TURKEY is prone to mainly three types of natural disasters:

- **Earthquakes:**
  - 70% of the population living in seismically active areas.
  - 66% of the country is located on active fault zones.
  - 75% of damaged buildings and %64 of total disaster losses in the last century are due to earthquakes.

- **Floods:**
  - Mostly in coastal plains and exacerbated by deforestation, erosion and ignorant development.
  - 15% of total disaster losses are due to floods.

- **Landslides:**
  - 25% of country area is exposed to landslide hazard.
  - 11% of total population is located in landslide areas.
  - 16% of total disaster losses are due to landslides.
Disaster management is a problem of sustainable development, not just that search and rescue ...

Summary Data on Disasters Caused by Natural Hazards (1980-2010) and Number of Human Casualties

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Nb. of events</th>
<th>Percentage</th>
<th>Total deaths</th>
<th>Total affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake</td>
<td>73</td>
<td>1.53</td>
<td>20.636</td>
<td>15.913.252</td>
</tr>
<tr>
<td>Epidemic</td>
<td>No data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landslide</td>
<td>811</td>
<td>16.97</td>
<td>233</td>
<td>91.081</td>
</tr>
<tr>
<td>Flood</td>
<td>172</td>
<td>3.59</td>
<td>75</td>
<td>69.788</td>
</tr>
<tr>
<td>Forest Fire</td>
<td>1.623</td>
<td>33.75</td>
<td>19</td>
<td>Over 20 hectares</td>
</tr>
<tr>
<td>Rockfall</td>
<td>247</td>
<td>5.16</td>
<td>18</td>
<td>26.747</td>
</tr>
<tr>
<td>Fire</td>
<td>275</td>
<td>5.75</td>
<td>79</td>
<td>364</td>
</tr>
<tr>
<td>Avalanche</td>
<td>209</td>
<td>4.37</td>
<td>195</td>
<td>18.560</td>
</tr>
<tr>
<td>Meteorological</td>
<td>1.378</td>
<td>28.84</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Disaster Total</td>
<td>4.778</td>
<td>100.00</td>
<td>21,261</td>
<td>16.119.792</td>
</tr>
</tbody>
</table>

www.afad.gov.tr/tuaa
1999 Marmara Earthquake, 7.4 Richter

- 17480 lives lost
- 113,000 housing units and business premises were completely destroyed, 264,000 damaged to varying degrees
- Up to 675,000 people were forced to leave their homes
- 10-15 billion US$ direct cost

Lessons learned from Marmara Earthquake

**Communication**
- Communication failed
- Telephone lines were out of order in first 48 hours
- Mobiles did not function

**Losses / Problems**
- Public buildings and infrastructure seriously damaged
- Sub-standard buildings and infrastructure
- Hazard ignorant development
- Lack of code enforcement
- Improper inspection during construction
- Corrupted permitting and licensing

**First Aid & Rescue**
- Lack of organization and coordination in search & rescue activities
- Cantic situation
- Bureaucracy inhibiting efficiency and effectiveness
- Insufficient logistical support
- Voluntary efforts were not trained and organised

**Serious Resource Gap**
- 10-15 billion $ as direct cost
- %5-7 of Turkey’s GNP
In the past
• Fate
• Reactive
• Recovery
• Wait and see
• Ex-post
• Crisis management
• Ad-hoc efforts
• Development at risk

New Strategic Approach
• Choice
• Proactive
• Mitigation
• Anticipate and prevent
• Ex-ante
• Risk management
• Comprehensive approach
• Sustainable development

Paradigm Shift in TURKEY;

Istanbul

More than 40% of Turkish GNP is generated in the region.

13-14 million people, 20% of Turkey’s population, live in İstanbul.

