EFFECTIVENESS OF TURKISH DISASTER MANAGEMENT SYSTEM AND RECOMMENDATIONS

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ABSTRACT

Turkey has always been vulnerable to various kinds of natural disasters because of its geology, topography and meteorological conditions. It is at risk from a range of complex emergencies. Statistically, a large-scale disaster happens every seven to eight years. Earthquakes, landslides, floods, drought, rock falls and avalanches are the main natural disasters. Deforestation and soil erosions exacerbate these disasters. Earthquakes account for 97 per cent of deaths and injuries caused by natural disasters.
In Turkey many problems in organizing a proper disaster management and response system are institutional and organizational. Absence of a single organizational structure focused on disaster management, including all disaster management aspects, dramatically exacerbated the impacts of disasters. The study is concentrate on institutional actors and deal with issues of coordinating disaster management aspects considering the past experiences.

Keywords: Turkey, natural hazard, disaster, disaster management

Introduction

Turkey lies between the Black Sea and the Mediterranean Sea, bridging Asia and Europe and is located within the rectangle bounded approximately by latitudes 36-42 degrees north and longitudes 26-44 degrees east. It comprises an area of 778 000 square kilometers. The land borders of Turkey are 2 573 kilometers in total and the coastlines (including islands) are 8 333 kilometers. The country has influential geo-political status because its location serves as a natural bridge between Europe and Asia. Between 1990 and 2008, the Turkey's population grew by almost 15.05 million: from 56.47 million to 71.52 million. About 75% of the population was classified as urban in 2008. The population is expected to grow to 84.3 million by 2020, of which three-quarters will live in urban areas (3, 6).

Turkey is in a region that is politically vulnerable and prone to natural disasters. It is at risk from a range of complex emergencies. Statistically, a large-scale disaster happens every seven to eight years (**Table 1**) (1). In Turkey, disasters are both natural and human made, causing serious disruption of normal daily life, causing widespread human, material or environmental losses that exceed the ability of the affected populations and the government to cope using its own resources. In general, the country is subjected to earthquakes, floods, landslides, avalanches and forest fires, with earthquakes having by far the greatest impact on population and infrastructure (4, 11, 15).

Understanding the Potential Risks

Turkey is located on a highly active Eurasian Geological Plate which has caused numerous big scale earthquakes throughout the history. On the basis of the current official earthquake hazard zoning map of Turkey (**Fig. 1**), 92% of the total surface area and 95% of the total population are situated in zones of varying degrees of seismic risk; 75% of the industrial centers are located in these earthquake prone areas. Moreover, 53% of the land, 50% of the population and 15% of industry are situated in areas of first and second degree risk, liable to a violent earthquake any time. **Table 2** presents elements such as population, surface, surface area, major industry centers and dams under risk in Turkey (5).

The table shows that approximately half of the surface area is under high earthquake risk and about half of the population lives in either highest or high-risk zones.

The long written history of Turkey includes descriptions of many destructive earthquakes during the past thousand years. The earliest earthquake records date back to 411 B.C. There have been nearly 100 earthquakes with magnitudes 7.0 or greater in Turkey. Also 14 earthquakes with casualties more than 10 000 have occurred since 342 A.D. As a result Turkey ranks high among the countries which have suffered significant losses of life and property due to earthquakes (22). Over 80 000 people have lost their lives as a result of 80 big earthquakes that have occurred in Turkey over the last century. The most important events were the earthquakes on 17 August 1999 and 12 November 1999, with magnitude of 7.4 and 7.2 respectively, which took place on the populated and industrial north-western parts of Turkey. According to official data, the earthquakes caused 18 373 deaths and 48 901 injuries and according to official figures 311 693 residential units and 46 538 business units either collapsed or were lightly to heavily damaged in an area of some 30 000 km^2, including eight urban agglomerations and the country's industrial and economic centre (10, 12, 14).

Landslides account for over 25% of Turkey's natural disasters. From 1955 to 2007 landslides affected 4500 settlements and killed 200 people. In this period 65 000 dwelling units were relocated to safer places. Landslides frequently affect inner Anatolia, Eastern Anatolia and particularly the Black Sea regions in Turkey (4, 11).

