

Disaster Risk Management Studies of İstanbul Metropolitan Municipality

Mahmut Baş, Osman Kılıç, Ahmet Emre Basmacı

*İstanbul Metropolitan Municipality Directorate of Earthquake and Ground Analysis. Sarachane / İstanbul
TURKEY*

E-mail : mahmut.bas@ibb.gov.tr

Abstract

İstanbul Metropolitan Municipality Directorate of Earthquake and Ground Analysis carries out assessment of possible risks and development of prevention strategies before an earthquake that may occur in İstanbul where it is regarded to be the financial, commercial, educational and industrial center of Turkey. Earthquake risk analysis, Earthquake Master Plan and microzonation studies are conducted to make İstanbul an earthquake safe city. Furthermore, risk of all building inventory and infrastructures are being determined and rehabilitated within the boundary of our authorization framework. Social and economical studies have been performed to prepare our city against earthquakes.

It is an underlined fact in İstanbul Earthquake Master Plan that occurrence of earthquakes can not be prevented but damages and losses can be mitigated by the application of planning and engineering tools. Microzonation is one of the best sound practice specifically serves for urban transformation and infrastructure projects that are put into practice step by step within the districts where earthquake and building risks are high as an outcome of Earthquake Master Plan.

Microzonation work follows prioritization of areas in terms of high population density and buildings with risky local soil conditions. The aim of microzonation is to produce a 1/2000 scale multi hazard approach map that is related to land suitability concept which constitutes a basis for the reconstruction plans. Microzonation is an engineering approach with a strong scientific basis in determination of areas with different potential of hazard and it provides planning suggestions to urban transformation and development. Project within an area of 182 km² is completed at the southern part of the European side of İstanbul and going on at the Asian side of İstanbul with an area of 458 km². The project at the Southwestern section of İstanbul with an area of 700 km² will be initiated. Project area is divided into 250m cells. Ground shaking, liquefaction, consolidation, landslide, flooding, surface faulting hazards are classified and mapped for each cell. After the analysis of geological, geotechnical and geophysical measurements and evaluation: Earthquake Hazard, Tsunami Hazard, Slope, Engineering Geology, Ground Water Level, Fundamental Period, Faulting, Ground shaking,

Inundation, Shear Wave Velocity and Site Classification Maps are obtained. “Land Suitability Map” is derived from the combination of inputs using multi-hazard approach.

Microzonation is an urban planning tool which consists of multi-hazard risk analysis findings from many engineering disciplines. Results are analyzed with a holistic approach. Methodology is used in planning of the location of residential housing areas, risk identification in urban transformation, routes of tunnels and bridges, feasibility of viaducts and engineering structures.

A disaster education training center is being designated to increase the awareness of people on prevention against various types of disasters including earthquakes, liquefaction, storms and fires. All of these hazard types will be introduced by simulators and trainings. Moreover, planetarium, 4D video, emergency first aid, audio, emergency communication, smoke experience and library facilities will promote the public awareness against disasters to keep the awareness concept more lasting and effective.