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## DISASTER MANAGEMENT IN TURKEY AND A NEW MODEL PROPOSAL: SISTER CITY DISASTER MANAGEMENT MODEL

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### Abstract

#### Article Info

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The concept of interaction, which has found more space in international relations with globalization, has also expanded the field of action of local governments. Sister city relations are among the international collaborations of local governments representing cities, regions and states. Managers of Washington-Hyogo, California-Osaka and Hawaii-Hiroshima sister cities in the USA and Japan and managers various regional non-governmental organizations made some recommendations at the end of the three-day conference process where lessons learned and best practices on planning, preparation and response to natural disasters were shared. Taking these recommendations into consideration, sister city relations were considered as a disaster management model in the context of local governments at national level. In the model, city pairings were made by taking into consideration factors such as fault line, population, cities not being close to each other, geographical location, etc. The main purpose of these pairings is to prevent managerial uncertainty and other weaknesses that may arise in the event of a possible disaster and to take action quickly. With the sister city disaster management model, it is thought that sharing the knowledge and experiences of sister cities regarding past disasters among themselves will provide significant contributions to the cities.

**Keywords:** Disaster Management, Sister Cities, Model Proposal.

**Jel Codes:** Q54, O18.



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## **1. Introduction**

Disaster encompasses destruction, catastrophe and calamity caused by natural events. Whether natural, technological or man-made, these events cause physical, economic and social losses for individuals and affect societies by interrupting or stopping ordinary life and human activities. In other words, disaster is not the event itself, but its result (Karacan, 2001: 130). According to the Law No. 5902 dated 29.05.2009 on the Organization and Duties of the Disaster and Emergency Management Presidency, disaster is defined as "natural, technological or human-induced events that cause physical, economic and social losses for the whole or certain segments of the society, stopping or interrupting normal life and human activities" (Article 2/b of the Law No. 5902). It is also defined as "a state of tension that threatens the existing values, objectives and functioning order of organizations by making their prevention and adaptation mechanisms ineffective", the inability to collect accurate, complete and up-to-date information that puts the organization and managers in trouble, the inability to establish healthy communication, the inability to eliminate communication barriers, and finally the inability to perform managerial and organizational activities as required. (Aktel & Çağlar, 2007: 149).

In order for an event to be accepted as a disaster and to be included in the World Disaster Reports, at least one of the following conditions must be fully realized. These conditions can be listed as follows (United Nations Development Programme Bureau for Crisis Prevention and Recovery, 2004: 33):

- Reporting that at least 10 people lost their lives,
- At least 100 people are reported to have been affected,
- Request for international assistance
- Declaring an emergency

Disasters cause many negative effects in the areas where they are experienced. These effects can be seen as loss of life and property as well as restriction of vital and socio-cultural activities of the society and individuals. It is possible to summarize the general characteristics of disasters that affect the lives of society and individuals negatively in many ways in the areas where disasters have occurred as follows (Erkan, 2010: 7).

- Disasters cause losses on human communities and settlements, cause confusion, panic, shock, injuries, disabilities and deaths, and may lead to infectious and epidemic diseases.

- It affects the settlement unit by interrupting human activities and destroys social and technical infrastructure.

- Due to reasons such as population growth, urbanization and unhealthy construction, the loss of life and property caused by disasters today is much higher than in the past.

- In underdeveloped countries, the loss of life and property caused by disasters is higher than in developed countries.

- Since the region cannot cope with the disaster with its own means, assistance is requested from outside the region.

- The inability of countries to cope with disasters with their own means and resources causes them to demand international aid and cooperation, thus causing disasters to have global impacts.

- Disasters, in addition to all serious damages to the infrastructure, also disrupt the economic structure and hinder and delay the investments planned by the state in the long term.

- Disasters negatively affect the structure, values and norms of society, create uncertainty, and the greater the uncertainty, the greater the need to find solutions to the crisis problem. In this situation, there are absolute steps to be taken; however, time and what can be done are limited and it is difficult to decide what, how and in what direction to use.

- Disaster is a difficult event to predict before it occurs. Therefore, the forecasting and prevention mechanisms of the units dealing with disasters are inadequate and the purpose and existence of these units are threatened.

