

ISTANBUL SEISMIC RISK MITIGATION AND EMERGENCY PREPAREDNESS PROJECT (ISMEP)



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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.

Earthquake Toll in Turkey

- Average annual direct economic costs exceeded 1 billion US\$ in the last decade.
- Average annual number of earthquakes equal or greater than a magnitude of 5.5 on the Richter scale: 0.76 (6th in the world)
- Number of people killed per year due to earthquakes: 950 (3rd in the world)
- Average number of people killed per million inhabitants: 15.58 (4th in the world)
- Average physical exposure per year: 2 745 757 people (8th in the world)
- Killed per million exposed – relative vulnerability: 346 people (4th in the world)

Bridge Collapse over Highway



Railway Shift



Bingöl





Earthquakes occurred in Turkey causing substantial loss of life and property since 1990

Earthquake	Date	Loss of Life	Injured	Homeless	Affected Population	Financial Loss (US\$ one million)
Erzincan	13.03.1992	653	3.850	95.000	250.000	750
Dinar	01.10.1995	94	240	40.000	120.000	100
Çorum-Amasya	14.08.1996	0	6	9.000	17.000	30
Ceyhan-Adana	27.06.1998	145	1.600	88.000	1.500.000	500
İzmit Körfezi	17.08.1999	17.480	43.953	675.000	15.000.000	13.000
Düzce	12.11.1999	763	4.948	35.000	600.000	750
Afyon-Sultandağı	03.02.2002	42	327	30.000	222.000	96
Bingöl	01.05.2003	177	520	520	245.000	135
TOTAL		19.354	55.444	972.520	17.954.000	15.361

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

First Aid & Rescue

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

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

Serious Resource Gap

- 10-15 billion \$ as direct cost
- %5-7 of Turkey's GNP

Developments after Marmara Earthquake – Worldbank as a partner

➤ Establishment of Disaster and Emergency Management Agency

- a central coordination and implementing agency under Prime Minister's Office
- restructure and streamline institutional responsibilities for disaster management by consolidating under the Prime Ministry functions until recently spread between three institutions (General Directorates for Emergency Management, Disaster Affairs, and Civil Defense).
- legislation on June 2009

Developments after Marmara Earthquake – Worldbank as a partner

➤ Setting up a National Catastrophic Insurance Program

- compulsory insurance for residential building
- to minimize finance-gap and to transfer risks from individuals and state budget

Some indicators of the CEI as at 31 December 2008:*

- Number of policies in effect : 2.8 million
- Total sum insured currently : USD 100 billion
- Sum insured per dwelling : USD 35.000
- Average premium per dwelling : USD 60

*TURKISH CATASTROPHE INSURANCE POOL - TCPCOMPULSORY EARTHQUAKE INSURANCE (CEI) ANNUAL REPORT 2008

Developments after Marmara Earthquake – Worldbank as a partner

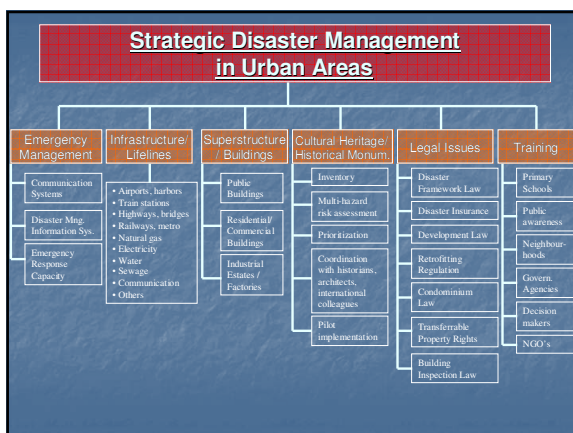
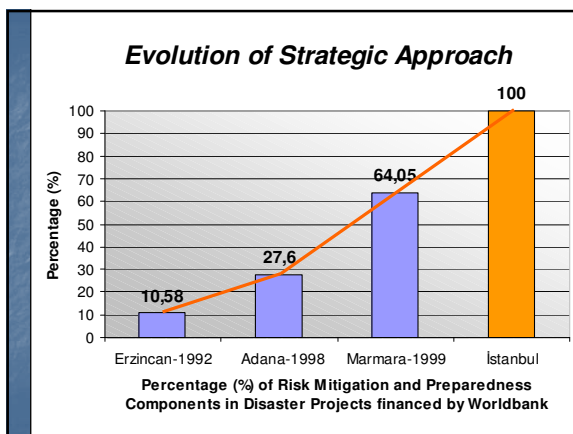
➤ Reconstruction of Buildings

- 14644 housing units,
- 5638 commercial units,
- 25 hospitals / health units,
- 9 schools

➤ Change in Disaster Management Paradigm

- from rehabilitation and recovery to mitigation and preparedness





İstanbul

13-14 million people, 20% of Turkey's population, live in İstanbul. More than 40% of Turkish GNP is generated in the region.



