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Cost-Benefit-Analysis of avalanche defence measures - a case study from Schiahorn, Davos, Switzerland

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The concept of integral avalanche protection includes a combination of technical, organisational and biological measures as well as land-use planning for reducing risk in settlements and on traffic routes. The decision which strategy should be realized is heavily influenced by the results of a cost-benefit-analysis which are more and more demanded by the public subsidizing authorities.

In this paper we demonstrate a methodology for determining the net benefits of alternative integrated risk reduction strategies in avalanche protection. We appraise the potential of cost-benefit analysis for avalanche protection measures on an analysis of 32 avalanche risk reduction strategies at Schiahorn in Davos, Switzerland.

The results show that the current protection strategy produces the highest net benefits among those considered. Evacuation of people out of the endangered areas proved to be a very efficient measure. The results of the net benefit calculations are highly sensitive to initial assumptions like efficiency of evacuation and the value of human life.

We conclude that results of cost-benefit analysis must be carefully interpreted but they constitute a valuable basis for natural hazards planning decisions.