- As the measures to be taken are put into action in a hurry and the available data on the event causing the disaster are so uncertain as to trigger an environment of insecurity, the level of tension increases, especially for the decision-making authorities (Ersöz, 2013: 41-2).

Furthermore, significant societal challenges can emerge in the aftermath of disasters. Factors such as displacement triggered by disasters, diminished employment prospects, and harm to livelihoods, particularly in the realm of livestock, stand out as primary contributing factors to these issues. After a disaster, businesses cease their commercial activities or reduce the number of employees. For this reason, measures that will enable people to become self-sufficient again and to have a job should be emphasized (Güler & Çobanoğlu, 1997: 18). The process of disaster management is intricate, encompassing various dimensions, disciplines, and stakeholders. It operates within a dynamic and complex framework, necessitating the

engagement of all societal institutions, organizations, facilities, and resources. This involvement aligns with established strategic objectives and priorities. The primary purpose is to systematically plan, direct, coordinate, support, and execute measures and activities before, during, and after disasters with the overarching goal of disaster prevention and the mitigation of damages (Annotated Glossary of Disaster Management Terms, 2014: 1). Disaster management comprises actions taken before, during, and after a disaster. That is, it includes preventive steps taken to ward off or mitigate the severity of disasters, as well as coping with adverse circumstances during a disaster, and trying to return to normalcy after a disaster. Designed to reduce the effects of disasters, a disaster management plan may be created ahead of time, outlining responsibilities, actions, and resource allocations when responding to a disaster. Executing a disaster management plan may be supported by a disaster management system, which can help provide real-time information and enhance decision-making capabilities, before, during, and after disaster response operations (Roztocki, Strzelczyk & Weistroffer, 2023: 4).

## **2. Disaster Management in Turkey**

In 2009, with the enactment of Law No. 5902, significant organizational changes took place in Turkey's disaster management framework. General Directorate of Civil Defense (under the Ministry of Interior), General Directorate of Disaster Affairs (under the Ministry of Public Works and Settlement) and General Directorate of Emergency Management of Turkey (under the Prime Ministry) were abolished. In their place, the Disaster and Emergency Management Presidency was established, which gathers the authorities and responsibilities under a single roof and reports directly to the Prime Ministry. This legal restructuring aimed to make disaster management efforts more effective by centralizing them under a single administrative structure. The Presidency was affiliated to the Ministry of Interior with the Presidential Decree No. 4 published on July 15, 2018. Earthquakes, floods, landslides, rockfalls, droughts, storms, tsunamis, and a myriad of other disasters exert profound and destructive influences on individuals, the environment, and the economy. Nonetheless, there exists the potential to enhance the resilience of both individuals and locations, signifying the capacity to endure and swiftly rebound from the severe impacts these disasters impart. The augmentation of such resilience serves to mitigate the adverse effects and damages wrought by disasters, thereby reducing the societal recovery time post-catastrophe. Turkey has recently introduced an innovative approach to disaster management, shifting its focus from traditional "Crisis

Management" to a more proactive "Risk Management" model (Disaster Management and Natural Disaster Statistics in Turkey, 2018: 29). This model is based on the Yokohoma Strategy

- The Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action ("Yokohama Strategy"), adopted in 1994 (for ten years), provides landmark guidance on reducing disaster risk and the impacts of disasters.

- Invites all countries to defend individuals from physical injuries and traumas, protect property and contribute to ensuring progress and stability, generally recognizing that each country bears the primary responsibility for protecting its own people, infrastructure and other national assets from the impact of natural disasters, and accepting at the same time that, in the context of increasing global interdependence, concerted international cooperation and an enabling international environment are vital for the success of these national efforts (Yokohama Strategy and Plan of Action for a Safer World Guidelines for Natural Disaster Prevention, Preparedness and Mitigation, 1994: 7).

- The review of progress made in implementing the Yokohama Strategy identifies major challenges for the coming years in ensuring more systematic action to address disaster risks in the context of sustainable development and in building resilience through enhanced national and local capabilities to manage and reduce risk.

- The review stresses the importance of disaster risk reduction being underpinned by a more pro-active approach to informing, motivating and involving people in all aspects of disaster risk reduction in their own local communities. It also highlights the scarcity of resources allocated specifically from development budgets for the realization of risk reduction objectives, either at the national or the regional level or through international cooperation and financial mechanisms, while noting the significant potential to better exploit existing resources and established practices for more effective disaster risk reduction.

