Natural Hazards Risk Assessment for Disaster Mitigation

Understanding and raising awareness of the risks posed by natural hazards are fundamental to enhancing community resilience to disasters. The Sendai Framework for Disaster Risk Reduction 2015–2030 emphasizes the importance of proactive measures to anticipate, manage, and mitigate disaster risks. These actions aim to minimize economic and social impacts while safeguarding public health, socioeconomic assets, cultural heritage, and ecosystems at both community and national levels.

While the frequency of disasters caused by meteorological events—such as floods, storms, and droughts—has risen due to climate change, the occurrence of disasters induced by earthquakes and tsunamis remains historically constant. Nonetheless, other anthropogenic factors, such as improper land use in densely populated areas and coastal zones, have contributed to increased risk exposure and community vulnerability.

This research explores concepts, methodologies, and predictive approaches for assessing risks associated with natural hazards, including earthquakes, river and sea floods, meteotsunamis, tornadoes, hydrological and meteorological droughts, liquefaction, and multi-hazard scenarios. The employed methodologies encompass quantitative, semi-quantitative, and qualitative risk assessment techniques; risk analysis at varying spatial scales; multi-hazard assessment frameworks; real-time hazard monitoring and early warning systems; disaster mitigation strategies; and risk management and emergency planning at multiple scales.