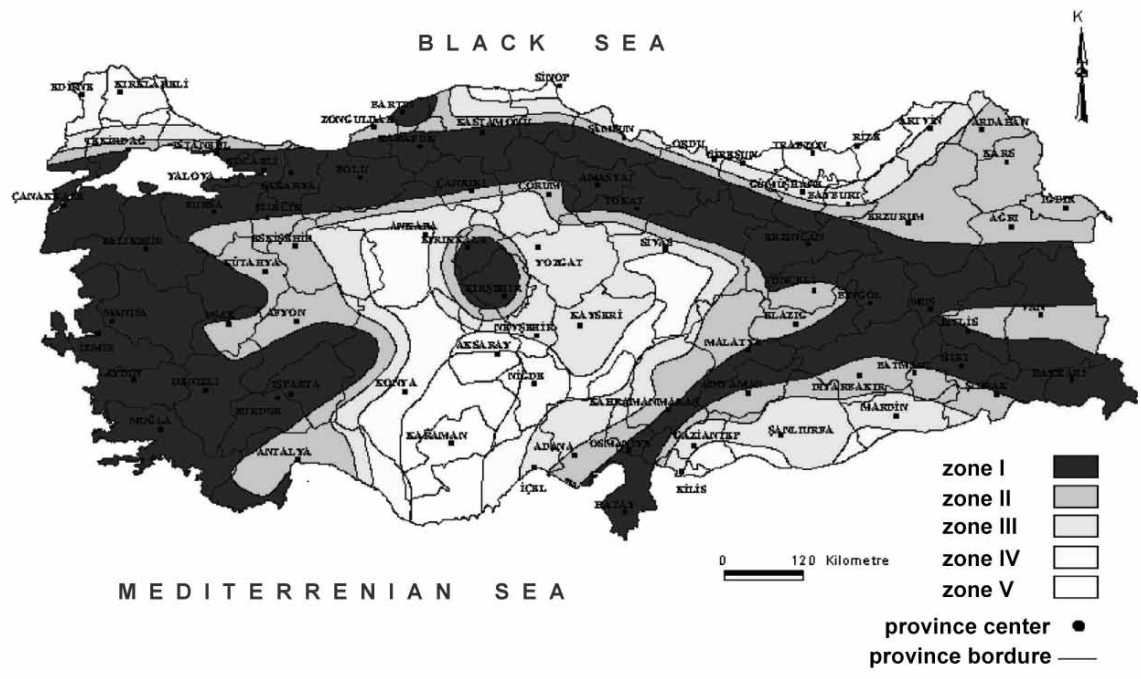

Fig. 1. Earthquake zone map of Turkey (GDDA, 2009).

TABLE 1

Summarized Table of Natural Disasters in Turkey from 1900 to 2009 (EM-DAT, 2009)

Type of Disaster	No of Events	Killed	Total Affected	Damage (000 US$)
Earthquake	71	88538	6874596	22 941 400
Epidemic	8	613	204855	-
Extreme temperature	7	100	8450	1000
Flood	35	1274	1743386	1645500
Dry mass movement	1	261	1069	-
Wet mass movement	1	135	-	-
Avalanche landslide	7	269	13275	26000
Storm	9	100	13639	2200
Forest fire	5	15	1150	-

TABLE 2

Major risk zones and percentage in total area of Turkey (GDDA, 2009).

Earthquake Zone	Population (%)	Surface Area (%)	Major Industry Centers (%)	Dams (%)
Zone I	22	14.8	24.7	10.4
Zone II	39	28.4	48.8	20.8
Zone III	24	28.8	12.0	33.3
Zone IV	20	19.4	12.6	27.1
Zone V	5	8.6	1.7	8.4

Floods are among the most frequent and costly natural disasters in Turkey in terms of human suffering and economic losses. Floods account for over 10% of Turkey's natural disasters. In the period of 1955 – 2007 there have been 1400 flood occurrences that caused 1400 deaths and collapse of 65 000 dwelling units. In the same period according to the disaster database, 775 rock falls have occurred and have caused 34 deaths and 27 000 house damages. Snow avalanches are frequently observed in eastern and south eastern regions, where snow fall is heavy. Since 1950 there have been 389 snow avalanches which caused 1039 deaths and 5200 house damages (4, 7, 15, 21).