- Specific gaps and challenges are identified in the following five main areas: (a) Governance: organizational, legal and policy frameworks; (b) Risk identification, assessment, monitoring and early warning; (c) Knowledge management and education; (d) Reducing underlying risk factors; (e) Preparedness for effective response and recovery (Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, 2005: 2):

In addition, the expected outcomes for the next 10 years as a result of the World Conference on Disaster Reduction support the model. The expected outcomes: The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries. The realization of this outcome will require the full commitment and involvement of all actors concerned, including governments, regional and international organizations, civil society including volunteers, the private sector and the scientific community (Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, 2005: 3):

This framework, called "Integrated Disaster Management System", focuses on anticipating and identifying hazards and risks in advance. The primary objective is to prevent losses from disasters and emergencies by implementing preventive measures before they occur, thus minimizing potential damage. The system is designed not only to ensure effective response and coordination during crises, but also to comprehensively oversee the post-disaster recovery process (Disaster Management and Natural Disaster Statistics in Turkey, 2018: 29).

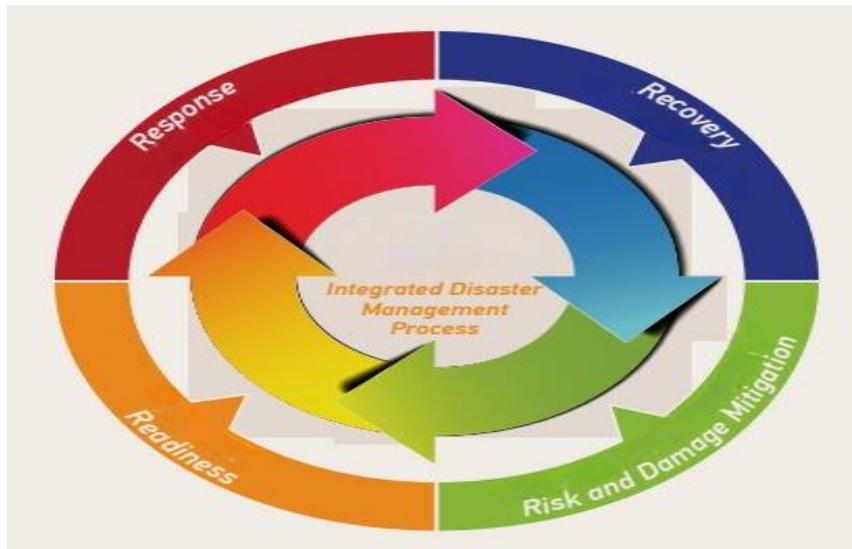


Figure 1.

*Integrated Disaster Management System*

Reference: Disaster Management and Natural Disaster Statistics in Turkey, 2018: 29

Establishing the roles and responsibilities of service groups and coordination units participating in response activities for disasters and emergencies involves delineating fundamental principles for response planning across the phases preceding, during, and subsequent to such events. This entails a comprehensive framework that outlines the specific functions and duties of the various entities involved, ensuring a well-coordinated and effective

response throughout the entire disaster management process. Elements of integrated disaster management system are given below.

**a) Risk and Mitigation Phase:** The concept of risk is defined as an undesirable event that may occur- but is not certain to occur or when it will occur. Hanson defines risk in five different categories. These are 1) Risk is an event that is likely or undesirable to occur, 2) Risk is the causes of undesirable events that may or may not occur, 3) Risk is the probability of encountering unwanted events that may or may not occur, 4) Risk is the statistically expected value of unwanted events that may or may not occur, 5) He defined risk as a decision made under known conditions (as cited in Kayahan, 2010: 5). Risk and mitigation is the determination of higher standards in construction starting from the principles of site selection in the creation of the physical infrastructure of the society, development of legal and economic methods to ensure these; determination of the measures that individuals, local communities and organizations can take to reduce possible disaster damages in all segments of the society and ensuring that they make these investments by creating an institutional and social culture (Yavaş, 2005: 38).

