

Interactive comment on “An adaptive regional vulnerability assessment model: Review and concepts for data-scarce regions” by Mark Bawa Malgwi et al.

Anonymous Referee #2

Received and published: 23 January 2020

"general comments"

The manuscript represents a good contribution to the understanding of natural hazards and their consequences. The presented conceptual framework aims to link vulnerability indicators with damage grades which highlights the value of damage grades in physical vulnerability assessments. A topic which is currently under-investigated. For the reader, it presents a comprehensive review on indicator-based approaches of physical vulnerability and flood damage models.

However, I have some major concerns that should be clarified and fixed before the paper can be fully accepted for publication.

C1

First, the goals of the study are not always declared clearly. The link between the review part and the conceptual framework could be more streamlined. I suggest condensing the literature review and provide more details how to operationalize the framework including details about developed indicators.

Secondly, I am a little bit confused by using the term vulnerability which is usually broader defined and includes social, ecological and economic vulnerability. In Section 2 you mentioned a focus on physical vulnerability to floods with a specific attention to buildings. The term building vulnerability is not properly defined in the paper, and it seems that this specific element of vulnerability is a main research area. Thus, the focus of the paper needs more streamlining (title, review and framework). I doubt that the developed framework is easily transferable to social or ecological vulnerability.

Thirdly, section 5 needs more attention to explain the operationalization from concept to application. The operationalization of the framework is very conceptual, and in some aspects, it is very vague. It misses the connection to empirical indicators that build the indices (BII, BRI, etc.) and thus shows that it can actually be applied to empirical case studies. Moreover, there are important aspects in the operationalization of damage grades that need more attention: e.g. judgement biases in the grading process, standardized training of experts and context-specific definitions of the grades etc.

Fourthly, the three phases in Section 5.2. could be better embedded in the overall picture of the paper. For example, Table 4 presents a damage grade scheme which is unclear whether the conceptual framework applies the same grading scheme or not. In Section 5.1 and Section 3.1, recommendations for best-practice are mentioned by Blong (2003b). I do not see these recommendations picked up in the framework.

Fifthly, the structure needs attention and the arguments are sometimes not placed in the right sections. In Section 2 you have too many (sub)subsection, followed by many lists with detailed arguments. Section 4 discusses the need for linking indicator and damage grades but is not clear whether it is linked to the own contributing or written as

C2

a conclusion of the literature review. In Section 5, the author's contribution should be in the center. Explanations and smaller reviews should be avoided here. I see Section 5.1. a bit like a repetition of what is explained in section 2, 3 and 4.

Sixthly, the main contribution of the conceptual framework, which I think is the applicability in data-scare regions is not sufficiently discussed in section 2 and 3. It should be more on the point. Also, the term 'adaptability' of physical vulnerability assessments to other regions could be better picked up in the review. Are all physical vulnerability assessments adaptive regional models? Which are regional adaptive? Why? I also suggest providing more information about the specific requirements and capacity for applying them across different regions. Your tables should reflect this by focusing on these aspects.

"specific comments"

Paper is too long and own contribution is relatively short. Title: "adaptive" and "regional" are not well addressed in the paper. Abstract: When reading the abstract the conceptual framework is in the center, however, this is not reflected by the paper which focuses more on the literature review. Introduction: too long and broad Line 81: Unclear how social loss is defined. I do not agree that building damages are the only or one of the most important factors for social loss. In particular, if you consider that not all affected people own a building. Line 83: There is a critical difference between social and physical vulnerability assessment. You need to make clearer. Line 143: more references. Line 149: the term 'holistic' needs a proper definition. Line 256: difference between indicator and index is not defined. Line 264: it is not objectivity what you mean it is comprehensiveness. Objectivity is needed for every selected indicator. Line 222ff. Indicator weighting: statistical weighting based on data can explain the consistency and inference of indicators but cannot be used for an appropriate weighting of importance or measurability of the indicators. This should be mentioned at the beginning. Line 571: unclear if this is part of the framework or part of literature review. Line 701: Do you applied field surveys or remote sensing? When discussion about different op-

C3

tion should be mentioned in the review section. Conclusion: Be more precise about the key messages both from the review and from the conceptual framework. An outlook of how the framework will be applied is also helpful for presenting the relevance. Please elaborate on the link between the relevance for risk reduction methods in developing countries and the data scarcity and barriers in collecting data in most of the developing countries?

"technical corrections"

Line 249: this sentence needs a reference Line 322: acronyms are not defined in table figure caption. Line 329f. Sentence is unclear also the example does not seem to make sense. Line 443: reference missing Linen 415f: unclear sentence Line 650, 661 and 680: fourth level of headline should be avoided.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-366>, 2019.

C4