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## A model proposal for efficient disaster management: the Turkish sample

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### Abstract

As it is pointed out in the literature, just focusing on disaster response and recovery phases (namely disaster crisis management) and not paying enough care and attention to mitigation and preparedness phases (namely disaster risk management) has caused different problems in Turkey so far. Turkey's experience with disaster management in the last decade is the prime reason for the need to readdress the disaster mitigation problems in terms of developing a better management mechanism in a manner that would provide highest effectiveness and efficiency.

This study aims prevent the unnecessary loss of lives and damage to personal and national assets and properties by presenting a suitable and comprehensive disaster management model at strategic level in line with the standards of the United Nations Office for Disaster Risk Reduction. Recurring management problems are presented by the methods of discourse and document analysis. It is seen that the current disaster management mechanism has certain weak parts and after in depth interviews, a new model for an efficient disaster management system is tried to be put forth in the end.

*Keywords:* Disaster, Disaster Management, Risk Management, Crisis Management

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## 1. Introduction

Because of its geological and geographical structure, Turkey is highly prone to disasters such as earthquakes and floods, and therefore it has experienced many disasters throughout the history (Kadioğlu, 2008: 1). Among these disasters, earthquake has caused the highest number of life and property losses as almost 96 % of Turkish land is vulnerable to earthquakes and 98 % of dwellers live in these regions (Özmen, 1999). After China, Iran, Russia and Peru, Turkey is enlisted as the fifth country because of the number of life losses in earthquakes within the last 60 years (Akdağ, 2002:1).

Turkey's experience with disaster management in the last decade has led to readdress the disaster mitigation problems in terms of developing a better mechanism in such a manner that disaster rescue operations could be performed in an efficient and effective manner (Erdoğan, 2006a). However, when the real cases are examined, it is seen that just focusing on disaster response and recovery phases (namely disaster crisis management) and being unable to pay enough care and attention to mitigation and preparedness phases (namely disaster risk management) has caused different problems in the process of disaster management in Turkey (ITU AYM, 2003: 23-24).

In this study, first of all, key terms of an efficient disaster management system are explained. Then, Turkish disaster management system and the other international disaster management systems, which are accepted as efficient worldwide, are examined and the problems of the current system are tried to be presented. Finally, an efficient disaster management model complied with Turkish sample is tried to be put forth in conclusion part.

## 2. Literature Review And Research Model

### 2.1. Disaster and Disaster Management

The term disaster is defined as “a serious disruption of the functioning of society, causing widespread human, material, or environmental losses which exceed the ability of affected society to cope using only its own resources” by the United Nations (1992). The damage caused by disaster depends on climate, the geographical location and the type of the earth surface/degree of vulnerability and disasters adversely the mental, socio-economic, political and cultural state of the affected area in general (Rahman, 2012: 88; Press and Hamilton, 1999: 1927; Ergünay, 1996).

Previous losses experienced in recurring disasters have led to a paradigm shift from “a traditional relief approach (where communities are considered as “victim” and “beneficiaries” of assistance) to disaster preparedness (a more holistic and long term approach which incorporates vulnerability reduction as part of the development planning process)”. This comprehensive approach recognizes that disaster mitigation has the highest effectiveness at the community level where specific needs are met (Rahman, 2012: 88). Thus; an efficient disaster management system becomes mandatory in order to mitigate recurring losses and manage the disaster in a successful manner (Akdağ, 2002: 2). From this point of view, disaster management is defined as “a process or strategy that is implemented when any type of catastrophic event takes place”. In some studies, it is also described as disaster recovery management; the process may be

initiated when anything threatens the normal operations or puts the lives of human beings at risk (Kale and Kutemate, 2011: 35).

The subject of building resilience of nations and communities to disasters was discussed in 2005, in Japan and 168 countries adopted the Hyogo Framework for Action 2005-2015 as a blueprint for global disaster reduction. In this framework strategic goals are determined as below:

- “The integration of disaster reduction into sustainable development policies and planning,
- Development and strengthening of institutions, mechanisms and capacities to build resilience to hazards,
- The systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programmes” (www.unisdr.org).

This subject is also enlisted among the seven critical issues in terms of ensuring sustainable development at the strategic level, at Rio + 20 Conference organized by the United Nations. The significance of reducing disaster risks, building disaster resilient cities and developing efficient disaster management systems was discussed by the delegates from both public and private institutions as well as nongovernmental organizations at Rio + 20 Earth Summit on Sustainable Development (Report of the United Nations Conference on Sustainable Development, 2012).