In the 50s Turkey faced heavy natural disasters: Erzincan Earthquake (1992), Flood in Black Sea Region (1998), Adana-Ceyhan Earthquake (1998), Marmara Earthquake (1999), Hakkari Earthquake (2004) and Sivas Landslide (2005). Direct economic losses due to natural disasters are expected to be 1% of GDP every year. Losses like decrease on the market, production losses and unemployment are even greater. The probability of economic losses exceeding 11.4 billion US$ in one year is about 0.5%. This is about 6% of the country's GDP. The probability of annual losses exceeding 3.5 billion US$ is about 5%.

For Istanbul, a worse-case scenario earthquake of 7.5 is assumed to take place along the Main Marmara Fault of North Anatolian Fault Zone. Probability of occurrence of a large earthquake in Istanbul in the next 30 years is greater than 65%; in next 10 years is greater than 20%. Secondary impacts may be triggered by a large earthquake, liquefaction and subsidence of soil, landslides along the coastal areas damaging transportation lines, infrastructure and fires, particularly from ruptures of natural gas pipeline infrastructures (4, 11, 15).

Other Forms of Disasters

In Turkey 80% of the land area is subjected to various levels of soil erosion. Between the years 1955 – 2007, 500 000 hectares of land have been subjected to reforestation and erosion control activities by the Ministry of Environment and Forest.

During the 1977 – 2007 periods, there were 69 000 incidents of forest fires which consumed 1.5 million acres of forest land. Statistics shows that every year 13 000 hectares of forest land are burned.

Severe droughts were experienced during the springs of 1999 and 2000, in the southern regions of the country causing 30% of agricultural losses. Extreme heat waves have not only caused increased forest fires but also human and animal deaths. Climate changes lead to ecological, environmental, social and economic problems in Turkey. In a country that doesn't have any petroleum resources, energy deficits caused by climate changes can be expected to become more important in the future infrastructure (4, 11, 15).

An Owerview of Disaster Management in Turkey

Development of Disaster Management (DM) System and National Strategies in Turkey can be divided into four distinct periods (4):

1. **Pre- 1944 period:** There were no effective policies for DM;
2. **1944 – 1958 period:** Period with feeble countermeasures: Government declared Law No: 4623 in 1944 for the foundation of DM activities in Turkey. In this period ''Development Law (Law No: 6785) and Civil Defense Law (Law No: 7126) were also enacted.
3. **1959 – 1999 period:** National Assembly passed Law No. 7269 (Disaster Law) and established a new Ministry which is responsible for the coordination and implementation of states obligations according to Law 7269 and 6785.
4. **Post 1999:** Awakening Period: The enormity of the losses from 1999's two big earthquakes forced the government to promulgate 7 new laws and 32 decree laws to improve the national disaster management system.

Currently, Turkey Emergency Management General Directorate (TAY) of the Prime Ministry, General Directorate of Disaster Affairs (GDDA) of the Ministry of Public Works and Settlement and General Directorate of Civil Defense (GDCD) of Ministry of Interior are in overall responsibilities with respect to disaster management duties in Turkey.

Municipalities and governorships are also responsible for mitigation and response activities. Turkish Red Crescent Society (TRCS) is an integral and important part of overall disaster management structure in Turkey. It is represented at national and provincial level committees. The TRCS is active in the areas of disaster preparedness and response, blood-transfusion services, first aid and temporary housing units (tents). There are many ministries, Turkish Armed Forces, state agencies and institutions, NGO's, foundations, S&R groups involved in disaster preparedness and response activities.

Disaster Management system of Turkey is highly centralized and hierarchical (**Fig. 2**). Responsibility for DM goes bottom-to-up, from district to province and to national level depending on the scale of the event. Small scale disasters can be handled first at district level. If the disaster surpasses the capacity of district level the provincial governor, who heads the "provincial rescue and relief assistance committee" (known as a crisis committee) involved response and recovery activities. If a major event occurs that requires central government intervention, the "Central Coordinating Committee for Disaster" coordinates the response efforts for the disaster. These structures were installed in 1959 through Law No: 7269 (Disaster Law). Law No.7269, "Measures and Assistance to Be Put Into Effect Regarding Natural Disasters Affecting the Life of the General Public" sets forth the fundamental components of disaster management in Turkey. The basic principle of the law is to enable government to cope with disasters at the provincial level through what is designated as the Provincial Committee (2, 17, 18).

