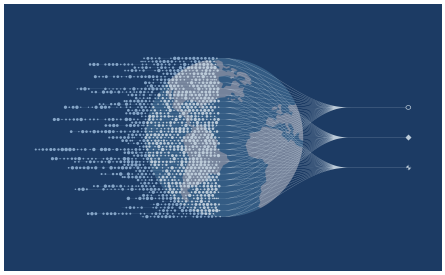

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Vulnerability and Earthquake Risk Assessment for Buildings in Kuwait Governorates, Kuwait

Friday 12 September 2025 10:00 (1 hour)

Studying the seismic risk of buildings and infrastructure in Kuwait is crucial for sustainability and urban development. The probabilistic seismic risk was computed to evaluate the economic and human loss in the Kuwait governorates of Al Farwaniyah, Mubarak Al-Kabeer, Sabah Al Ahmad, Hawally and Al Jahra to help emergency planners design plans to control or mitigate future risks. This study required incorporating the seismic hazards to Kuwait from seismic sources, the exposure risks, and vulnerability, including the properties of buildings and infrastructure in each governorate. The economic loss for each exposure element was calculated using probabilistic metrics. These metrics are the Loss Exceedance Curve (LEC), the predicted Average Annual Loss (AAL) and the Probable Maximum Loss (PML). Seismic risk maps were also created to provide all the necessary information for housing institutions, governments, and transportation, as well as decision makers to reduce infrastructure vulnerability and to design or improve appropriate building codes. Thus, investors, governorates, and insurance institutions can develop effective plans to be used in the reconstruction, renovation, and emergency response to protect vulnerable areas from deteriorating social and economic conditions.

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