



RUPOK - a web-map application for assessment of impacts of natural hazards on the transportation infrastructure

Michal Bíl, Jan Kubeček, Richard Andrášik, Martina Bílová, and Jiří Sedoník
CDV - Transport Research Centre, Brno, Czech Republic (michal.bil@cdv.cz)

We present a web-map application (www.rupok.cz) designed for visualization of losses caused by natural hazards to the transportation infrastructure. This application is an output of a project in which we analyzed direct, indirect and network-wide impacts of major natural disasters which hit the CZ as of 1997.

When natural disasters hit a road network the results are often a number of closed road sections. Certain roads may be, however, destroyed, whereas the majority of them are usually only closed and can be reopened after a short period of time. While the computation of direct losses (the cost of remedial works) is fairly simple, the evaluation of indirect and network-wide costs is much more difficult.

We created a database of interrupted road and highway sections due to natural processes which includes data since 1997 and which is automatically updated. 6,828 records concerning interrupted communications located on 2,879 road sections are included in the database for the 1997 - 2014 time period. Flooding caused 37 % of the traffic interruptions, followed by fallen trees (22 %), landsliding (5 %) and rockfalls (2 %).

The RUPOK webpage contains information on the probabilities of transportation section interruptions due to natural processes as well as the impacts of possible interruptions. The direct losses are depicted as monetary values per road section unit. The values are calculated on the basis of official tables including the prices for construction works. The indirect losses were calculated on the basis of the best alternative route expenses and as traffic intensities affected by a road section interruption.