



Social and ethical perspectives of landslide risk mitigation measures

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Landslide risk may be mitigated by use of a wide range of measures. Mitigation and prevention options may include (1) structural measures to reduce the frequency, severity or exposure to the hazard, (2) non-structural measures, such as land-use planning and early warning systems, to reduce the hazard frequency and consequences, and (3) measures to pool and transfer the risks. In a given situation the appropriate system of mitigation measures may be a combination of various types of measures, both structural and non-structural.

In the process of choosing mitigation measures for a given landslide risk situation, the role of the geoscientist is normally to propose possible mitigation measures on basis of the risk level and technical feasibility. Social and ethical perspectives are often neglected in this process. However, awareness of the need to consider social as well as ethical issues in the design and management of mitigating landslide risk is rising. There is a growing understanding that technical experts acting alone cannot determine what will be considered the appropriate set of mitigation and prevention measures. Issues such as environment versus development, questions of acceptable risk, who bears the risks and benefits, and who makes the decisions, also need to be addressed. Policymakers and stakeholders engaged in solving environmental risk problems are increasingly recognising that traditional expert-based decision-making processes are insufficient.

This paper analyse the process of choosing appropriate mitigation measures to mitigate landslide risk from a social and ethical perspective, considering technical, cultural, economical, environmental and political elements. The paper focus on stakeholder involvement in the decision making process, and shows how making strategies for risk communication is a key for a successful process. The study is supported by case study examples from Norway and Italy. In the Italian case study, three different risk mitigation options was presented to the local community. The options were based on a thorough stakeholder involvement process ending up in three different views on how to deal with the landslide risk situation: i) protect lives and properties (hierarchical) ; ii) careful stewardship of the mountains (egalitarian); and iii) rational individual choice (individualist).