Main Organizations for Disaster Management

General Directorate of Disaster Affairs (GDDA): the major legislation pertaining to the implementation of GD is Law No: 7269. The law determines the protective and preventive

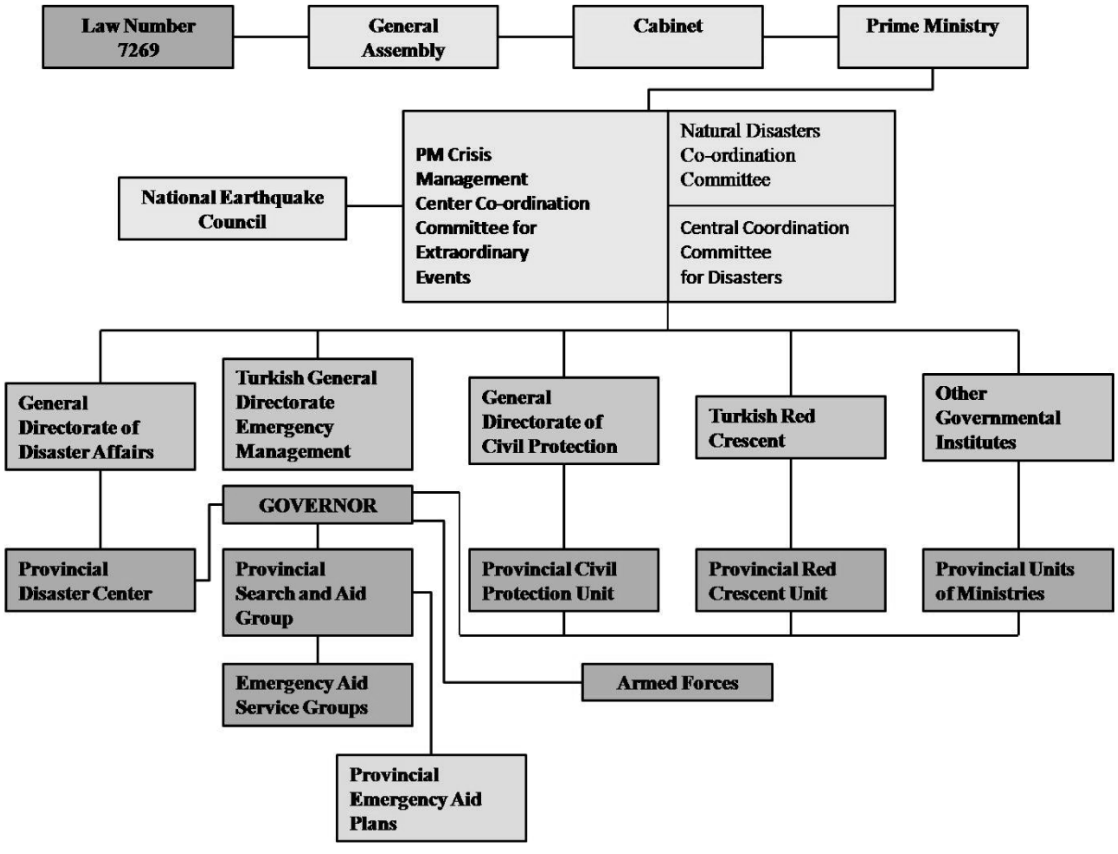

Fig. 2. National disaster management scheme of Turkey (Anonymous, 2009)

measures as well as regulates the activities to be undertaken before, during and after natural disasters and defines guidelines for terms and condition of assistance to be provided to affected people. GDDA, which was founded in 1964, is composed of seven departments (5):

- Earthquake Research;
- Disaster Damage Assessment and Survey;
- Emergency Relief and Machine Support;
- Planning and Indemnification of Affected Populations;
- Disaster Fund Administration;
- Temporary Housing;
- Prefabricated House Construction;

The GDDA is entrusted with the following responsibilities:

- To provide emergency relief and coordination when a disaster strikes;
- To take short and long term measures in disaster stricken areas in order that urgent settlement and shelter is provided;
- To identify natural disaster prone area, taking the required measures to prevent disasters;
- To make preparations, all kind of plans, projects, implementations, management and auditing.

General Directorate of Civil Defense (GDCD)

The goal and purpose of the civil defense organization is to minimize the life losses and other type of losses during warfare and disasters. Civil Defense Law (Law No: 7126) explains the main purposes of the organization as follows (4):

- To secure the lives and belongings of the civil people during war,
- To save lives and belongings of people during disasters;
- To reduce the damage to the lives and the belongings of victims in a fire;
- To build up morale among civilians.