**b) Preparation Phase:** Since it is not always possible to stop or prevent natural disasters with the measures taken in the risk reduction stage, some activities should be carried out in the preparation stage to protect human life and property and national assets from the destructive effects of disasters (Karacan, 2001: 132-3). What can be done in the preparation stage where plans, procedures, training, education and coordination activities are carried out (Kadioğlu, 2011: 53): a) Incident command system, b) Planning, c) Forecasting and early warning, d) Drills, e) Training.

**c) Response Phase:** Intervention phase is defined as the phase that includes activities such as activation of emergency plans, making emergency announcements to the society, emergency medical aid, operation of crisis management centers, sheltering, evacuation, search and rescue activities carried out in order to save lives, minimize material damage and/or improve recovery just before, during or just after disasters (Leblebici, 2004: 45). What can be done in the intervention phase where life and property saving activities are carried out (Kadioğlu, 2011: 53): a) Impact and needs analysis, b) Incident scene management, c) Early recovery, ç) Temporary shelter, d) Donation and volunteer management, e) Information and transportation, f) Identification of needs, g) Search and rescue, ğ) First aid, h) Treatment, ı) Evacuation, i) Temporary settlement, j) Provision of food, clothing and fuel, k) Security, l) Environmental health and preventive medicine, m) Damage assessment, n) Removal of

dangerous debris, o) It is the prevention of secondary effects of disasters such as fire, explosion, infectious diseases (Leblebici, 2004: 45).

**d) Recovery Phase:** Recovery is the effort to normalize the infrastructure, social and economic life of the people. However, mitigation of damage should also be considered as a goal. In the short term, basic human and social needs should be met and necessary infrastructure systems should be established. After stabilization is achieved, recovery also includes long-term efforts such as creating economic mobility, reconstruction of public buildings and residences, taking into account long-term mitigation needs (Leblebici, 2004: 49). When the dangerous hours and days of natural disasters are over, all attention is focused on recovery and reconstruction activities. Recovery and reconstruction can take several months to several years, depending on the size and nature of the disaster. Moreover, the cost of recovery can be very high. Financial assistance, which needs to be provided from different sources, can be provided by the state or international institutions and organizations (Kadioğlu, 2011: 190).

In Turkey, it is observed that risk assessment, mitigation and preparation stages of risk management, which is the first stage of integrated disaster management, are not implemented as desired. Reduction of disaster damages, continuation of social and working life in a safe manner and ensuring sustainable development are only possible with the implementation of a good disaster management plan. For this purpose, risk mitigation activities should be prioritized (Şahin, 2019: 181).

Although not yet at an advanced level, the organizations involved in the disaster process in Turkey are trying to incorporate new technologies into the relevant processes. In addition to other non-technological efforts, it will be important to increase and continue technology-oriented disaster management. In this way, Internet of Things, sensors and drones will increase spatial data, training activities will be strengthened through applications such as augmented reality, losses will be reduced through early warning systems integrated into mobile phones, accurate communication will be ensured through social media tools, preparation and recovery phases will be improved, and cloud computing will make it easier to keep and use data (Memiş & Babaoğlu, 2020: 172-3).

### **3. Sister City (Town Twinning)**

Sister cities are cooperations established by cities that are geographically distant from each other in order to carry out joint activities or interact. Such collaborations are referred to as sister cities in the US and town twinning in the EU (Oktay, 2014: 13). The sister city relationship

was first established in 836 in the form of cultural cooperation between Paderborn in Germany and Le Mans in France (Ogawa, 2012: 11). According to many studies that trace reciprocal urban relations back to ancient times, the starting point of these relations was the Greek city-states and then the cities of feudal medieval Europe. Other studies trace the earliest urban relations to the relations between cities in Egypt, Anatolia, Mesopotamia and Persia. According to realist political scientists, the only factor in the international arena is the state. In today's world, however, the monopoly position of central governments in the international arena is highly questioned. The breaking of the monopolies of central governments has brought about compulsory democratization in many geographies, which has increased the value of local governments that have first-hand contact with citizens. From this point on, local governments, which have gained some economic freedoms, have been freed from the pressures of central governments and started to establish international relations without the need for any intermediary. With the city diplomacy that emerged in this process, cities have realized international flows with their own employees. Along with city diplomacy, foreign policy processes have played important roles in the development of peace and lobbying activities in the international arena. In this context, sister city projects are a formal cooperation move formed by the work of the units of the cities elected by the voters and formed by sharing activities in the human field between two local administrations (Özer, 2022: 33).

