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Probabilistic Seismic Hazard Assessment in Kenya and Its Vicinity

Seismic hazard assessment in Kenya is very crucial due to great and rapid spread of large development programs especially, the nuclear power plants and oil and gas, stations that are envisaged to be established under the Vision 2030. Although Kenya is considered a country of low to moderate seismic activity, it has experienced numerous historical large earthquakes and damage has been reported ranging from minor to great. In the past, because of under-development, the effects of major earthquakes in Kenya have been deceptively low. However, this situation is rapidly changing, with development programs moving into the earthquake-prone areas, which will bring vulnerability to damaging earthquakes. The tectonic activity of Kenya has been reviewed. All magnitudes were homogenized to moment magnitude scale and declustered. Seismic source zones parameters have been modeled from 103-year catalogue. Appropriate ground motion prediction attenuation equation is adopted. Then seismic hazard was computed using 50 km interval grid points, utilizing PSHA approach using Openquake program. The results shows high hazard levels in southwestern regions as compared with regions in northeastern part of the study area. Result provides information about earthquake prone areas and seismic risk potentials and, therefore, can be utilized for future earthquake mitigation and preparedness.

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