



## **Multiple Natural Hazards Assessment and Comparison to Planned Land Use in an Andean Touristic Site within the Riskscape Central Chile**

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The Andes of central Chile are a natural environment characterized by multiple natural hazards (mass movements, volcanic hazards, seismic hazards, snow avalanches to name a few). The totality of these hazards, according to the notion of Müller-Mahn et al. in relation to vulnerable entities, spans a riskscape.

Spatial planning should take this riskscape into account in order to ensure a safe and resilient regional development. However, as frequently observed in developing or newly developed countries, such precaution measures are only hardly realized. Spatial planning tends to be reactive to private inversion, opportunistic and frequently clientelistic. This results in spatial structures whose future development is vulnerable to natural disasters.

The contribution analyses these circumstances within a riskscape in central Chile. Within the VIII. Region, close to the volcanic complex Nevados de Chillan, a touristic development around a Hotel for winter sports is established. However, the place is affected by a multitude of natural hazards. The contribution, on the basis of primary and secondary data, first provides hazard maps for several natural hazards. Secondly, the individual hazard maps are merged to an overall hazard map. This overall hazard map is related to the vulnerable entities to span a riskscape. The vulnerable entities are settlements, but also tourist infrastructures.

Then, the contribution compares how a precautionary spatial planning could have avoided putting vulnerable entities at risk, which spatial structure – especially regarding tourism – is actually found and which challenges for spatial development do exist. It reveals that the most important tourist infrastructures are found particularly at places, characterized by a high overall hazard. Furthermore, it will show that alternatives at economically equally attractive sites, but with a much smaller overall hazard, would have existed. It concludes by discussing possible reasons for this by considering the Chilean planning system.