GDCD's responsibilities are as follows:

- To set up Civil Defense Service nationwide and to ensure planning application, coordination and supervision of measures in government and private establishments;
- To plan and execute all activities for unarmed protection, emergency help and firs aid;
- To set the standards for fire departments and to educate, supervise and coordinate;
- To train civil defense staff and inform the public about CD;

GDCD has a Civil Defense College in Ankara for training, search and rescue and firefighting teams.

General Directorate of Turkish Emergency Management

Although Law No: 7269 gives the overall coordination duty to the Ministry of Public Works and Settlement, in practice there were some difficulties to coordinate the ministry on that level, therefore higher authority was necessary for coordination by using the power of Prime Ministry. For this reason after the

1999 two big earthquakes, TEMAD was established by Decree No: 600 in June 2000. The main responsibilities of TEMAD are (4, 17):

- To have emergency management centers established in governmental organizations for effective realization of EM, identifying their working principles;
- To monitor and evaluate the organizations taking necessary measures to prevent situations that requires EM;
- To carry out coordination services in utilizing all kinds of land, marine and aviation vehicle, when EM is applied;
- To make incentive arrangements for volunteers and organizations that provide relief in emergency situations and to coordinate both national and international relief workers.

Crisis management arrangements were developed in early 1990's in Turkey. Crisis Management Center in the office of the Prime Ministry is a nationwide general coordinating body that includes (4):

- Crisis Coordination Board;
- Crisis Monitoring and Assessment Board;
- Secretariat.

Crisis Management Center carries out the missions and responsibilities in accordance with the procedures in national legislations and in national plans. CMC in the office of the Prime Ministry is activated by the PM upon the proposal of the National Security Council, Board of Ministers, or State of Secretary who is responsible for CM or Secretary General of NSC, if there are some clear indications of crisis. According to its regulation, it has been established with core personnel in peace time. After it has been decided to activate in times of crisis, according to the type of crisis, it is augmented by the members of related ministries and institutions. If crisis management failed and in the case of escalation of the crisis, it may be proposed by CCB to competent this bodies in order to declare state of emergency, martial or mobilization and war.

Crisis Coordination Board

CCB is chaired by the Prime Minister or one of the State of Secretary. Its members are related ministers in accordance with the type of crisis, Chief of the General Staff and The Secretary General of NSC. CCB may meet upon the Prime Minister or one of the members of CCB, It also may convene by Crisis Monitoring and Assessment Board in situation warrants. CCB is responsible for (4, 11):

- Making assessments about the proposals and information provided by Crisis Monitoring and Assessment Board and determining essentials of political guidance;
- Taking necessary decisions related to problems in light of these assessments;
- Monitoring implementations about decisions and their executions;
- Deciding establishment of ministerial and provincial centers.

Crisis Monitoring and Assessment Board

CMAB, under the CCB is chaired Under Secretary of Prime Minister. It is composed of undersecretaries of related ministers and chairmen of the other organizations concerned. It convenes upon the decision by the CCB. If it is required it may be called to convene upon the Secretariat of The Crisis Management Center of Prime Minister. CMAB is responsible for:

- Assessing the information about crisis;
- Determining the measures to be taken dealing with crisis according to these assessments and initiating implementation of these measures;
- Coordinating among related ministries and organizations;
- Guiding the activities to be maintained by authorities in order to allocate public resources such as equipment, personnel and other means;
- Monitoring the implementations on decisions and directives by the Council of Ministers and CCB and providing their implementations;
- Proposing state of emergency, martial, and state of mobilization and war to CCB if necessary;
- Inviting CCB to convene in the matters which are not under its authorities;
- Delegating Secretariat about some services and activities if required;
- Monitoring the implementation and decisions and directives by the Council of Ministers and CCB and providing their implementation.

The Secretariat is composed of the representatives and experts of Prime Ministry, Turkish General Staff, ministries concerned General Secretariat of NSC and other representatives of related organizations.

According the Regulation on CMC it was established with core personnel at the General Secretariat of NSC in the peacetime. After it has been decided to activate in times of crisis, it is augmented by officials who have good knowledge in their field of concern from related ministries and institutions.

