A cost–benefit analysis of mitigation options for optimal management of risks posed by flow-like phenomena - DTU Orbit (14/04/2019)

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Decisions associated with life safety risk management of natural hazards can involve significant potential consequences for public safety. Given possible limitations to available societal resources, it is therefore necessary to establish a clear and rational basis for the allocation of resources towards risk management. A viable approach for utilising life safety risk assessment in public safety decisions that are aimed at improving the welfare of the public and other stakeholders is described in this paper. This approach is conceptually based on the principles of the Life Quality Index (LQI) (Nathwani et al. in Affordable safety by choice: the life quality method. University of Waterloo, Waterloo, 1997; Nathwani et al. in Engineering decisions for life quality: how safe is safe enough? Springer, London, 2009). A case study involving the cost–benefit analysis of selected packages of measures for reducing the risks posed by different rainfall-induced flow-like phenomena—which include hyperconcentrated flows, debris flows and landslides on open slopes—in the municipality of Nocera Inferiore (located in the Campania region in southern Italy) is then described. As demonstrated through the case study, the approach enables a clear evaluation of the efficiency and acceptability of the risk mitigation packages and provides vital decision support in their prioritisation and optimisation.

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