عنوان مقاله:

A Platform for Earthquake Risk Assessment in Iran Case Studies: Tehran Scenarios and Ahar-Varzeghan Earthquake

محل انتشار:

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خلاصه مقاله:

The generation of riskmaps in urban area is necessary for risk and disaster management studies and strategic planning. This research is completed in line with the tasks of the GEM-EMME (Global Earthquake Model - Earthquake Model of the Middle East) project and aims at the development of a systematic procedure in estimating the seismic risk to residential buildings and the human loss. The procedure involves four main stages. At first, the geospatial information for buildings and population are compiled and processed as to generate a country-wide geodatabase. In the next phase, ground shaking maps are produced for scenario or actual earthquakes for case studies. The third phase corresponds to the vulnerability modeling of the building stock. In the final phase, the estimate of the building damage and the associated casualty loss are calculated for two case studies. For the first case study, the residential building loss and casualty numbers are calculated for three important earthquake scenarios produced by Mosha Fault (MF), North Tehran Fault (NTF) and Rey Fault (RF) for Tehran. The current findings show that NTF can potentially account for the high number of ۳۴۹۴۲۸ heavily damaged or destroyed housing units and ۱۰۰۶۸۰ severely injured (or dead) people outnumbering MF and RF cases. For Rey fault, the estimated figures correspond to ۲۵۷۳۲۹ heavily damaged (or destroyed) housing units and ۵۴۴۶۸ severely injured (or dead). For the second case study, ۷۷۶۰ heavily damaged (or destroyed) housing units and ۱۰۴۵ severely injured (or dead) people are estimated for Ahar-Varzeghan earthquake (August ۲۰۱۲) that is in close agreement with the actual reported numbers.

کلمات کلیدی:

Earthquake risk, Building inventory, Fragility Curve, Vulnerability, casualty, Risk Assessment, Ahar-Varzeghan earthquake