Prepared by M.S. Bursa and K.G. Elgin
Istanbul

- Comparable seismic risk degree with San Francisco, Los Angeles and Tokyo cities
  - Probability of occurrence of a large earthquake in next 30 years is greater than %62
  - Probability of occurrence of a large earthquake in next 10 years is greater than %20

- Impacts after a probable 7.5 Richter scale earthquake in Istanbul;
  - Approximately 70,000 dead people, 120,000 heavily injured people, 400,000 lightly injured people
  - Direct economic loss ~50 billion US $

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Istanbul Seismic Risk Mitigation and Emergency Preparedness Project: ISMEP

**Country / Region**: Turkey / Istanbul

**Project Duration**: 2006 +

**Implementation**: Istanbul Special Provincial Administration
- Istanbul Project Coordination Unit (IPCU)

**Finance**:
- World Bank
- European Investment Bank
- Council of Europe Development Bank
- Islamic Development Bank

**Loan Amount**: EURO 1.2 Billion (WB-EIB-CEB-IDB)
ISMEP Project Phases

Phase I
2002-2005
- ISMEP Project Preparations
  - Ownership
  - Prioritization
  - Budget allocation
  - Comprehensive approach
  - Risk reduction strategy

Phase II
2006
- Project Organization
  - Local Administration
  - Establishment of IPCU
  - Development of project team
  - Steering Committee

Phase III
2006 +
- Implementation
  - Socially acceptable and human oriented
  - Technical feasibility and harmony with international standards
  - Appropriate financial and economic solutions
  - Working with multistakeholders

Phase IV
- EXPERIENCE AND KNOWLEDGE SHARING
  - Establishment of a centre of excellence in İSTANBUL

Phase III Implementation

A. Strengthening Emergency Management Capacity
- Emergency Communication Systems
- Emergency Management Information System
- Strengthening the Institutional Capacity of DED
- Upgrading the Emergency Response Capacity
- Public Awareness and Training

B. Seismic Risk Mitigation for Priority Public Buildings
- Retrofitting
- Reconstruction
- National Disaster Studies

C. Enforcement of Building Codes
- Public Awareness
- Development of Regulatory Framework
- Voluntary Accreditation and Training of Engineers
- Streamlining of Building Permits Issuance Procedures

ISMEP Components
Component A
Enhancing Emergency Preparedness

**Communication Infrastructure**
- To enhance uninterrupted communication system;
  - Analog FM Radio Infrastructure strengthened and extended to cover provincial city limits.
  - Peripherial hardware investments done to have effective communication between agencies;
    - Istanbul Disaster and Emergency Directorate
    - Provincial Health Directorate
    - Istanbul Search and Rescue Unit
    - Provincial Police Department
- Investments:
  - Mobile Relays
  - Regional Relays
  - Analog Radio
  - Radio exchange ve management platform
  - Other peripherial investments

**Establishment Of Emergency Management Information System**
- Procurement of Computers, Network Devices and Active Devices for Istanbul Disaster and Emergency Directorate was completed.
- Software Development for İstanbul Disaster Management Information System has been started to ensure;
  - efficient resource management
  - staff assignment for crisis management
  - organize search and rescue activities
  - etc.
Component A
Enhancing Emergency Preparedness

Strengthening the Institutional Capacity of DED

Istanbul Disaster and Emergency Directorate Command Control Centers

Hasdal Command and Control Center
European Side

Akfirat Command and Control Center
Anatolian Side
Component A
Enhancing Emergency Preparedness

**Equipments:**
- Emergency service vehicles
- Emergency operation vehicles
- Communication vehicles
- Ambulances
- Rescue equipments
- Medical Equipments
- Containers
- Cold depots
- Mobile lighting towers
- Others

**Agencies/Institutions:**
- İstanbul Disaster and Emergency Directorate
- Provincial Health Directorate - UMKE
- Search and Rescue Unit
- Provincial Police Department
- Red Crescent

Component B
Seismic Risk Mitigation for Priority Public Buildings

**FEASIBILITY STUDIES**

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Campus</th>
<th>Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>796</td>
<td>1128</td>
</tr>
<tr>
<td>Hospitals</td>
<td>31</td>
<td>310</td>
</tr>
<tr>
<td>Outpatient clinics-health centers</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Administrative buildings</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>Dormitories</td>
<td>8</td>
<td>37</td>
</tr>
<tr>
<td>Social service buildings</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>960</td>
<td>1654</td>
</tr>
</tbody>
</table>

- Feasibility study of 1654 building has been completed in 960 campuses. 238 buildings in 207 campuses are being studied.
EDUCATION SECTOR

- Retrofitting and Reconstruction Works:
  - 660 schools,
  - 2,687,535 m² construction area,
  - 1,087,911 students, teachers