İstanbul

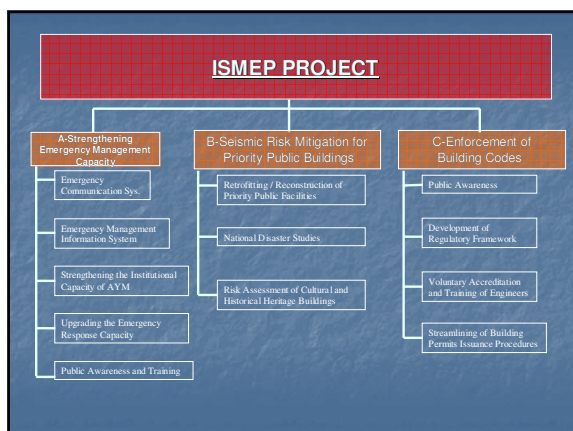
- Comparable seismic risk degree with San Francisco, Los Angeles and Tokyo cities
 - Probability of occurrence of a large earthquake in next 30 years is greater than %50.
 - Probability of occurrence of a large earthquake in next 10 years is greater than %20.
- Impacts after a probable 7.5 Richter scale earthquake in İstanbul;
 - Approximately 70.000 dead people, 120.000 injured-heavily injured people, 400.000 lightly injured people
 - direct economic loss ~30 billion US \$

Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP)

- **Country / Region** : Turkey / İstanbul
- **Project Duration** : 2006-2014
- **Implementation** : İstanbul Special Provincial Administration / İstanbul Project Coordination Unit (IPCU)
- **Finance** : World Bank, European Investment Bank
- **Loan Amount** : (Joint WB-EIB) EURO 610 Million

GOALS

- Strengthening institutional and technical capacity of emergency management.
- Increasing emergency preparedness and response awareness.
- Retrofitting/Reconstruction of priority public buildings.
- Vulnerability inventory and project design for cultural and historical heritage assets.
- Taking supportive measures for the efficient implementation of development law and building codes.



THE PROGRESS IN ISMEP PROJECT

COMPONENT A ENHANCING EMERGENCY PREPAREDNESS

Provincial Disaster Management Centers

- The design and the land allocation studies for the Provincial Disaster Management Center buildings are finalized.
 - European Side – HASDAL
 - Asian Side – FSM KOZYATAĞI







COMPONENT A ENHANCING EMERGENCY PREPAREDNESS

*Enhancement of Analog FM Radio Infrastructure
(Istanbul Health Directorate– Istanbul SAR– Istanbul DMC– Police Department)*

- Mobile Relays
- Regional Relays
- Antenna mast
- Mikrowave Link
- Analog Radio
- Communication switch


Mobile Lighting Tower



Containers



Medical Equipment



Medical Equipment



COMPONENT A ENHANCING EMERGENCY PREPAREDNESS

- Establishment Of Emergency Management Information System
 - Resource management,
 - Supporting risk mitigation efforts,
 - Response and recovery plans, assignments, monitoring,
 - Coordination and sharing of data between organizations,
 - Integration and cooperation of central and local governments,
 -



PUBLIC AWARENESS AND TRAINING

- 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



Public Awareness Training Programs for Disaster Preparedness

PUBLIC AWARENESS AND TRAINING

Books

Information Cards

Brochures

Models



Training Materials

PUBLIC AWARENESS AND TRAINING



Distribution of

- 500.000 brochures,
- information cards,
- 3000 t-shirts,
- 3000 caps,
- 50000 magnets
- 100000 bags

Taksim, Mecidiyeköy,
Beşiktaş, Bakırköy, Kadıköy

August 16-17, 2009
A step forward for a safe life: Get a training

PUBLIC AWARENESS AND TRAINING



82.000 beneficiaries (students, teachers, parents)
trained in 85 schools

Social Guidance and Awareness for the
beneficiaries of retrofitting schools
April-May 2009

