



Microzonation Mapping Of The Yanbu Industrial City, Western Saudi Arabia: A Multicriteria Decision Analysis Approach

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Urban areas along the western coast of Saudi Arabia are susceptible to natural disasters and environmental damages due to lack of planning. To produce a site-specific microzonation map of the rapidly growing Yanbu industrial city, spatial distribution of different hazard entities are assessed using the Analytical Hierarchal Process (AHP) together with Geographical Information System (GIS). For this purpose six hazard parameter layers are considered, namely; fundamental frequency, site amplification, soil strength in terms of effective shear-wave velocity, overburden sediment thickness, seismic vulnerability index and peak ground acceleration. The weight and rank values are determined during AHP and are assigned to each layer and its corresponding classes, respectively. An integrated seismic microzonation map was derived using GIS platform. Based on the derived map, the study area is classified into five hazard categories: very low, low, moderate high, and very high. The western and central parts of the study area, as indicated from the derived microzonation map, are categorized as a high hazard zone as compared to other surrounding places. The produced microzonation map of the current study is envisaged as a first-level assessment of the site specific hazards in the Yanbu city area, which can be used as a platform by different stakeholders in any future land-use planning and environmental hazard management.