

Challenges in Landslide Prevention and their Management through Advanced Technologies

Vardges Grigoryan

Faculty of Construction, National University of Architecture and Construction of Armenia (NUACA), Yerevan, Armenia

Ashot Mkhitaryan

Faculty of Construction, National University of Architecture and Construction of Armenia (NUACA), Yerevan, Armenia

Abstract

Landslides represent a critical natural hazard in the Republic of Armenia, significantly affecting infrastructure safety and long-term land use. This study investigates one of the most landslide-prone transport corridors—the Abovyan–Shorbulaq–Sovetashen bypass road—through field observations and engineering analysis, highlighting the consequences of inadequate geological and hydrogeological investigations. The results demonstrate that deep-seated, water-saturated clay layers, rather than surface slope geometry alone, are the primary drivers of progressive deformation and structural failure. The paper emphasizes the necessity of multidisciplinary site investigations and continuous monitoring prior to construction. Finally, the potential role of advanced technologies, including Building Information Modeling (BIM), artificial intelligence (AI), and modern sensing systems, is discussed as a pathway toward more effective landslide risk mitigation.

Keywords

Natural hazards, landslide, deformation, block movement.

