

Man-induced geological hazard of the Upper Nitra region, Slovakia

Peter Ondrejka, Alena Klukanová, Bednarik Martin, Pavel Lišák, Peter Maas

Comenius University

pavel.liscak@intas.be

An extensive underground excavation of brown coal in the Handlová and Nováky depressions has brought about several harmful geological processes, even disasters. Naturally conditioned slope instability on the margins of the Vtbinik and Kremnický vrchy mountain ranges, made of volcanic sequences, was accelerated by the undermining, which led to a development of several huge rock slides and landslides. The slopes are sown with numerous scarps, some of them reaching width of several meters and penetrating through volcanic formations 300 to 500 m thick into underlying Neogene claystones. Several villages in the Neogene Nováky Depression have been heavily affected by subsidence and some of them had to be abandoned. The processing of airborne orthophotomaps enabled an exact localization of these phenomena in the recent morphology. Detailed Digital Elevation Model was created. Together with landslides and subsidence manifestations, they provided the basic parametric layers for slope stability assessment. Vulnerability maps were constructed, indicating the regional “hot spots”.