## *2.2. Key Components of An Efficient Disaster Management Cycle*

In a disaster management system, incidents are categorized according to their levels as the following; incident command, emergency management and disaster management. In this study we focus disaster management and in a modern disaster management system, while the works related to mitigation, preparedness, prediction and early warning, disaster awareness are called as “risk management” (Haddow and Bullock, 2003:1), post disaster works such as impact analysis, response, amendment, reconstruction are called as “crisis management”. Crisis management is accepted as a primitive management style on its own and it cannot be efficient as long as the process of risk management is ignored. In other words; crisis management is a responsive, asynchronous, inefficient, premature, untimely, unreliable way of coping with disasters and it might turn an incident into a catastrophe (Kadıoğlu, 2008: 3).

## *2.3 Importance of Strategic Disaster Management Plans and Hazard Mapping*

Crucial factors in organizations’ survival in a time of disaster heavily depend on effective and efficient preparation in advance of the disaster; a quick response to the occurring situation; and strategic recovery following the disaster (McCool, 2012: 1). Thus; implementing a strategic plan is highly significant in order to “provide a comprehensive, all hazards, all agencies approach by achieving the right balance of prevention, preparedness, response and recovery; supporting the mainstreaming of disaster preparedness and mitigation into relevant areas of activity of government, non-government, small business and corporations; and aligning disaster risk reduction, disaster mitigation, disaster resilience and climate change adaptation policy and actions with international and national reforms” (Disaster Management Strategic Policy Framework, 2010).

Hazard maps, which combine hazard information with evacuation routes and locations of assembly points, are effective tools for promoting evacuation procedures and increasing risk awareness among the

public. However, as it is seen in the case of the Great East Japan Earthquake (GEJE), these hazard maps which are created before the event, might have given people a false sense of security by underestimating the disaster's potential impact (Sagara and Saito, 2012). Therefore, it becomes important to design comprehensive hazard maps according to the unique structures of the countries.

### *2.3. Disaster Management in Turkey*

Although disaster management policies go back to 1939, Erzincan Earthquake, it is seen that these policies are limited to post disaster works such as arranging temporary housing or food and medical care. Turkey's Disaster Management System used to focus on the post-disaster period and there were no incentives or legislations to promote risk analysis or risk reduction approaches (Ergünay, 1996: 270). Following disasters assert the importance of implementing an emergency response policy. Prime Ministry used to hold the responsibility when the incident exceeds the local abilities and turns into a national disaster but as it could be seen in Marmara Earthquake, the existing system was unable to cope with the situation. The emergency management system is questioned seriously subsequent to this national disaster and the need for developing a new structure which would provide the coordination among the institutions was accepted (Kadioğlu, 2008: 37-38).

There have been a number of attempts to ensure the coordination but assigning multiple institutions for disaster management caused ambiguity in terms of balancing authority and responsibility (Kadioğlu, 2008: 38; Erdoğan, 2006: 56-62; Yılmaz, 2003: 115). In order to overcome this problem and to take necessary measures for an effective emergency management and civil protection issues, by the Act 29/5/2009 dated and No.5902 Establishment of Disaster and Emergency Management Presidency; General Directorate of Turkey Emergency Management under Prime Ministry, General Directorate of Civil Defense under Ministry of Interior, General Directorate of Disaster Affairs under Ministry of Public Works and Settlement were unified under single independent authority with the act adopted by the parliament, and Disaster and Emergency Management Presidency of Turkey (AFAD) established in 2009. The presidency is responsible for conducting pre-incident works such as mitigation and risk management, preparedness, as well as incident works such as response and also post incident works such as recovery and reconstruction ([www.afad.gov.tr](http://www.afad.gov.tr)). However, the previous earthquake experience in Van, which was a regional disaster, indicates that the problem of coordination has not been completely solved yet and this problem would continue if the necessary measures are not taken.

