



Multi –risk assessment at a national level in Georgia

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Work presented here was initiated by national GNSF project ” Reducing natural disasters multiple risk: a positive factor for Georgia development “ and two international projects: NATO SFP 983038 ” Seismic hazard and Risk assessment for Southern Caucasus-eastern Turkey Energy Corridors” and EMME ” Earthquake Model for Middle east Region”. Methodology for estimation of ”general” vulnerability, hazards and multiple risk to natural hazards (namely, earthquakes, landslides, snow avalanches, flash floods, mudflows, drought, hurricanes, frost, hail) were developed for Georgia. The electronic detailed databases of natural disasters were created. These databases contain the parameters of hazardous phenomena that caused natural disasters. The magnitude and intensity scale of the mentioned disasters are reviewed and the new magnitude and intensity scales are suggested for disasters for which the corresponding formalization is not yet performed. The associated economic losses were evaluated and presented in monetary terms for these hazards. Based on the hazard inventory, an approach was developed that allowed for the calculation of an overall vulnerability value for each individual hazard type, using the Gross Domestic Product per unit area (applied to population) as the indicator for elements at risk exposed. The correlation between estimated economic losses, physical exposure and the magnitude for each of the six types of hazards has been investigated in detail by using multiple linear regression analysis. Economic losses for all past events and historical vulnerability were estimated. Finally, the spatial distribution of general vulnerability was assessed, and the expected maximum economic loss was calculated as well as a multi-risk map was set-up.