



## **Rounbletz: An Excel-based software to perform cost-benefit analysis at local scale**

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Public financial support for natural hazard protection measure is generally attributed, in Switzerland, according to the results of cost-benefit analysis. The analysis is generally made with a very controlled procedure, where many parameters are predefined according to a few input parameters. Vulnerability is, for example, defined according to the building's type and the hazard's type and intensity (divided in 4 classes). Therefore, this procedure, although having the advantage of being reproducible, suffers from a lack of ability to describe the local specificities.

This work describes an Excel-based application which allows to calculate the cost-benefit analysis at local scale, based on the usual 3 scenarios and the predefined intensities used in Switzerland. Although the risk equations are not new, this study focuses on finding the right balance between a rigid but reproducible, and a free but too much user-dependent approach. Many parameters value are therefore predefined, but are displayed and can be modified by the user if needed. If these predefined parameters are modified, the program highlights them in the output in order to be transparent for the person who will take a decision based on these results. The software is multi-hazard, but is not yet designed to account for the possible hazards interactions.

A preliminary attempt to include the uncertainty in the calculation is also presented. The uncertainty analysis consists of using triangular distributions for the input parameters and performing a Monte-Carlo simulation to obtain a distribution of possible values. The triangular distribution is chosen because of its simplicity, which is a desirable characteristic since the specialist assessing the risk is most of the time more comfortable with the natural phenomenon than with probabilities. Thus, since this type of analysis always suffers from a high uncertainty, this simple procedure allows taking this uncertainty into account for the decision process.