### *2.4. Research Model*

The recommended disaster management model for Turkey is given below:

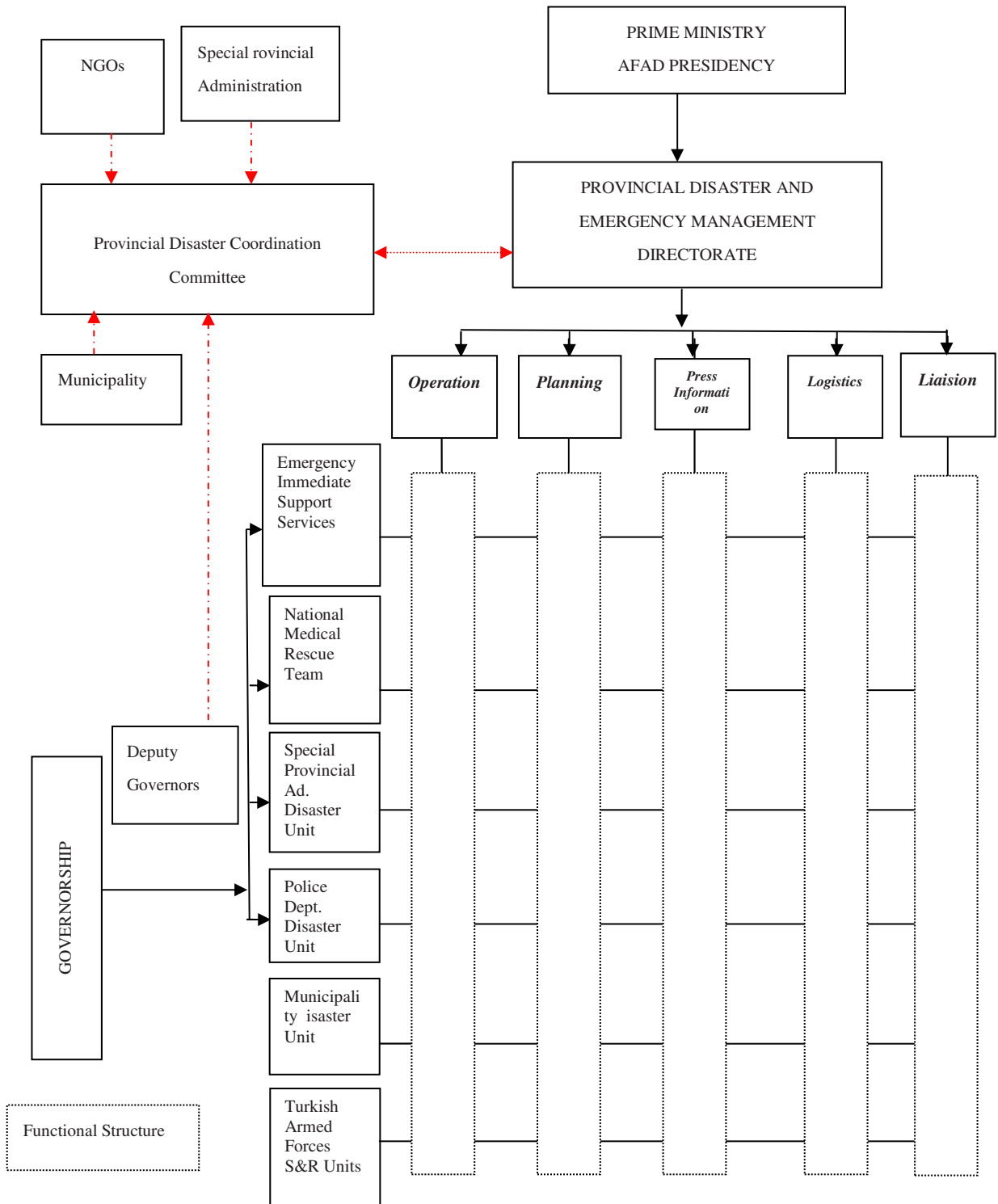


Table 1. An Efficient Disaster Management Model for Turkey

As it is important to make rapid decisions in times of crisis, there should be a single leading institution which has the utmost authority and as being directly affiliated with the Prime Ministry, it should coordinate all kinds of disaster preparedness, rescue and relief efforts if the affected region extensive. In Turkey, AFAD is the leading institution. This leading institution should establish the coordination centre and all relative institutions involved in the disaster response should operate under this structure and sustain the continuous flow of information about the disaster. Provincial Disaster and Emergency Management Directorate is to operate under AFAD and the governors are supposed to receive orders from this centre and regularly give reports.

Emergency Immediate Support (which is known as 112 in Turkey), National Medical Rescue Team, Special Provincial Administration Disaster Unit, Fire Department, Police Department Disaster Unit, Municipality Disaster Unit and Turkish Armed Forces Search and Rescue Units are assigned to operate under Provincial Disaster and Emergency Management Directorate. All of these institutions have their own operation, planning, press and information, logistics and liaison sections but apart from conducting rescue and relief efforts, they are also responsible for providing continuous information and preparing current site reports in times of disasters. Moreover, they should arrange local trainings and learn to work collaboratively in usual times.