Secretariat

The Secretariat's duties and responsibilities are divided into two categories, in times of crisis and peace, according to the Regulation on CMC. In the peacetime The Secretariat is responsible for (4):

- Maintaining equipments and devices communication means in CMC;
- Providing training for officials who are carrying out their duties at ministerial, provincial and organizational crisis centers;
- Monitoring current crisis arrangements and undertaking necessary planning activities regarding to these legislation;
- Preparing reports on the situation of current crisis centers and submitting it to PM;

- Gathering information for crisis and providing necessary information to related authorities or Monitoring implementation for crisis;
- Providing the necessary information to the public by mass media.

There has also been CC on central and local levels. Central ones have been established at Turkey General Staff and others at every ministry and concerned organization. Local ones have been established at provinces and towns. They are responsible for:

- Monitoring and evaluating crisis;
- Determining the requirements;
- Providing coordination among the organizations;
- Reporting the implementations to the CMC in the office of PM;

Provincial Level

The organizational structure for DM at provincial level is under the authorizations of the governor. Each governorship establishes a "Provincial Rescue and Aid Committee". There are nine service groups within this body during disasters to implement effective response and recovery efforts. Districts also establish the same structure for their own DM activities (4).

International Relations on Disasters

1. Bilateral, multilateral, international and regional cooperation significantly enhance Turkey's ability to respond effectively and recover easily, through the technology transfer and sharing of information and resources. Since 1955, Turkey established strong links with a large number of international organizations in terms of disaster management, response and relief operations. About 80 international relief organizations participated actively in response and recovery activities after Marmara and Duzce earthquakes in 1999. The most relevant organizations names are given below (4) Black Sea Economic Cooperation (BSEC);
2. Council of Europe;
3. European Investment Bank;
4. European Seismology Commission;
5. International Atomic Energy Agency (IAEA);
6. International Committee of the Red Cross;
7. International Committee on EQ Engineering;
8. International Federation of the RC and RC Society (IFRC);
9. North Atlantic Treaty Organization (NATO);
10. Stability Pact for South Eastern Europe;
11. United Nations Environment Programme (UNEP);
12. Food and Agriculture Organization (FAO);
13. UN High Commissioner for Refugees (UNHCR);
14. United Nations Industrial Development Organization (UNIDO);
15. The United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA);
16. World Food Program (WFP);
17. World Health Organisation (WHO);
18. World Meteorological Organization (WMO).

Effectiveness of the disaster management system

Turkey's Disaster Management System was focused mainly on the post-disaster period and there were no incentives or legislations to encourage risk analysis or risk reduction approaches before the 1999 two major earthquakes. After these events with big impact the main concepts of Disaster Management System has been changed. Many new laws, regulations and other instruments on planning and implementations in all phases of disaster (mitigation, preparedness, response, recovery and rehabilitation) were accepted. But the disaster risk reduction system of Turkey is still mainly centralized. The institutional organization for disaster management and planning has a chaotic nature, namely the duties and responsibilities of some of the institutions often create confusions (20). Depending on the magnitude and intensity of the event, responsibilities move from provincial to national level. At the moment there are three main governmental organizations dealing with disaster related issues. General Directorate of Disaster Affairs under Ministry of Public Works and Settlement, G.D. of Civil Defense under Ministry of Interior and Turkish Emergency Management G.D. under Prime Ministry are the main actors in this field. Their roles and responsibilities are clearly defined by laws and legislations and each unit has their own budget allocated from national annual budget. In addition to those laws and regulations some ministries like Ministry of Environment and Ministry of Health, etc. are involved in disaster risk reduction and post disaster response and rehabilitation issues. Since the responsibilities and roles of each unit are clearly defined, the abundance of too many units is believed to cause sometimes hierarchy problems when responding. The necessary coordination and cooperation amongst the institutions responsible from DRR may sometimes be poorly conducted. Agencies responsible for DRR activities need strong financial resources and when distributed between several units they become inadequate (4, 20).

Unlike the central government, local governments are not given any real responsibility with respect to disaster management. The current legal regulations do not specify any administrative role for the municipalities, NGOs, professional organizations, headmen (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. Local governments and non-governmental organizations are not given opportunities to play a sufficient role in these issues.

There is still lack of knowledge of modern disaster risk factors, therefore, that results in lack of action and weak awareness of population and institutions. Education about disaster risk is offered in primary and high schools, but there is no systematic educational program for the 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.

