



## **Multi-hazard and multi-risk in mountains - applying the IPCC-AR5 concept in practice**

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While most hazards have been critically scrutinised for many years, research about the interaction of multiple hazards and the assessment of related risks is still in its infancy. This limitation may have substantial influence on the way how disaster risk reduction activities are addressed and to which extent potential impacts may become reality. This is particularly true for the changing levels of risk due to modified climate conditions.

Here, we present our conceptual and applied research related to a multitude of possible hazards and risks with a focus on mountain regions. Backbone of our studies are so-called impact chains, which follow the general approach as proposed within the Fifth Assessment Report (AR5) of the International Panel on Climate Change (IPCC). These impact chains take into consideration external and internal factors contributing to possible risks. They are carefully generated by means of participatory processes and explicitly include climate, bio-physical as well as social, legal, economic and institutional aspects. Based on these chains, their factors and identified indicators, risks can be identified, assessed and compared. The risk assessment results may inform decision makers in developing risk reduction strategies and in monitoring the success of related activities.

Whilst this approach has been successfully applied in practice (e.g. in Bolivia, Pakistan, Burundi) the improved representation of feedback loops and interactions amongst the various factors of the impact chains demands further research. Within the scope of desktop studies and test cases in the Alps, we scrutinise a range of physical, statistical and abstract models and check their feasibility for various parts of the impact chain and elaborate on their usefulness for the various spatial scales usually at stake.