



Landslide risk assessment and its use in development planning, highlands of the Outer Western Carpathians, Czech Republic

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Outer Western Carpathians (OWC) in the Moravia region of the Czech Republic have been for a long time recognized as region highly susceptible to landsliding (Záruba 1922-23). Landslide events caused by heavy and prolonged rains in July 1997 caused destruction of 30 houses and interrupted international train connection with the Slovak Republic claiming large direct as well as indirect economic losses (Krejčí et al. 2002, Rybář and Stember 2000).

Up to now almost no attention has been paid to assess landslide risk caused by already existing as well as possible future landslides. The main possible reason is that the risk assessment, evaluation and management well defined in existing Czech codes and standards is not legally enforced on the development planning procedures. Therefore the involved state agencies do not consider this as an important part and useful tool of the landslide damage reduction.

The article presents and discusses qualitative landslide risk assessment of typical rural region of the OWC heavily affected by the 1997 landslide event. It is aiming to find out: i) if the qualitative landslide risk assessment with quantification of possible losses is reliable enough to be considered by local authorities and property owners, ii) if the risk maps provide new and useful information for landslide mitigation as it is performed by the local authorities and iii) under what extend are the local authorities willing to include landslide risk assessment into their decision making?

For that purpose two different hazard maps were prepared. Firstly an expert zonation map was used to delimit hazardous areas of translational slides, earth flows and complex slope deformations. Afterwards an infinite slope stability model coupled with static hydrological model using topographic wetness index as a proxy for pore water pressure distribution (SINMAP) was used to delimit hazard areas of soil slips and slumps. These maps were consequently overlaid with different layers of elements at risk: i) linear features (roads and ski lifts), ii) houses, and iii) land use areas to obtain different risk maps. Moreover a quantification of the elements at risk value in each risk class was made. At the end of this study, the results were presented to the official stakeholders in order to have a feedback if: i) Can be the risk maps used for local authorities? ii) Does the presented landslide risk information would improve preparation of development plans? iii) Do you think, the risk assessment gives you more relevant information than the susceptibility assessment? iv) Do you think it is useful in specific house building permission procedure? v) Would be quantitative risk assessment better?