Department of Earthquake Risk Management and Urban Improvement

Directorate of Earthquake and Geotechnical Investigation

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Directorate of Earthquake and Geotechnical Investigation in few words:

- Founded in 1994

Main responsibilities:

- To plan and execute projects and surveys, as well as produce maps and reports within the scope of earthquake and ground investigation within its jurisdiction areas,

- To carry out or have work done on the determination of urban risks, the creation of disaster hazard and risk maps,

- To give opinions on geological, geophysical and geotechnical investigation reports prepared by municipalities, other public institutions and organizations, private or legal persons, within the scope of zoning and urban planning.
Directorate of Earthquake and Geotechnical Investigation in few words:

- Some of Major projects:
  - Landslide Awareness Project (2020)
  - Tsunami Action Plan (2019)
  - Probable Earthquake Loss Estimates for Istanbul Province (2019)
  - Tsunami Risk Investigation in the Marmara coasts of Istanbul (2018)
  - Social Vulnerability Research in the Face of Disasters in Istanbul Province (2018)
  - Mega City Indicator System (MegaIST) (2012)
  - Istanbul City Geology (2011)
  - European and Anotolian Side Microzonation Projects (2007 and 2009)
  - Istanbul Province Disaster Prevention/Mitigation Basic Plan Study Including Seismic Microzonation (2002)

And many more…
Istanbul Province Disaster Prevention/Mitigation Basic Plan Study Including Seismic Microzonation (2002)

Objectives:
- to compile seismic microzonation maps
- to advise on new building construction for earthquake resistant urbanization
- for the seismic disaster prevention/damage reduction plan for the city of Istanbul and its surroundings.

* This study not only concentrated on the life loss or injured people, but also all engineering structures such as buildings, tunnels, bridges, gas or water pipes, drainage systems, etc.
European and Anotolian Side Microzonation Projects (2007 and 2009)

* Geological, geotechnical and geophysical investigations within the project area are carried out.
* Vulnerable areas are determined depending on the earthquake effect and local soil conditions.
* New engineering solutions are developed in terms of earthquake-soil-structure interaction.
* Landuse Maps are prepared.
* The results are also used as a base for earthquake hazard and tsunami analyses.
MegaIST is a disaster risk analysis that focused on the social vulnerability and the physical damages (life loss, all damaged structures, fire, etc.). The capacity for disaster recovery has also been revealed.
• 3,500 - 5,000 very heavily damaged buildings (0.4% of all building storage)
• 20,000 - 30,000 heavily damaged
• 90,000 - 110,000 moderately damaged
• 15,000 - 35,000 life loss
• 50,000 - 75,000 injured
• Loss (structural damage) 26B TL
• Total loss 80-100B TL,
The possible tsunami that will occur after the possible Istanbul earthquake (Mw=7.5), both seismic and triggered landslides, were determined and a tsunami hazard analysis was made for all Marmara coasts of Istanbul.

Different seismic and landslide scenarios were used for the calculation. According to the worst case scenario:

* Appx. wave height: 10m (eastern coasts of Istanbul)
* Arrival time: in about 8 mins
* Inundation distance: up to 150 m
Tsunami Action Plan (2019) and Field Studies
Thank you for your attention...