

Estimating the minimum economic costs from possible tsunami of Makran Subduction Zone in Chabahar Bay

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Abstract

Among the marine natural hazards, tsunami is a natural disaster that has effect on both human's life and coastal ecosystems and its results will remain for longtime. Possibility of tsunami in south of Iran has been predicted. According to the documents in that region last tsunami has been occurred in 1945. Emergency risk managers and local government planners should be aware of building vulnerability and total damages and losses of probable tsunami in order to set suitable strategies for risk management. The economic impacts of tsunami are categorized in four sectors: 1- social sectors, 2- infrastructure, 3- productive sectors and 4- cross-sectoral.

In this research we use PTVA model to assess the vulnerability of buildings and housing which are the important part of social sector. For other sectors we have applied methods, probable maximum loss and benefit transfer for evaluation. The estimations are carried out in two scenarios include: worst scenario and best scenario depends on the severity of earthquake. According to tsunami modelling for Makoran region, inundation will happen extensively with 9 rishter earthquake while with less than this degree we are not face with large areas with flood.

The results show that total estimation of damages and losses from probable tsunami in

Chabahar Bay is about \$100.3 billion in worst scenario and in best scenario the damages and losses will be around \$800 million. The large amount of this cost is due to two ports in the bay which are responsible for more than 20,000 tons of trades.

The finding indicates that policy makers should be prepared for this hazard by designing policies and programs for mitigating the impact of tsunami on humans and coastal assets.

Keywords

Tsunami, Probable maximum loss, PTVA model, Chabahar bay, Economic valuation, The zone-based damage estimation, Makran Subduction Zone (MSZ)