If the disaster affects just a city and if it could be managed within the resources of a city, AFAD may share its authority with Provincial Disaster and Emergency Management Directorate and Provincial Disaster Committee. At this point, AFAD may only monitor the situation but if the affected region is extensive, these institutions are to operate under AFAD in terms of coordinating relief efforts at the city level. We separated two provincial institutions because Provincial Disaster Committee is to be activated only in times of a disaster and it includes not only the governor's staff but also experts from other institutions. Its duty is to coordinate the efforts of municipalities and nongovernmental organizations. In this way the heavy work load of Provincial Disaster and Emergency Management Directorate could be reduced. However, all these institutions should work collaboratively in times of disasters, common trainings and exercises should be organized periodically. At this point AFAD is not only responsible for ensuring the coordination in times of disasters but also organizing the common events to increase the preparedness level. Last but not least, this model should be supported with a strategic plan.

## **Methodology**

### *2.5. Research Goal*

By presenting a suitable and comprehensive disaster management model in line with the standards of the United Nations, this study aims to prevent recurring disaster management problems experienced in Turkey. This study also aims to make contributions for the sustainable development by building disaster resilient cities which is previously pointed out by Hyogo Framework for Action 2005-2015. In addition, this study aims to make tangible contributions for the following researches on disaster management.

All kinds of documents written on Marmara, Düzce and Van earthquakes are examined within the scope of this study. Also international post disaster evaluation reports, such as Mozambique Flood

(2000), Hindistan earthquake (2001), Haiti earthquake (2010) and Japan earthquake and tsunami (2011) reports are examined in detail. By the methods of discourse and document analysis, recurring management problems are found. Afterwards, in depth interviews are conducted with three experts from different institutions, all of whom have at least 5 years of experience in disaster management field. Each interview lasted for about 95 minutes. Also two authors of this study are active members of the first internationally accredited nongovernmental organization on the field of disaster management in Turkey and as a result, have attended international disaster management trainings and exercises provided by the United Nations, International Search and Rescue Advisory Group, which is accepted as the highest authority worldwide.

In this study, we consulted these experts twice. In our former interview, findings are presented to the experts and possible solutions are asked to overcome these problems. It is seen that the current disaster management model in Turkey has certain weak parts especially in terms of ensuring the coordination among the institutions. We conducted content analysis and determined main themes. All findings are directed us to the fact that an applicable disaster management model and a new comprehensive strategic disaster plan should be reorganized according to the specific needs of Turkey. And then, we presented our disaster management model to the experts and asked their opinions. They all agree that our model would be a proper solution for these problems if it could be implemented successfully.

## 2.6. Findings

In disaster management literature review, different case studies and the content of international trainings are examined and the most recurring problems are tried to be found. Our first finding is that Turkey has the common problems in general with the other countries.

First of all, in terms of sustainable development, it is found that the subject of disasters and building disaster resilient countries are enlisted among the critical issues in both Hyogo Framework for Action 2005-2015 and Rio + 20 Earth Summit on Sustainable Development. This is not a surprising progress when the previous disaster experiences and their drastic effects on economy and society are considered. In order to avoid the negative effects of a disaster and to be prepared at the strategic level, countries are forming cooperation and exchanging their best practices. The most recent of example is the one between European Union and Japan. There has been letter exchange providing a framework to further enhance EU-Japan Cooperation in disaster management. According to the EU; “The letters provide the basis for cooperation in a broad spectrum of disaster risk reduction topics, including major natural and man-made disasters related to water, such as floods, droughts, landslides and tsunami; preparedness and response to mega-disasters; and the integration of climate change adaptation into disaster management policy. The overall objective is to focus on learning from each other's experience and sharing best practices” ([www.ec.europa.eu](http://www.ec.europa.eu)).

According to the literature, the most recurring problem of disaster management systems is the lack of cooperation and coordination. Accordingly, our first theme is lack of coordination. As it could clearly be seen in the literature even the “Group of Seven” countries place emphasis on exchanging best practices and acting collaboratively in this field in a way that they could develop and sustain the effectiveness of their disaster management mechanisms. At this point, motto of United Nations Office for the

Coordination of Humanitarian Affairs gets remarkable attention which is announced as “Coordination Saves Lives”. According to their profound knowledge basing on enormous disaster experiences in throughout the world, coordination is the most significant factor in a comprehensive disaster management mechanism and the success of management heavily depends on that key factor. In addition, related institutions should be well aware the significance of this key factor and it should be supported with a legal implementation at the strategic level. That’s why all developed countries have specific strategic disaster plans. Also cooperation with the other countries and exchanging best practices would provide vital information in this field and in this way current mechanism could continually be updated.

When the previous earthquake experiences of Turkey and statements of Turkish experts are examined in detail, it is found that the coordination is the most recurrent problem as well. Especially in Marmara earthquake in 1999, the affected region was immense and there were neither an applicable disaster strategic plan nor a single coordinating institution and thus multiple organizations get involved in the action and act as if they are fully in charge. As a result, it became impossible to manage the disaster and eventually an extensive chaos was experienced.

When we examine the most current example in Turkey, Van earthquake in 2011, although we have AFAD and a redeveloped disaster management mechanism this time and although it was just a local disaster, it is seen that the problem of coordination still exists so the affected villages could not receive the aid on time. We investigated the reasons behind these bad experiences and after consulting the experts we found that we lack of a strategic disaster plan in the first place. Thus, we determined the lack of a strategic disaster plan as our second theme. Instead of it, we have an earthquake action plan and we do not have any regional hazard maps or precautions for the other types of disasters in it. Another problem is that the current management model has certain weak parts; it is not clearly presented that which organization would take action at which point when the affected region is immense. For instance, whether there is a regional border that limits the authority of an authorized institution and whether fire department or civil defense teams are to highest authority for conducting the search and rescue operations at the city level is not clear within the plan.

Our third theme is lack of regional hazard maps beyond the city level. According to the literature and the opinions of experts, these hazard maps are crucial especially in preparedness phase and these maps would contribute a lot while determining the boundaries of authority and responsibility of relevant institutions. As each region has its own disaster risks, they could act together to take necessary precautions.

And our final theme is lack of an efficient disaster management model which would prevent these problems beforehand and it is presented in research model part in detail.

### **3. Conclusion and Suggestions**

In this study, first of all, the significance of developing a comprehensive disaster management model is emphasized. The main reason of this emphasis is; although a number of precautions are taken to cope with the disasters, previous experiences indicate the fact that more comprehensive measures should be taken both for pre and post disaster phases and these measures should be supported by a strategic plan which is developed according to specific regional hazard maps. In order to be successful in this process, it



is necessary to embrace a paradigm shift from the controversial term crisis management to risk management. It is also essential to consult not only public administration experts but also experts of management sciences avoid previous mistakes and to develop a comprehensive approach.

There has been a promoting process in this field especially since 2009, as an example, in Strategic Plan (2010-2014) published by Istanbul Municipality, the need for establishing coordination among public, private and nongovernmental organizations in the process of forming emergency plans has been presented. On the other hand, in times of disasters, fire department is stated as the leading institution at city level, and this might cause a disorder in terms of coordinating rescue and relief operations when the number of affected cities and citizens increases. Consequently, this plan should be improved to address possible problems of disaster management process especially problems related to disaster preparedness and ensuring coordination among the organizations after the disaster.

The main aim of this study is, to prevent previous mistakes by presenting an efficient disaster management model at the strategic level in order to cope with the all kinds of disasters in Turkey. If we aim to be ready against disasters and prevent chaos after disasters, there should be a single leading institution, which is directly affiliated with the Prime Ministry and coordinates all kinds of disaster preparedness, rescue and relief efforts if the affected region is extensive. As it is important to make rapid decisions in times of crisis, it should be designed and authorized as an autonomous structure similar to development agencies. Besides, it should coordinate all training and disaster preparedness events at the strategic level in cooperation with all relevant institutions.

In Turkey, AFAD has this responsibility but previous experiences also indicate that multiple organizations get involved in the action and act as if they are fully in charge because their responsibilities were not specified in detail. AFAD has an Earthquake Action Plan but as it could be understood from its name, it addresses only the problems related to earthquakes. At this point, authority and responsibilities of relevant organizations should be clearly stated and this assignment and task distribution should be supported with an extensive strategic plan. It is also seen that most cities have their own disaster plans in Turkey but in order to manage disasters in an efficient manner, disaster planning should be made according to regions and necessary precautions should be taken according to the specific needs of these regions. Last but not least, if the proposed model could be implemented effectively, the most recurrent problem of ensuring the coordination would be solved.

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