HEALTH SECTOR

Seismic Retrofitting / Reconstruction Works

- 12 hospitals
- 49 polyclinics
ISMEP Health Investment Program

- **Ümraniye** Pediatrics and Maternity Hospital
- **Kartal** Training and Research Hospital
- **Okmeydanı** Training and Research Hospital
- **Goztepe** Training and Research Hospital
- **Marmara University** Training and Research Hospital

Construction Area: 923,000 m²
Bed capacity: 4,508 beds
Total Budget: 600 Million USD
Actors in Retrofitting Process

- Teachers
- Students
- Parents
- Reached app. 250,000 people..
Public Awareness and Training

Training Programs for Disaster Preparedness

• Individual/Family Disaster Preparedness Training Program
• Disaster Preparedness Training Program for Neighborhood Disaster Volunteers
• Disaster Preparedness Training Program
• School Disaster Preparedness Training Program
• Hospital Disaster Preparedness Training Program
• Business Community Disaster Preparedness
• Survival under Extraordinary Conditions Training Program Psychological First-Aid Program Structural Awareness Training Program
• Non-Structural Risk Awareness Training Program
• Retrofitting of Public Buildings
• Awareness of Compulsory Earthquake Insurance.
• Urban Planning and Construction for Disaster Mitigation
  – Local decision makers
  – Technical staff
  – Community representatives

Web Site: www.guvenliyasam.org
Public Awareness and Training

<table>
<thead>
<tr>
<th>Before and During a Disaster &amp; Emergency</th>
<th>Individual Preparedness</th>
<th>Community Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFE LIFE 1</td>
<td></td>
<td>LOCAL DISASTER VOLUNTEER</td>
</tr>
<tr>
<td>SAFE LIFE 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2009-2012
- 70,000 Safe Life Volunteer

2015 Target
- 200,000 Safe Life Volunteer

Component B
Seismic Risk Mitigation for Priority Public Buildings

**Project**: Inventorization and Multi-Hazard and Earthquake Performance of the Cultural Heritage Buildings in Istanbul

**Client**: Republic of Turkey, Ministry of Culture and Tourism, Governorship of Istanbul, Special Provincial Administration, İstanbul Project Coordination Unit

Archeology Museum
Main Objectives:

- Mitigating the seismic risks associated with the cultural and historical property (heritage) in İstanbul

- Strengthen the capacity for proactive measures in order to mitigate the damaging and devastating effects of future earthquakes on cultural and historical heritage buildings and other historical and cultural structures and assets in Turkey, such as museums and museum displays

Project Stages

- Literature Survey
- Field Surveys
- Vulnerability Assessment
- GIS Database
- Final Risk Assessment and The Mitigation Measures
Component C
Building Code Enforcement

- Training of Civil Engineers on Retrofitting Code (dated 06.03.2007 (no:26454) Official Gazette) is being implemented under the protocol signed with the Ministry of Public Works and Resettlement.

In this scope:
- Training materials were prepared.
- Training of trainers was completed.
- Training of civil engineers in selected provinces throughout Turkey has been started. By the end of April 2012, 3631 engineers were trained.

Projects in the pilot municipalities:

- Streamlining and monitoring of building and occupation permit issuance procedures in the pilot municipalities (Bağcılar ve Pendik)

- Undertaking practical and restructuring measures by re-engineering activities (Capacity building activities, software/hardware provision and integrated data management services and call center for better building code enforcement)
Data collection, updating and integration services-Digital Archive System for Documents of Development Plans

**Project Benefits**

- Work flows (all related applications) are integrated with web site, service desk and call center (e-municipality services)

- Citizen satisfaction (according to records of the municipalities) increased.

- Digital archive system is fully used in both municipalities. (documents can be loaded from the computer and produced documents can be uploaded automatically to archive)

- Building permits are given in digital form in both municipalities
Phase IV: Knowledge and Experience Sharing

- A centre of excellence in DRR

- Proposed Functions Of The Center
  - Providing leadership and operational trainings on earthquake risk reduction and preparedness in areas such as:
  - Retrofitting techniques on schools and hospitals
  - Disaster management response
  - Public awareness
  - Emergency management and communications systems
  - Building code enforcement
  - Volunteer systems
  - etc.

- Sharing our own experiences as well as other good experiences from other countries

- Providing theoretical and practical training including site visits in Turkey and outside Turkey

THANK YOU

Kazım Gökhan Elgin
Director of ISMEP