 165: see comment regarding line 154.

Line 502: remove the word *hugely* as it may be unnecessary.

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