

# **URBAN DISASTER MITIGATION IN ISTANBUL**

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## **ABSTRACT**

*The earthquakes that occurred in the Marmara Region of Turkey in 1999 affected a large population, and caused major loss of life and property. The northern Anatolian fault zone that ruptured, causing these earthquakes also is a threat to the city of Istanbul. A city with a population exceeding ten million has a major task in preparing for a future earthquake. Therefore, a project has been prepared and outlined in this paper to mitigate losses in the greater Istanbul Municipality prior to a disaster.*

## **1. INTRODUCTION**

The city of Istanbul is preparing for a future disaster through a new urban mitigation project. The city has a population of over ten million residents, of which 1.3 million reside in squatter homes. The population growth of the city of Istanbul surpasses all other cities, and exceeds the national average, at a level of 500,000 people per year, which is approximately 4.5%, well over the national rate of 2.2%. The population being large, and at risk, the municipality decided to prepare a project to prepare the residents of Istanbul.

The aim of providing a modern emergency management model for Istanbul is to minimize the loss of life, to prevent injuries and to protect property and the environment in case of a possible earthquake and other disasters. This model should be structured to organize the local government divisions and responsible individuals in defining their emergency responsibility assignments and establishing the way of communication in emergency situations. Together with the training of responsible personnel in local government, the public awareness and training will help to improve the success of emergency preparedness in case of major disasters.

This model is focused on response phase of emergency management categories and consists of the following sub-sections: Coordination, an Incident Command System, proper Resource Management and training of those to be involved in all stages of a disaster.

## 2. DISASTERS FROM A SOCIOLOGICAL DIMENSION

The increasing public awareness and developed public communication channels are important key factors due to the strengthening of the durability of dynamic social structure against disasters.

Certain subjects should be mentioned in order to increase the awareness of society against disasters:

- The development of the society's communications channel
- Increasing the organization level of society
- Increasing the level of knowledge about disasters
- Increasing the quality of human capital

In order to establish a well-organized, dynamic administrative structure, there should be cooperation and coordination in every level of governance from top to bottom. This is important for both the implementation of macro and micro policies and to take action faster after a probable earthquake, in other words in an emergency situation. This structure should include:

- **National Scale:** It is not possible for a local government to overcome the problems that will emerge after such an earthquake by using only its material and moral sources. In this respect, there is a great need for developed organizational structures that are competent of implementing first aid, providing logistic and other essential organizational facilities. If there are existing groups facilitating these areas in society, it will be very beneficial and constructive for horizontal organization and reaching the local sources for coordination and reaching to the local knowledge that has high priority for implementation of disaster management policies.
- **Regional Scale:** The spatial reorganizations and socio-economic problems that come out after the earthquake will have effects not only for a specific area but also for the entire region. In this respect, it is important to ensure access to the communication channels and provide coordination among settlements in a region.
- **Metropolitan Scale:** In this scale, qualified human capital is the most important requirement. In an emergency situation and after that there will be a great need for people who can manage/lead the socio-economic interactions among the regions, which will be in a difficulty. Following a probable earthquake, management of aid and assistance, and realizing an organizational structure that can provide logistic and psychological support is essential.
- **Town Scale:** After an earthquake, the municipalities will be under pressure due to the socio-economic transformation in the local scale. Therefore, municipalities have great importance of collecting local

data that helps in planning and prevention of the probable social and economic risks.

- **District Scale:** In this scale, to build up a developed interaction between police, disaster management centre, fire department etc and to increase their capability of responding to the population, who needs help, living in the respective district after an earthquake will be the most essential preparations.
- **Neighborhood Scale:** It is very important to identify the usage and function of buildings in the local scale related to the risks they carry.

### 3. GOVERNORSHIP AND MUNICIPALITY COORDINATION AT THE PROVINCE LEVEL

Response to a disaster or emergency at province level is under the authority of central government representative-Governor and District Mayor. Governors and District mayors are regulated by the Ministry of Interior. On the other side municipalities have some responsibilities for the preparedness. Fire brigades as dealing daily emergencies are under the authority of municipalities.

