Scientific Wisdom behind Yogyakarta Palace's Sustainable Resilience to Natural Hazards

Lakshita, Najmuna

Fitri, Sakina

Yogyakarta is one of provinces in Indonesia having high potential to be affected by natural hazards such as earthquakes, volcanic eruptions, tsunamis, floods, landslides and strong winds. On the other hand, a complex of building called Yogyakarta Keraton or Palace has been able to survive for more than 260 years. This fact has been a motivation for us to investigate factors that support Yogyakarta Palace’s sustainable resilience to natural hazards. Data collection was conducted through literature study and observation of secondary data from relevant government and academic institutions. Data were analyzed and interpreted spatially to understand the distribution of natural hazards their effects to the Palace. Geologically, Yogyakarta is characterized by the presence of volcanic deposits, volcanic rocks, sedimentary rocks, and intrusive rocks. An active Opak fault has been identified traversing southwest-northeast direction. The shallow earthquake hypocenters in Yogyakarta are mainly distributed in the vicinity of the fault and none of them appear very near to the Palace. The Palace is built on a low peak ground acceleration area indicating lower risk of structural damage. The Palace was built on shallow alluvial relatively denser than the surrounding sediment soils. The traditional structure of the building mainly comprises of strong wooden poles whose joints and junctions make the structure withstands major earthquakes. Although Merapi Volcano erupts frequently, its lava, pyroclastic and lahar flows never reach the Palace except volcanic ash. Hydrologically, the Palace is safe from threat of flooding and tsunami, and its flat terrain minimizes the potential of landslide occurrence. Keywords : Yogyakarta’s Palace, natural hazards

Awards Won: