

# Istanbul, Turkey

## Disaster Risk Management Profile

Last Update October 2005

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## Disaster Risk Management Profile



### 1 Introduction

#### Demographic, economic, social and cultural characteristics

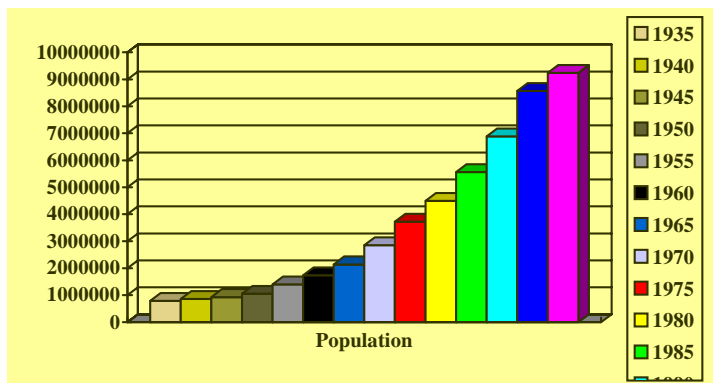
The distinguishing features of the city of Istanbul are its geographic location, unique natural beauty, and the great historical and cultural heritage, which has come to symbolize the city. The first foundations of today's Istanbul were laid down in the 7<sup>th</sup> century *BC*. It was rebuilt and made the capital city (Constantinople) by Emperor Constantine in the 4<sup>th</sup> century *AD*. Since then, for sixteen centuries the city has retained its position as the capital city of Eastern Rome, the Byzantine Empire, and Ottoman Empire. In addition to becoming one of the centers of Christianity under the reign of Emperor Constantine, Istanbul became the most important center in the Islamic world following the conquest of the city by the Ottoman Turks in 1453.

As early as the ancient times the city enjoyed an advantageous position in terms of the control of both the East-West road from Europe to Asia Minor and the sea connection in the North-South direction. Established at the crossroads of human history, Istanbul has for centuries attracted the interests of many emperors, armies, adventurers, merchants, philosophers, and great religious personalities. Poems praising the city have been written.

At present, Istanbul is in many respects more modern than many major cities of the world. This is due to the new investment in the latest technology, and to the

concentrations of wealth and affluence that made it possible. Since the City's rapid progress into modernity only began a few years ago, it is no wonder that most modern available technologies were brought into the city.

This has made this city attractive not only to foreigners and foreign investment but also constitutes a real magnet for people in other regions of the country, particularly from the rural areas, that look for better prospects and quality of living improvements, thus accelerating urban growth, not always in the best possible conditions.



The total area of Istanbul City is 5343 Km<sup>2</sup>. According to last population census, Istanbul's population is 10,018,735 inhabitants (2000), its population grows at a rate of 3.45% mostly

accounting for the countryside migration. The presence of squatters, mass transportation and solid waste disposal are some of the most critical problem the city administration phases, further challenged by the increasing irregular and illegal urbanization and the need of collective housing areas for an estimated population of 13 million by year 2010.

Rapid industrialization has drawn thousands of rural poor to the metropolis, resulting in a vast social gap between 'natives' and migrants and growth rates at treble the national average. Its wealthy elite (about 25%) lives in the newly built suburbs and enjoys the sophistication of Istanbul's society. Over 60% are under 25 years old and enjoy a vibrant contemporary cultural life.

The economy of Istanbul remains solid since it dominates the trade at the national level and also has an important international significance; it counts on both, the most important airport and harbor in the country. Istanbul is identified as Turkey's economic capital. Main sector of the economy relates to provision of services and utilities (60%), manufacturing accounts for the 35% and the primary sector only for the 5%.

### Governance style<sup>1</sup>

According to articles 1 to 3 of the constitution, Turkey is a republic; a democratic, secular and social state governed by the rule of law. The Turkish State is an indivisible whole with a territory and nation. The provisions of the first three articles are specially protected by Article 4, which forbids parliamentary amendment of the first three articles.

Free and competitive elections based on universal participation (Article 67), the existence of more than one freely organized political party, and respect for fundamental human rights and freedoms all reflect the basic features of this modern liberal democracy.

The constitution of 1982 vests legislative authority in the 550 elected deputies of Turkey's Grand National Assembly. The executive branch of the government comprises the president of the republic and the Council of Ministers. The first has no political responsibility while the latter has such responsibilities. The Council of Ministers consists of a prime minister designated by the president and members of parliament. Ministers are nominated by the prime minister and appointed by the president of the republic. The ministers assume collective responsibility for the general policies of the government. At the same time, each minister is individually responsible for matters within their own ministry and the actions of ministry subordinates.

As in other states, the executive also has legislative functions. The regulative power of the executive includes the enactment of regulations, by-laws and law-amending ordinances. The latter, also called ordinances or cabinet decrees, amend existing laws. They provide the executive's delegated legislative function.

According to the principle of judiciary independence, which is protected and safeguarded by the constitution, both the legislative and executive authorities must comply with court decisions. A system for judicial control of the constitutionality of laws, undertaken by the constitutional court, has been in

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<sup>1</sup> Rusen Keles, "Turkish Government Structure from a DM Perspective", 2005

force since 1961. The legality of the administration means that the executive function must be exercised and carried out within a legal framework.

### National hazardscape

Five different earthquakes have affected urban areas of Turkey in the last decade, an estimated number of 20,000 people killed, the vast majority of them through the collapse of residential buildings. Altogether in these earthquakes, seventy thousand buildings have been damaged and about 20,000 completely destroyed. The cost of the damage represented by the collapsed buildings alone has been estimated at USD 5 to 7 billion<sup>2</sup>.

The following table shows recent earthquakes in Turkey and its associated losses:

**Table 1: Recent Earthquakes in Turkey**

Event	Casualties	Damaged Buildings	Collapsed or Heavily Damaged Buildings	Displayed households	Economic Loss USD bn
Erzincan 1992	645	8000	1450	8000	0.75
Dinar, 1995	100	6543	2043	24000	0.25
Adan/Ceyhan, 1998	150	21057	2000	600000	0.5
Kocaeli, 1999	>17000	24000	6000		18
Duzce, 1999	759	10121	800		1
Bingöl, 2004	177	6956	3005	-	-
Elazig, 2004	-	-	-	-	-
Gökova, 2004	-	-	-	-	-

Reference: Gulkan Polat, Managing Urban Risk through enhancing the resilience of building environment, Proceedings of the 3<sup>rd</sup> Earthquakes and Megacities Workshop, Shanghai, November 2001. Completed by Metin Ilkisik October 2005

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<sup>2</sup> Gulkan Polat, Managing Urban Risk through enhancing the resilience of building environment, Proceedings of the 3<sup>rd</sup> Earthquakes and Megacities Workshop, Shanghai, November 2001

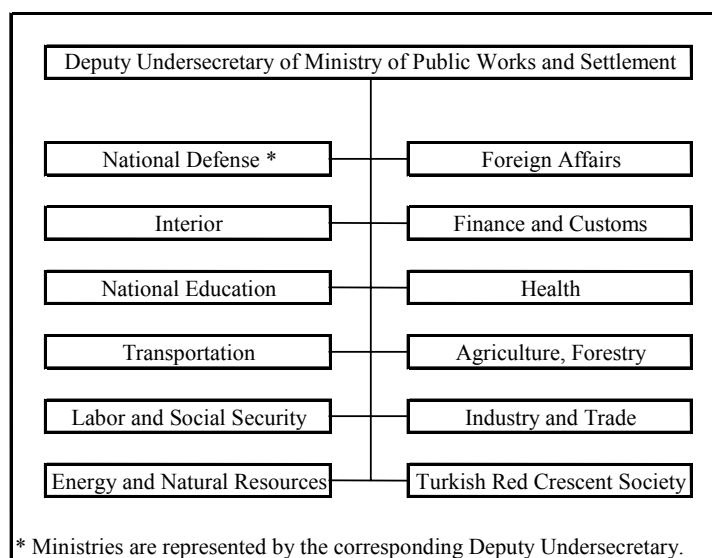
### National disaster management structure and relevant legislation

The chief legal frame of disaster management is Law no. 7269 which is mainly directed towards post disaster organization of humanitarian help, assessment of the damage and finance, although there are some articles that are devoted to duties and responsibilities related to preparedness.

The Ministry of Public Works and Settlements has the authority and responsibility for the coordination of disaster preparedness activities of the central government organizations. Additionally, Directorate of Civil Defense under the Ministry of Internal Affairs and Turkish Emergency Management Directorate (TAY), which was found after the 1999 Earthquake, are responsible for coordination, planning and organization. This tripartite structure, which also includes a number of other side organizations held responsible, constitute a highly complicated and confusing arrangement where the roles in the disaster management is highly obscure.

In addition to this tripartite structure, there are a number of other boards that are activated after a disaster, such as Prime Ministry Crisis Management Center and Central Disasters Coordination Board.

#### **Organization of the Disaster Coordination Council (Central Government)**



At the provincial level, from a legal perspective the central administrative bodies are the ones that are in charge. Following a disaster the appointed Governor

and the district authorities are given extraordinary entitlements for the purposes of management of response activities at the province scale.

The legal foundation for disaster management in Turkey is contained in two laws that provide public intervention capacity and improvement in the efficiency of relief operations after disasters, both administered by the Ministry of Public Works and Settlements:

**The Disaster Law (7269)** which dates from 1959, provincial governors are granted wide powers in the aftermath of a disaster for immediate reconstruction planning. One of its most controversial articles was that every homeowner would have a dwelling built with public funds if its former property was unusable after a disaster, with out discrimination of legal or illegal construction. (this article was rescinded post the 1999 earthquake.

**The Civil Defence Law (7126)** defines the duties of the Civil Defense Organization, which are minimizing loss of life and property during natural disasters and fires, protection and rescue, protection, repair and renovation of crucial public and private organizations, and getting support from the civil public for defense.

**The Development Law (3194)**, which dates from 1985, governs the terms of regulations and procedures for the preparation of urban master plans, private construction through building permits, use of buildings, and provision of shelters, among others. Numerous regulations complement this Law.

**Law of Municipalities (1958)**, dated 1930, constitutes the foundation for DRM at the municipal level.

**Building Supervision Law (4708)**, enacted in 2001

After the huge losses of the 1999 earthquake, a number of important regulations have been enacted, mostly in the form of decrees, two of the most important are cited here:

- Compulsory Earthquake Insurance, decree No. 587, Dec. 1999
- Building Construction Supervision, decree No. 595, April, 2000

### National land use management system and relevant legislation

In terms of central administrative structure, Turkey is divided into provinces on the basis of geographical situation, economic conditions, and public service requirements; provinces are further divided into lower levels of administrative districts. The administration of the provinces is based on the principle of devolution of wider powers.

As can be easily understood from aforesaid regulations, Local administrations are inseparable part of the executive, together with the central government. Local authorities, by decision of their decision-making body, may issue by-laws in order to ensure the application of laws and regulations relating to their particular fields of separation, provided that they are not contrary to these laws and regulations. Also, they can form unions, among them, with the permission of the Cabinet, in order to meet their common necessities collaboratively and efficiently.

The following bodies are responsible for the legislation and regulations concerning human settlements in Istanbul:

- State Planning Organization is responsible for the preparation of Five Year Development Plans or preparation of Regional Plans or having them prepared.
- The Ministry of Public Works and Settlement is responsible, among other aspects, for: the preparation and approval of territorial plans through Planning Law No: 3194/1985; the preparation of land use plans for areas subject to disaster and their approval through Disaster Law No: 7269/1051; the preparations and approval of land-use plans of Squatter Prevention Areas or Rehabilitation Zones through the Squatter Law No: 775/3384;

### Significance of the city to the nation

Historical background of the city is really impressive; founded in the 7<sup>th</sup> century BC as Byzantium, renamed Constantinople in the 4<sup>th</sup> century AD by Roman emperor Constantine the Great, serving as capital of the Empire until the Ottomans captured it in the 15<sup>th</sup> century and made the capital of the Ottoman Empire.



Fragments of this varied architectural inheritance are visible, with stunning Ottoman mosques, classical columns, Byzantine structures, ancient city walls and fine churches.

Istanbul has always been the center of Turkey's economic life. Turkey's major manufacturing factories are settled in the province that produces cotton, fruits, olive oil and tobacco. Food processing, textile production, rubber, metal ware, leather, chemicals, electronics, glass, machinery, paper and paper products, alcoholic drinks, are among the major industrial products. The city has also plants to assemble cars and trucks.

Istanbul has 20% of Turkey's industrial labour and 38% of Turkey's industrial working place. The 55% of Turkey's trade and 45% of the country's wholesale trade<sup>3</sup>. This city contributes with the 40% of all taxes collected in the nation.

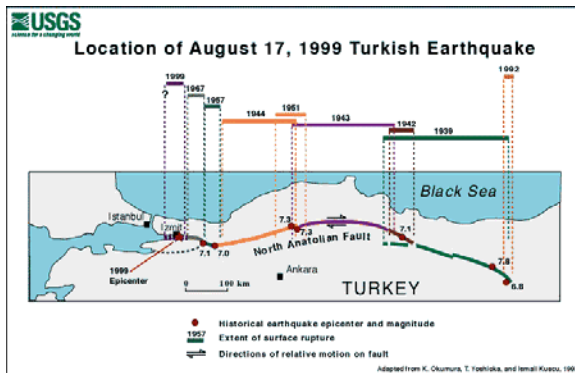
### Geographical setting of the City



The distinguishing features of the city of Istanbul are its geographic location, unique natural beauty, and the great historical and cultural heritage which has come to symbolize the city. Istanbul is the only city in the world that has its surface in two continents, Europe and Asia. The European section is twice the size of the Asian section and it is again split into the old and modern sections by the Golden Horn, a narrow channel of the Bosporous, which also connects the trade routes of the Black Sea to the Sea of Marmara and the Mediterranean. As a result, the city has been a jealously guarded center of world trade since the Byzantine era, and protected by water on three sides, with the natural harbors of the Golden Horn nestled within the city.

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<sup>3</sup> Urban Green Environment Project, <http://www.urgeproject.ufz.de>



Turkey is located in the intersection of a complex tectonic and very active environment due to the interaction of several tectonic plates. The north Anatolian fault is responsible for a series of earthquakes in the last decade, particularly the 1999 one.

In addition, the closeness of

Istanbul to the Marmara fault which continues across the Marmara Sea and which main alignment is capable to produce an earthquake of magnitude  $M_w=7.5$ , pose considerable threat to the city and the country in general.

## 2 Inter-City Linkages

### Internal division of the City



There are 32 district municipalities in Istanbul (2005). Each district has, its own mayor and council with its members elected by the public every five years. In Istanbul, one fifth of

all district council members represent their district in the Municipal Council. The DMs are principally responsible for providing waste management services and building construction permits to their residents. They have their own budgets and revenues. District Municipalities of Istanbul are: Avcılar, Küçükçekmece, Bakırköy, Bahçelievler, Bağcılar, Güngören, Esenler, Büyükçekmece, Çatalca, Silivri, Bayrampaşa, Zeytinburnu, Fatih, Eminönü, Beyoğlu, Beşiktaş, Şişli, Kağıthane, Sarıyer, Gaziosmanpaşa, Eyüp in Europeand side and Üsküdar. Beykoz, Kadıköy, Kartal, Pendik, Tuzla, Ümraniye, Adalar, Maltepe, Sile andSultanbeyli in the Asian side. Kadıköy, is the biggest with a population of 660,619 (2005).

### Governance/management style

The metropolitan model was applied in Turkey according to existing laws. The foundation of the metropolitan administration goes back to 1930 and 1984 when specific laws were passed. The metropolitan council is accepted as the competent authority for decision-making, most of them related to planning, designing programs budgeting, approving the district municipalities budgets, and budget amendments and providing coordination. The bureaucratic structure of the Metropolitan administration is composed of main service departments and assisting departments. The departments are under the direct authority of the metropolitan mayor. They are administered by the Secretary General and are composed of the department heads, managers and officials. They are the main service units of the Greater Metropolis.

There are also assistant commissions to ensure service productivity within the metropolis. These are the Infrastructure Coordination Center, The Transportation Coordination Center and the Consulting Committee

The metropolitan government structure consists of three main organs:

- The Metropolitan Mayor
- The Metropolitan Council
- The Metropolitan Executive Committee

The metropolitan mayor is popularly elected every five years. He is the chief executive and coordinator for the metropolitan area and represents the metropolitan government. He has power of veto over all decisions taken either by the metropolitan council or the district municipal councils, which may, however, override this veto with a two-thirds of majority vote.

The Metropolitan Council, headed by the metropolitan mayor, the main decision making body of a metropolitan municipality, is composed of the Metropolitan Mayor, District Mayors, and one fifth of the district municipal councilors. The members of the council are elected for a five-year period.

The Metropolitan Executive Committee, headed by the metropolitan mayor or a designated deputy, is both an executive and decision making body. Its members are the secretary general of the metropolitan government, and the

heads of the municipal departments of urban planning and development, public works, finance, legal affairs, personnel and administration.

### Formal arrangements

On July 10<sup>th</sup> 2004, a new law was passed, (Act #5216 for Greater Municipalities<sup>4</sup>) which changes the boundaries and the responsibilities of IMM. In accordance to Act 5216, metropolitan or greater municipalities require two sorts of municipal entity within their own boundaries to cope with responsibilities and areas of action divided between metropolitan municipalities and district municipalities.

In this context, the responsibilities of metropolitan municipalities can be summarized as follows:

- To draw up city master plans and approve and supervise the implementation of those drawn up by district municipalities.
- To build and to operate the major infrastructure installations such as water and sewerage system, waste water and solid waste treatment plants, gas and central heating system.
- To deal with the other services which is beyond the capacity of district municipalities.
- To Coordinate and control the activities of the municipalities within its boundaries.
- To settle the conflicts among the municipalities within their own boundaries.
- Selection of solid waste disposal sites; location, construction and operation of cemeteries, major parks, city-scale projects, major roads, bridges, passenger and freight terminals, markets, etc
- Operation and coordination of municipal police and fire services
- Implementation and co-ordination of city-scale joint ventures.

The 1984 Metropolitan Municipalities Act requires that all intra-city services should be carried out in accordance with plans and programs prepared by the

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<sup>4</sup> Information updated by Metin Ilkisik from IMM

metropolitan municipalities within the framework of the objectives of the National Development Plans.

The municipal services other than those, which were exclusively given to the metropolitan municipalities, are rendered by either district municipalities or both metropolitan municipalities and district municipalities.

#### Relevant legislation/regulations

The main legislation that gives additional powers and responsibilities to municipalities is the Act (No: 5272) of 2004. According to this law, a municipal administration can be established in localities of more than 5,000 inhabitants with a referendum. As to provinces and districts, municipal administration has to be instituted irrespective of their population.

Metropolitan municipalities are defined as "Cities which comprise more than one district within their own boundaries". This concept was introduced by the Act of Metropolitan Municipalities (No: 5216). The number of such administrations is of sixteen (2004) in the whole county.

### **3 Land Use Management**

#### Relevant legislation

At the Regional Level, the Bosphorus Higher Planning Coordination Council is responsible for the approval of plans or plan amendments in the coastal strip and fore front view area of the Bosphorus through the Bosphorus Law No: 2960, 22.07.1983 and Planning Law No: 3194, 09.05.1985.

At the city level, the Municipality is responsible for the preparation of land-use plans within the boundaries of Municipalities and Adjacent areas through the Planning Law No: 3194, 9.5.1985; the determination of squatter areas and upgrading zones and preparation and approval of their land-use plans through the Squatter Law No: 775/3811; the preparation and approval of upgraded implementation plans through the Amnesty Law on Settlement Development No: 2981/3290/3386; the Construction and Occupancy Permits through the

Planning Law NO: 3194, 9.5.1985 and the Municipality Law No: 5272 of December 7, 2004; and the approval of land-use plans related to land uses

other than tourism in tourist areas and centers through the Tourism Encouragement Law No: 5216 of July 10, 2004.

The Greater Municipality is responsible for the preparation and approval of master or land gains through drying through the Law on the Administration of Greater Municipalities No: 3030, 27.06.1984.

Currently (2005)<sup>5</sup>, the Municipality of Istanbul is implementing a new Regulation Plan that aims, until the year 2010, at instituting a preservation and development balance as a metropolitan settlement that acknowledges its historical, cultural, natural treasures, and thus re-gains the status of a world-city in line with its historical and cultural identity. The new administration is interested in strengthening the urban planning processes in the city, through the Istanbul Metropolitan Planning and Urban Design Center (IMP) which has been called by Istanbul Metropolitan Municipality Mayor Dr. Architect Kadir Topbaş as "the project which I would like to be remembered with"<sup>6</sup>

Three are the basic strategies incorporated in the Istanbul Metropolitan Sub-region Master Plan:

- **Specialization Rule.** Resolve and simultaneously plan the relationship between the residential and commercial functions throughout the sub-region, particularly for the new settlements.
- **Ranking of Centers Rule.** Provide demographic decentralization in the entire metropolitan sub-region by proposing "wing" attraction centers, and facilitating their development as first class centers. Provide the multi-centre development of the urban macro-form at a linear and ranked scale.
- **Ranked Densities Rule.** Reduce the population density in specific areas, in line with a recent analyses conducted for the city as a whole. Reducing the current average livable densities from the centre outwards according to a hierarchy.

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<sup>5</sup> Istanbul Metropolitan Municipality, <http://application.ibb.gov.tr/isat/mp5.htm>, accessed October 2005

<sup>6</sup> Istanbul Metropolitan Municipality, <http://www.ibb.gov.tr/en-US/Haberler/HaberDetay.html?HaberId=875> , accessed October 2005

### Responsible agents and their relationship

Local authorities in Turkey are of three types: Municipalities, Special Provincial Administrations and Village Administrations. Among the local authorities, municipalities are gaining greater importance with the rise in urbanization. The number of municipalities in Turkey has increased in parallel with the increase in population. In 1923 there were 421 municipalities, while in 1997 this figure raised to 2835. The current rate of population living in municipalities is more than 70% of the general population, whereas that of 1930 was about 26%.

While the Disaster Law and the Development Law assign significant responsibilities to Central Government Ministries, according to the decentralization provisions of the 1985 Development Law, the primary responsibility for land use and building regulation resides at the municipal level.

The development law requires that municipal and provincial administrations prepare development plans. Municipalities must develop and maintain urban development master plans with limited technical guidance or review from central authorities.

While standards for seismic microzonation to guide safe construction are developed by the Ministry of Public Works and Settlements within the regulations concerning "Design Principles for Buildings in Disaster Areas", it is responsibility of the municipalities to administer and enforce these standards in the practice.

### Effectiveness of current arrangements

The City is currently growing at a rate of more than 150,000 inhabitants per year (statistics 2005). This rapid growth puts tremendous pressure on the IMM and other agencies responsible for land use planning and the delivery of public utilities and services. Several departments within IMM, as well as other outside groups and agencies, such as universities and ministries of the national government, are involved in addressing the issues of urban development in Istanbul.

With so many departments and semi-independent agencies responsible for planning and providing public services, the coordination of information about the

growth of the City, the needs of its inhabitants, and the infrastructure systems for delivering services are vital.

Current legal and institutional arrangements adding to limited human and financial resources have not always been enough to cope with such huge demands.

## **4 Vulnerability Issues**

### Hazards

According to the Istanbul Metropolitan Municipality (IMM-AKOM)<sup>7</sup>, Potential Disasters in Istanbul are associated with earthquakes, heavy rain and floods, landslides, forest fires, industrial explosions and fires, wind and snowstorms, heat wave, fog, transportation accidents and terrorist attacks. From all of them, the earthquake threat is by far the one that would produce the biggest damages in the city.

On daily basis, traffic and ship accidents in the Bosphorus, produce important losses for the city. Some of the are referred herein: In 1979, a crude oil tanker, *Independenza*, had an accident at the south entrance of Bosphorus and 110.000 tons fuel-oil burn for more than 2 months causing very serious environmental problems at the hearth of the city. In average, 48,000 ships cross the Bosphorus per year and 173 similar accidents have taken place in the last 10 years.

### At-risk groups

During the process of design of the EMPI, major sectors at risk and root causes of the physical and social vulnerability of the city were discussed. Among others, the urban growth tendency linked to an incompatible land-use and planning system that incentivates the development of informal and poor settlements in the city is seen as one of the major factors that contribute to Risk.

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<sup>7</sup> Mahmut BAŞ and O.Metin Ilkisik, İstanbul Metropolitan Municipality, 3rd Coordination Meeting, Seeheim, Germany, June 2004



Aging infrastructure, use of inappropriate materials and construction technologies, in the building stock, lack of enforcement of norms and standards to assure minimum seismic provisions to the structures, important informal construction pockets have proved in the recent earthquakes, to be extremely vulnerable to earthquakes. Indispensable structures such as government buildings, schools and hospitals, are part of the same problem.

It could be said then, that the whole society is at risk given the possibility of a strong shaking in the city in the coming years.

#### At-risk locations

Istanbul counts on detailed studies on vulnerability and risk assessment for the different sectors such as health, education, energy, but also with loss estimates for each one of the districts, based on different earthquake scenarios. Particular interest has been given to detailed studies regarding vulnerability assessment of the building stock, in such a way that intervention in different districts can be prioritised. Landslide and liquefaction susceptibility maps are available for the entire city.

The first study was done by JICA and the IMM on year 2001 and a follow up of that same project was carried out by Bosphorous University.

#### City policies on vulnerability alleviation

Istanbul Metropolitan Municipality built its "urban design" target on a particular study named "2023 Istanbul Projects"<sup>8</sup>. To see Istanbul a livable and modern faced city up to the year 2023, the city has projected important work related to urban design but harmonious to the nature of Istanbul.

**Projects on Urban Development, Rehabilitation and Transformation**, where the focus is strengthening and rehabilitating earthquake risk areas, transformation projects for geologically weak zones and for unhealthy constructed building districts as well as master projects for rehabilitation and

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<sup>8</sup> IMM, annual report 2002

transformation of Historic Peninsula

**Metropolitan Area Corridor Projects**, extended west-east direction with a narrow corridor aimed at gaining a green bank for the city while improving the transportation system.

**Projects of New Settlements and Specialized Cities**, planning new proper settlements naturally and ecologically appropriate for housing meanwhile making specialized cities to perform specific tasks under a modern concept.

**Urban Transformation Projects**, as a continuation of some pilot projects of the Earthquake Master Plan for Istanbul. Re-development programs have been designed for some neighborhoods such as those in the Zeytinburnu District. As a first step, the metropolitan Municipality has started to construct 3200 housing units in this district. The program will be extended in year 2006 to incorporate two more districts: Fatih and Küçükçekmece. Zeytinburnu Urban Transformation Project is an ambitious one, as explained recently by the mayor of Istanbul, architect and planner Kadir Topbaş; “2 thousand 800 buildings which carry earthquake risk will be demolished and will be rebuilt with a modern approach”.<sup>9</sup>

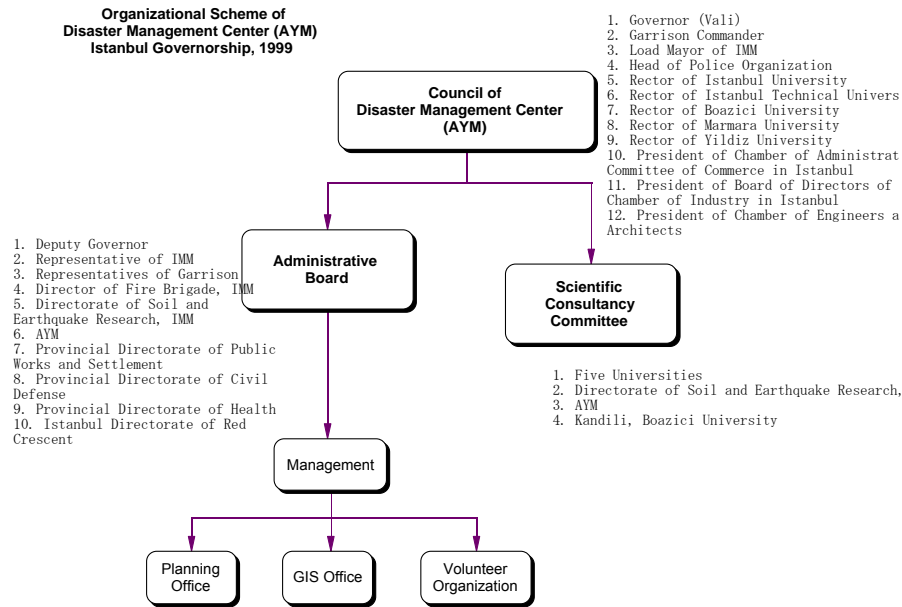
## **5 Disaster Risk Management Arrangements**

### Functional arrangements

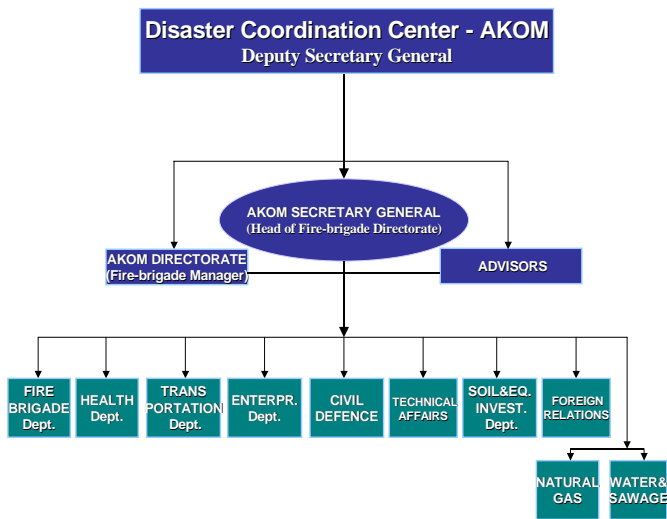
The dual organization of local administration in Turkey, with appointed governors and elected municipal officials, establishes the basis for their distinguished role in disaster management. Provincial governors are agents of the central authority, therefore they perform in-line functions when managing emergency situations province-wide. This is achieved through power provided in the ‘Disasters Law’ (7269). Accordingly, the governor assumes every conceivable prerogative to act in extraordinary situations. The mayor and municipal bodies fall under the authority of the governor under these circumstances.

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<sup>9</sup> Istanbul Metropolitan City web page, <http://www.ibb.gov.tr/en-US/Haberler/HaberDetay.html?HaberId=875>, accessed October 2005



The current legal regulations do not specify any administrative role for the municipalities, NGOs, professional organizations, muhtars and citizens, but holds them responsible for carrying out the duties assigned by the central authority. Moreover, these parties are not given any discretion neither for planning, nor for mitigation stages.



To remedy this disadvantage and trying to improve disaster preparedness, the Istanbul Governorship created the Council of Disaster Management Center (AYM), which organizational chart is depicted on Figure 3, and the Istanbul Metropolitan Municipality instituted the Disaster Coordination Center (AKOM).

### Risk Assessment

Several studies have been carried out in Istanbul that provide estimated parameters of the risk Posed to the population, buildings, transportation systems, and lifelines as well as to the potential impact on essential facilities, services and emergency response. For this investigation the earthquake hazard was expresses in terms of deterministic (Mw 7.5 earthquake on the Main Marmara Fault) and probabilistic terms (50% probability of exceedance in 50 years) with quite similar results. Inventory data on urban elements at risk, obtained from the relevant institutions and from private companies, specific studies and satellite imagery, have been used in the following projects and studies:

- Disaster Prevention / Mitigation Basic Plan in Istanbul including Seismic Microzonation in the Republic of Turkey – (JICA – IMM).
- Earthquake Risk Assessment for Istanbul Metropolitan Area – Bogazici University (supported by the American Red Cross) (BU – ARC).
- Earthquake Risk Assessment for Industrial Facilities in Istanbul – Bogazici University (supported by Munich-Re Group)
- Turkish Improvement of Natural Hazard Insurance and Disaster Funding Strategy (TEFER) Project – Turkish Treasury (supported by the World Bank and conducted by Cordis-Willis with the assistance of CAR and Bogazici University).

According to the different scenarios developed, the estimated human and physical losses for Istanbul could be the following:

- Death Toll of about 40,000 persons
- Number of injured requiring hospitalization would be about 200,000
- About 400,000 households would require shelters.
- A total of about 40,000 buildings would be completely damaged or suffer total collapse. Five to six thousand could produce a “pancake type” failure”.
- About 70,000 buildings would suffer extensive damage and some 200,000 would have moderate damage.
- The monetary losses due to building damage would add up to USD 11 billion

To complement the information showed, detailed studies done for the Zeytinburnu renovation project show that 2395 buildings out of 16031 investigated, are highly vulnerable and may result in heavy damage should a severe earthquake hit the city.

### Risk Communication

In Turkey, education of public disaster preparedness and disaster mitigation has been under the responsibility of the central government (department of civil defense, department of education). Local governments and non-governmental organizations are not given to play a sufficient role in these issues. Education about earthquake risk is offered in primary and high schools, but there is no systematic education program for general public. Development of standards for public education and community organizations, reaching the public at large, active participation of public, training the trainers and production of training materials has not been considered.

Although the educational efforts underway so far are valuable and have reached a large number of people, the current situation can be summarized as a pervasive state of un-preparedness. The educational work done so far focused solely on “what and how to do”. Information on earthquakes is presented, non-structural mitigation is demonstrated, what to do during an earthquake is shown and a trial is made. This focus is certainly important. Yet, clearly another focus is required; which is to find the mechanisms to get the public to take action.

On the technical side, the city counts on a number of universities and research institutes where aspects related to disaster risk management are formally through regular and specialized training. The municipality has also undertaken some training and capacity building activities address to both, municipal staff and the general public.

The city counts on a seismological and accelerographic network to monitor seismic activity, which are maintained and monitored by specialized institutions, and the IMM it self runs 8 seismic stations in addition to monitoring meteorological data base related to flood and heavy snow. There is not a systematic and loss inventory data collection in the city.

## **6 Disaster Risk Management Vision**

Geologically, Istanbul, like most of Turkey, is at risk for earthquakes. A campaign has started to ready and safeguard the city from earthquakes in a coordinated effort that involves the central government, local administrations, civil society organisations, universities and the private sector under the leadership of Istanbul Metropolitan Municipality.

As summarized in the document “Investing in Turkey and Istanbul”, prepared by the Metropolitan Municipality of Istanbul<sup>10</sup>, local authorities continue to work on risk reduction issues, based on the proposals of the Earthquake Master Plan in order **“to restore, renew and strengthen the fabric of the city and thus minimize the loss of lives and property from any future earthquakes”**.

## **7 Issues**

### **Problems Associated with Institutional Responsibilities<sup>11</sup>**

1. The institutional organization for disaster management and planning in Turkey has a chaotic nature, namely the duties and responsibilities of some of the institutions often create confusions.
2. Unlike the central government, local governments are not given any real responsibility with respect to disaster management.
3. Due to the inconsistency in macro level policies and standards, the central government fails to provide efficient assistance to local governments in tackling disasters.
4. The legal system does not incorporate plans and programs for disaster mitigation which in fact can be used as means to support effective community participation.

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<sup>10</sup> Investing in Turkey and Istanbul, Metropolitan Municipality of Istanbul, March 2005

<sup>11</sup> Earthquake Master Plan for Istanbul, Istanbul Metropolitan Municipality, July 2003

5. The draft laws and their bylaws related to planning and development have contradictory articles.

### **Problems Associated with Planning**

1. The preparations of regional plans are optional, thereby creating areas developing without macro level plans.
2. The coverage, scale and definition of some plans contradict with each other in different laws.
3. Particularly in metropolitan areas, some of the institutions established by the central government are empowered to prepare their individual local plans for areas relevant for their specialties. As a result overlapping and contradictory plans for the same location occur.
4. In the context of risk assessment and risk mitigation, the planning system, in general, often fails to reflect the real dynamics of the cities in Turkey.
5. The existing legal framework does not incorporate effective compensation mechanisms which specifically pay regard to the public interest by redistributing of the post-planning gains.
6. The legal framework of planning lacks some of the instruments for risk mitigation and associated financial models.
7. Amnesties for illegal constructions encourage the development of illegal, poor quality and disaster unresisting areas, particularly in the fast growing cities in Turkey

### **Problems Associated with the Built Environment**

1. The bureaucratic obstacles and long frustrating procedures for the constructing usually encourage the illegal development.
2. An efficient control mechanism for construction safety has not yet been introduced into the legal framework since the earthquake in 1999.

## 8 References

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