COMPONENT B SEISMIC RISK MITIGATION FOR PUBLIC FACILITIES

Building Type	Feasibility Studies	Completed Retrofitting Works	Ongoing Retrofitting Works
Hospitals	28	2	4
Polyclinics	19	1	3
Schools	673	230	80
Administrative	34	1	10
Dormitories	8	3	4
Social Service	10	-	6
TOPLAM	772	237	107

COMPONENT B SEISMIC RISK MITIGATION FOR PUBLIC FACILITIES

SEISMIC RETROFITTING WORKS (completed)

- 230 Schools (390.000 students, 650.000 m²)
- 2 Hospitals & 1 polyclinics
- 3 dormitories
- 1 Service Building



COMPONENT B SEISMIC RISK MITIGATION FOR PUBLIC FACILITIES

SEISMIC RETROFITTING WORKS (ongoing)

- 80 Schools
- 4 Hospitals & 3 polyclinics
- 4 dormitories
- 6 Social Service Buildings

COMPONENT B SEISMIC RISK MITIGATION FOR PUBLIC FACILITIES RECONSTRUCTION WORKS

Completed:

■ 12 Schools

- Demolished 40.000 m², Recons. 82.000 m²
- Demolished 250 classrooms, recons. 360 classrooms

On going:

■ 32 Schools

Planned:

- 3 Hospitals
- 80 Schools
- 1 dormitory



COMPONENT B SEISMIC MITIGATION FOR PUBLIC BUILDINGS



■ Büyükçekmece İhlas İ.Ö.O.

■ Beykoop Ali Çebi İ.Ö.O.



RETROFITTING STUDIES

COMPONENT B SEISMIC MITIGATION FOR PUBLIC BUILDINGS



RETROFITTING STUDIES

COMPONENT B SEISMIC MITIGATION FOR PUBLIC BUILDINGS

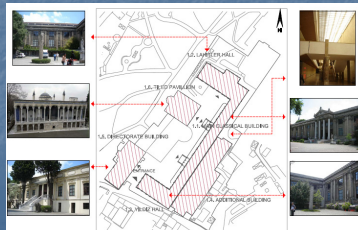


AFTER RETROFITTING



COMPONENT B SEISMIC RISK MITIGATION FOR PRIORITY PUBLIC BUILDINGS

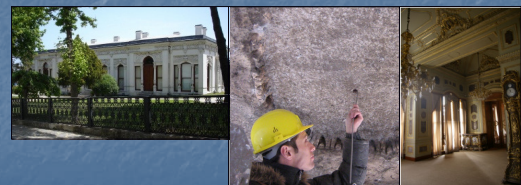
- "Consultancy Services for Inventorization and Multi-Hazard and Earthquake Retrofit Evaluation of the Cultural Heritage Buildings in Istanbul under the Responsibility of the Ministry of Culture and Tourism (Ref: CB 4.1)"
- Consultancy Services are completed.



Archeological
Museum

COMPONENT B SEISMIC RISK MITIGATION FOR PRIORITY PUBLIC BUILDINGS

- The Contract for "Consultancy Services for Earthquake Performance Assessment and Preparation of Structural Seismic Retrofitting Designs for Cultural Heritage Buildings under the Responsibility of the Ministry of Culture and Tourism (CB 4.2)" is signed.
- Studies will be finalised in December 2009.



Mecidiye Kiosk

COMPONENT C Building Code Enforcement

Objectives;

- to improve the efficiency of issuance of building permits, ensure transparency in the pilot municipalities
- to undertake practical and restructuring measures by re-engineering activities (on hardware, software, data management and hotline services).
- to monitor the compliance with the building permits and to identify any illegal construction

Project Activities and Works

1. Data Collection-Updating and Integration Services
2. Optimization of the Functionalities of Development Activities (Document and Archive Management System, and Call Center Service)
3. Supply of Information Technology Infrastructure

COMPONENT C Building Code Enforcement

- Training of approximately 3.000 Civil Engineers – Protocol signed with Ministry of Public Works and Settlement.
 - New Turkish Building Code 2007
 - Vulnerability assessment
 - Damage assessment after disasters

ISMEP PROJECT

Contributions:

- ✓ Prevention of potential loss of life.
- ✓ Mitigation of social, economic and financial effects of a possible earthquake.
- ✓ A model for the design and implementation of other projects and activities within the field of disaster management.

***“WE ARE STRENGTHENING
OUR FUTURE”***

Thank you.

Governorship of Istanbul
Istanbul Special Provincial Administration
Istanbul Project Coordination Unit (IPCU)
www.ipkb.gov.tr