Enhancing readiness for seismic resilience in Kota Belud, Sabah through a comprehensive vulnerability assessment

ABSTRACT

Seismic resilience is of paramount importance in regions vulnerable to seismic activity, and this study focuses on enhancing seismic resilience in Kota Belud, Sabah. The unique geological and geographical context, compounded by its proximity to tectonic plate boundaries, exposes Kota Belud to significant seismic risks. The Ranau 2015 earthquake, which occurred in the vicinity, serves as a stark reminder of this vulnerability. Moderate earthquakes, with the potential to cause significant damage, have a range of approximately 100 kilometers from their epicenters, a critical consideration for Kota Belud. This paper explores the damages caused by the Ranau earthquake, emphasizing the need for comprehensive vulnerability assessment and enhanced seismic resilience in the region. The study employs the Rapid Visual Screening (RVS) method to assess the seismic vulnerability of 16 buildings in Kota Belud. The methodology involves preliminary work to streamline on-site RVS surveys, and damage assessment based on FEMA P-154 standards. Results indicate that most buildings fall within Potential Damage Grade 3, highlighting the importance of seismic resilience strategies. A Geographic Information System (GIS) map is created to visualize the seismic risk distribution across Kota Belud, providing valuable insights for disaster mitigation and emergency response planning. The study underscores the necessity of addressing seismic resilience challenges in Kota Belud to ensure the safety and resilience of its communities.