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Interactive comment on "Assessing the risk posed by natural hazards to infrastructures" *by* Unni Marie Kolderup Eidsvig et al.

Anonymous Referee #2

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The paper deals with risk related to interaction between natural phenomena and critical infrastructures which is a key issue in risk management process. The authors propose a two level empirical methodology to assess this risk. Despite of its operational interest, the major issue is that the whole methodology is fully empirical with very few references to existing works in such domains. Therefore, despite of some good ideas, it is quite difficult to trust in the method and its results : many subjective choices are done without being clearly explained and described. Using and applying the method would be difficult and it is now clear to see how this process can be generalized. What is the added value in comparison with decision making methods, safety analysis already used to assed criticality of interdependent infrastructures ? A detailed review including remarks is proposed in the annotated pdf. Some example of issues in the text relate are described below : 1. Insufficient definition of concepts used (risk,

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hazard, phenomena, uncertainty on risk, potential risk, societal vulnerability ? ...). Some definitions are contradicting with state of the art : this has to be changed or discussed completely. Why are new definitions proposed ? what do they correspond to ? How are they justified ? 2. Studied infrastructures are not described 3. Figures are not informative (eg figure 1 , what about existing cause effect consequence diagram) 4. Not enough references to existing frameworks related 1) to safety and reliability analysis (functional analysis, failure modes etc...) 2) to classical decision-aiding methods such as multicriteria decision making methods : proposed aggregation is a weighted average, why are there no references to classical aggregation methods (MCDM)? 5. Some keys issues about choosing criteria are not described 6. Some tables are not understandable (eg table 5) 7. The calculation process robustness itself is not tested and described. The adjustment are not understandable. How can vulnerability be used to modify the frequency of a phenomenon ?!!! "The physical vulnerability score is used to adjust the probability category assessed in the initial categorization and the societalvulnerability score is used to adjust the consequence category assessed in the initial categorization"

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2016-89/nhess-2016-89-RC2-supplement.pdf

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