National DMS has a response-based strategy and there is a budget for only post-disaster activities (response, search and rescue, sheltering). The country has no national strategy for management and reduction of the risks from disasters. There is not a national disaster management plan to guide all the organizations at central and local level. As a result the local emergency plans are not prepared as they should be. The priorities, allocation of roles and responsibilities; the resources to be utilized are not included in the plans. Due to the inconsistency in macro level policies and standards, the central government fails to provide efficient assistance to local governments in tackling disasters. 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 (2, 11, 15).

Conclusions and Recommendations

Turkey's geological, seismic, topographical and climatic characteristics combine to provide a settling for many types of disasters. The last twenty years of major disaster experience have clearly shown us the shortcomings and weaknesses of the DM strategies and systems that exist in Turkey. Legislations are the main tools to perform the policies. In Turkey, after the Marmara Earthquake the legislations were reviewed in order to obtain a "comprehensive disaster management". The major shortcoming is considered the focus on dealing with disasters after they have happened and largely ignored prevention and risk reduction. In existing legislation some additional points should be added:

- The pre-disaster phases and characteristics of "proactive" disaster management system should be emphasized, clearly defined and the role and responsibilities should be reallocated accordingly, both at local and national level;
- The coordination for pre- and post-disaster activities should be clearly defined;
- The financial issues regarding to both pre-and post-disaster phases (including risk transfer mechanisms) should be clearly defined and the resources and funds should be allocated;
- The monitoring and auditing mechanisms should be strengthened;
- The enforcement legislations should be introduced.

The last 5-year development plan includes pre-disaster policies, but the approach is not totally "proactive" yet. The term of proactive disaster management should be introduced and integrated into all related sectors policies, such as urbanization, agriculture, industry, etc. As a result of the current fragmented and poorly coordinated approach to disaster management, there is no integrated national disaster management strategy or plan that supports local level responses to emergencies and disaster mitigation in the long-term (13). There is also no adequately defined governmental policy for the provision of eviction and settlement (risk analysis estimations and planning models for pre-disaster monitoring) of people who are settled in disaster zones.

There is no single national coordinating agency for disaster management in Turkey. The pre and post activities of a disaster related subject should be executed by the same organizations, which also have the responsibility of implementation of the related subject. At the national level, the coordinating body (TEMAD) should operate more effectively. There should be specific units in TEMAD working on the specific phases of the disaster management and they should coordinate the national level activities of the organizations. Furthermore, these units should cooperate with each other to share information and maintain the sustainability of the activities. At the local level there is a need for a coordinating unit. The coordination units at national and local level can also undertake the integration of the IOs and IGOs activities so that they can make the best profit from these efforts.

NGOs are voluntary-based organizations. They are governmentally registered in order to operate in the existing system. But central authority does this registration while most of the NGOs are locally operating and once registered they are monitored neither by central, nor by local authority. But they are the key role players in DM since they directly use the power of public sector and community. Since most of the NGOs are local ones, there is a need for a "coordinating unit" on local base to coordinate the activities of NGOs. Representatives of governmental organizations and NGOs, as well as municipal ones should participate in the coordinating unit (11, 20).

Public and community awareness is the key point to sustain a coordination and cooperation in the system and to make the best use of resources. Once the awareness is raised, it is going to be easier to integrate all the organizations into the system because the community will be the monitoring body and this will lead all the related local and governmental authorities to work more seriously. The community itself can participate in the disaster management system via:

1. Civil societies and NGOs, which all citizens have access to and can orient;
2. Municipalities: The municipalities take the advantage of using the community power as a result of being elected by them.

Disaster Management activities do not produce gains in financial terms and the result of the activities cannot be monitored directly as welfare. Nevertheless, these kinds of activities enhance the well being of the community. The results can only show up when a disaster strikes. So, we can

say that these activities are voluntary based and as long as the community is aware of its own vulnerability and probable contribution to the consequences, they will be a real part of the Disaster Management. National and local programs can increase the level of community awareness. DM Trainings should be included in the National Education Program. NGOs can be the executive organizations for some community-based programs. Also the disaster management system should be introduced to related fields of university degrees (16, 19).

There is a need for a National Disaster Management Plan. It should take into consideration that Turkey is a big country with an area of 778 000 km² and a population of about 70 million. The hazard and risk profile also varies from one part to another and the plan should just include the major guidelines for pre- and post-disaster phases. Information management as well as workflow should be a part of the plan. It should also be used as a guide for the community when local preparedness and response plans are made. A national resource management approach for disasters should be introduced. The plan should also cover how to monitor the DM and how to include new measures in it and ways for update.

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