After the devastating disaster in 1999, Province Emergency Management Center was established in the Governorship and Emergency Coordination Center (AKOM) in the Metropolitan Municipality of Istanbul as part of restructuring process for disasters and emergencies. Fire Department connectedly working with AKOM has to have responsibilities for “response” primarily and “preparedness” and “mitigation” but not only serving as a support function to emergencies. Because, Fire Department of Istanbul serves in 32 districts of Istanbul with its 40 facilities and has the possibility to be capable in the coordination of AKOM with Governorship’s Civil Defense Province Directory. The relationship between AKOM and the Province Crisis Center of Istanbul has the importance for coordination in this sense.

On the other side, some of the sub-directories under the framework of AKOM for emergency situations are listed below;

- Head of Fire Department,
- Secretary of Defense,
- Head of Transportation Department,
- Department of Construction,
- Head of Partnership Directory,
- Head of Health Directory,
- Head of Social and Administrative Works,
- Directory of Road Maintenance,
- Directory of Ground and Earthquake Works,
- Directory of External Affairs,

- İSKİ (Directory of Water and Sewage of Istanbul),
- İGDAŞ (Gas and Natural Gas Associated Corporation of Istanbul),

#### **4. INCIDENT COMMAND SYSTEM IN DISASTER MANAGEMENT**

This section discusses the tasks, responsibilities and the qualifications of role players in the incident command system that are the essential components of contemporary disaster management. The subjects in this section also evaluate the linkage of incident command system with other disaster management organizations.

The aim of this organization called “incident command system” mainly shapes the core of the model of the disaster management. So, it aims to enhance the performance of responsive power of professional or volunteer groups, and to create coordination with other disaster management systems.

The contemporary disaster management always motivates us to create an efficient incident command system (ICS) in the neighborhood scale. Therefore the established system will provide the linkage and cooperation with small organizations in the limits of the neighborhood. The headquarter building of local ICS serving coordination, training and planning activities might be local fire brigade building and its facilities. This proposal may not create any problem in existing facilities of all over districts of Istanbul, except small renovation and alterations in existing buildings. The facilities can be considered as local headquarters of ICS, and they will functionalize for educational and public purposes. This type of building can be considered as the closest public facility for citizens in the neighborhood. These facilities do not provide only the training program for fire protection, but they will also serve specific training programs for mitigation and preparedness phases. The aim of this model will provide another perception in the public. The local training programs that will be held in facilities will enhance the importance and generosity of the fire brigades like during the westernization process of Turkish society in the past. These strategies also motivate to expand the concept of local disaster organizations in the neighborhood scale.

This model will enhance the strength of the resilient communities in the neighborhood scale, and the local professional response teams such as fire brigades. So, the local fire brigades will gain importance and credibility in the society.

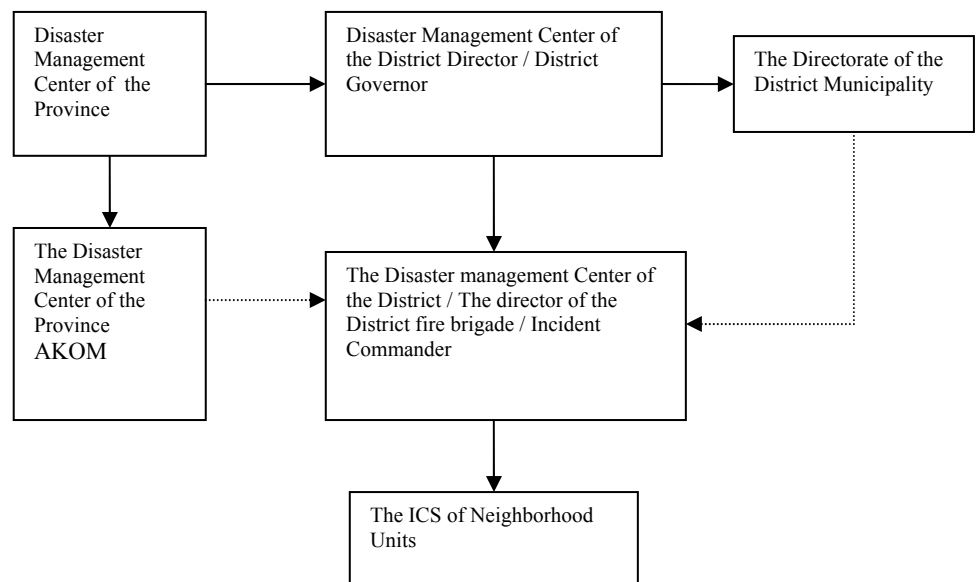
##### **4.1 Cooperation with Disaster Management Centers in the Province and the District Scale**

The cooperation centers of local incident command system can be assumed as district fire brigade and its facilities. This center also cooperates

with the District Management Center called as AKOM (Disaster Management Center of The Great Municipality of Istanbul). The incident commander of the district is the district governor, and he / she is the director of the disaster management center of the district. This center always coordinates with the disaster management center of the province as well as other districts, and it also implements disaster and emergency action plans, and it provides the coordination with local ICS units.

