Rockfall Hazards Modeling on the Imereti Limestone Massif in the Kviriila River Canyone

Nikoloz Kapanadze

E-mail: nikoloz.kapanadze691@ens.tsu.edu.ge

Department of Geography, Faculty of Exact and Natural Sciences

Ivane Javakhishvili Tbilisi State University

3, I. Chanchavadze Ave., Tbilisi, 0179, Georgia

Rockfall is a natural phenomenon, which develops very fast and brings considerable damage to the living environment, different infrastructure facilities and threat to human lives.

For the prevention of the above-mentioned problems, various protection mechanisms should be devised in addition with the rational assessment of early threats and their modeling. This is necessary for taking precautionary measures and for preventing expected damage. The specific topic includes the assessment of hazards. Introducing safety precautionary assessment by using different mechanisms as well as division of threats into risk zones.

The master's thesis presents rockfall hazards modeling on the Imereti limestone Massif in the Kvirila River Canyon, also comprehensive analysis of threats and defense strategies. Master thesis underlines the significance of implementation of modern research methodologies for studying hazards (rockfalls and landslides). The aim of the study is to determine the potential impact of rockfalls in the specific area by employing advanced modeling mechanism, specifically Rockfor3D (software).

The research embraces multidisciplinary and interdisciplinary approaches, which includes geological, geotechnical and engineering principles in order to assess economical and the danger circumstances for human lives caused by hazards (rockfalls and landslides). Apart from this, it evaluates the effectiveness of different Rockfall protection nets and mitigation strategies used to minimize hazard effect around infrastructure and populated areas.

The master's thesis contributes to delivering valuable information on specific challenges and the effectiveness of (existing) safety measures in the research region of rockslide formations.

The results underline the significance of exact assessments and precautionary mitigation strategies in the region prone to rockfall. The knowledge gained by the thesis should be considered by local government for protecting human lives, infrastructure; for preventing economical damage as well as executing right measures.

In total, this master's thesis presents not only the comprehensive analysis of rockfall hazards but serves as a valuable resource for national and regional scale future studies which aim at reducing risks connected to the rockfall incidents.