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Alpine natural hazards: Benefits of local structural protection

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The increasing land-use activities in European mountain regions led to a considerable threat by natural hazards such as flash floods and debris flows in areas used for settlement purpose and economic activities. To mitigate associated losses, traditional protective measures, including check dams and retention basins, were commonly implemented by public authorities. However, due to the arising scarceness of public funds, efficient protection alternatives have to be developed to reduce future expenditures. Supplementing the concept of integral risk management, this efficiency can be obtained by local structural protection reducing the vulnerability of buildings and infrastructure facilities considerably. However, data related to the effects of local structural protection measures to reduce losses has not been quantified satisfyingly so far, and the associated decrease in vulnerability has hardly been measured until now. In this paper, results of a comparative standardised cost benefit analysis are presented. Different mitigation strategies were assessed and the benefit of local structural measures was quantified. The results suggest that local structural measures reduce the vulnerability of buildings towards natural hazards considerably, and that they therefore should be considered as either additional or even alternative mitigation measure.