The District Management Center always interacts with the district fire brigade especially in emergency cases. The chief of the fire brigade is not only the assistant of the local governor about the disaster management of the district, but he/she is the chief commander of operations.

The existing administrative structure for disaster management interacts in similar logic starting from the neighborhood units to the disaster management centers of the province (Fig. 1).



*Fig. 1: The ICS and its Coordination in Disaster Management Model of the District*

### **The Roles in Incident Command System**

The coordinated units with disaster management center interact in the framework of incident command system. The typical incident command system has four units. These units may be considered as Operations / Response Teams, Planning, Logistics and Finance.

## **5. RESOURCE MANAGEMENT IN DISASTERS**

In order for the greater İstanbul municipality to be prepared and to respond to disasters effectively, all resources must be determined

beforehand. The principles of resource management include planning, organization, management and control. The resources to be managed include manpower (in charge and volunteers), machinery, equipment, and technical information.

### **5.1 Resource Planning**

The authorities taking part in the emergency operations center at the greater İstanbul municipality need to determine the current resources, their status, and what their goal will be during a response to a disaster.

According to the goals, strategic planning is required and the resources required have to be determined. During the response effort, a continuous status check has to be performed. During the status control, many questions have to be answered. What are the threats, if the situation is under control or not, how widespread (in terms of population and area, and transportation routes) the damage is, are a few that come to mind.

The greater İstanbul municipality should have the primary goal of protecting those that will take active part in the recovery phase, and then protect the citizens of the city. In order to be able to make this happen, strategic goals have to be placed in terms of personnel, equipment, machinery and technical know-how. The source of where resources will be allocated from during the response stage of a disaster has to be known, and these resources must be in working order. Resources needed from private sector, NGO and other government agencies have to be requested and agreements should be made in advance.

### **Resource Organization**

Organization of resources entails lining up and placing all resources to be used during a response to a disaster. Those Greater İstanbul Municipality employees to be situated at the site during the response phase have to know exactly what their jobs will be, and they must be trained to perform their tasks correctly. They also must know the chain of command in the jobs, and also know how to communicate and what means they will communicate with.

The technical works directorate of the greater İstanbul municipality holds important resources to support the greater city and the smaller counties. This support is important for debris removal and management, evacuation routes and preparing existing roads for evacuations.

Another important resource for the greater İstanbul municipality is the local construction companies and contractors. Preparing agreements prior to disasters, during the planning phase is important.

### **Resource Management**

In order for the emergency operations center to be successful, those that will be actively involved must have control and decision making roles and abilities. Resources can be managed easiest by motivation and leadership. All resources to be managed must be listed (including those of

the private sector and NGO's) prior to a disaster, and all required permissions must be granted to the municipality beforehand.

Security measures for all resources must be planned, as well as a defined and ready to spend budget. The management will be carried out by an incident commander, logistics director and equipment director to be selected by the municipality.

### **Controlling Resources**

Standards must be placed, and responsible parties must be chosen to control resources. During a response to a disaster, responsible parties must include at least 2 people instead of 1, in order to provide effective service. The directors and controllers must evaluate conditions at close intervals of time to ensure that the correct resources go to the neediest locations. If the evaluation shows that resources are not being provided adequately, the incident commander will request an alternative method for service.

## **6. SUMMARY AND CONCLUSIONS**

The greater municipality of Istanbul has achieved a major task, as it has prepared its mitigation plan for a disaster in eight months, and presented its outcome in June, 2003. The municipality has the task of implementing this master plan and will save lives and property in the future.

The major components of the emergency management and mitigation model include the coordination of the local governing bodies which include the mayor and also the governor, an incident command system involving all parties from the local to central government level, proper resource management and also the training of those to be involved in all stages of a disaster. A model for the City of Istanbul has been presented in this paper.

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