Sister cities are considered to be the first step taken by local governments to be involved in long-term international activities and to make their interests visible in the international arena. It refers to a long-term partnership between the cities of two countries with broad participation. Today, the fact that cities are part of a mutual cooperation makes it possible for them to engage in economic promotion, commercial activities, information and resource sharing. A sister city is a deep and long-term partnership between geographically distant settlements, such as cities, districts or states. This partnership can be based on many different reasons such as cultural, commercial, development, post-conflict dialogue. Sister city relations, which are formed by two or more cities carrying out projects and programs to accelerate socioeconomic development, provide communities with the opportunity to evaluate common issues and carry out joint programs on the axis of mutual benefits through local governments (Özmen, 2018: 55).

When the contributions of sister city relations are considered as a whole, it is seen that there are two schools of thought in terms of cooperation between cities in the context of north-south resources (looking at the current situation in the world, it is seen that the north is richer and stronger than the south). In the first approach, sister city relations are considered as a form of decentralized development cooperation. In this framework, the questions, answers and concerns relate to the contributions that sister cities can make in terms of service delivery, local

development and urban governance. There is a case of one city patronizing another or contributing more than the other partner or partners, so that one or more partners are in a relatively strong position vis-à-vis the other partners. The second approach takes into account processes and outcomes in both the north and the south, as evidence shows that it is possible for all partners in a sister city relationship to learn and benefit from each other. In this approach, there is a condition of cooperation between equal or equivalent partners in which both cities learn from and benefit from each other (Gezici & Kocaoğlu, 2018: 118).

In the international arena, the practice of sister cities has expanded rapidly since the middle of the 20th century. Although the concept of sister city has started to be widely used in the international arena since these dates, the date of its use in a scope that corresponds to its current meaning is from the end of the 20th century. Both the scope and impact of the concept of sister cities gradually increased, and towards the end of the 20th century, it started to be applied in real terms and cooperation and joint activities were carried out between local units in many fields. As a result of these developments, sister city practices reached their maximum level in the 1980s and 1990s and were implemented in a way that corresponds to their current meaning (Aktulun, 2015: 1). When evaluated in terms of the relations established with sister cities and the benefits they provide, all these studies are important in terms of establishing the global identity of the city with the development of the global partnership network and showing the level of development to the world public opinion through the promotion of the world-class services offered by the municipality. In addition, in today's world, established relationships, networks and close collaborations play an important role in an organization and/or city becoming a pioneer and leader at the global level and maintaining this position (Ermiş, 2012: 19).

### **3.1. Sister City Disaster Management Model**

Leaders and representatives from civil society organizations from the sister cities of Washington-Hyogo, California-Osaka and Hawaii-Hiroshima in the United States and Japan gathered for a three-day conference. The aim was to exchange views and share best practices on planning, preparedness and response to natural disasters. Faced with earthquakes, floods, typhoons and heavy rains, these six port cities are making a collaborative effort to improve their collective preparedness and response to future disasters. The conference concluded with statements from the sister cities addressing key issues. There was consensus among disaster managers that a robust information management system is crucial for intergovernmental coordination. Hyogo City, for example, has successfully implemented the Phoenix Disaster

Management System, a comprehensive information management system that collects and disseminates earthquake, typhoon and flood data throughout the city. It is noteworthy that all Japanese prefectures and municipalities have developed disaster management plans in line with nationally formulated mitigation policies.

In the field of disaster management, beyond facilitating cooperation between agencies at the city, county, governorate, state and national levels, it is imperative to ensure harmonized coordination among the various government departments at each level of jurisdiction. The Seattle Emergency Operations Center (EOC) in the United States exemplifies this through its day-to-day operations, where interdepartmental coordination is ingrained. The Seattle EOC structures its organization according to city departments, encouraging regular meetings, planning sessions and training between departments such as fire, police, human services and transportation. In Japan, however, the dynamics of coordination are different; for example, police services always report to city administrators, while fire services fall under municipal jurisdiction. While these different jurisdictions often facilitate disaster management, they can also pose challenges by limiting information sharing and coordination. An important consideration in both countries is the cooperation between the military and civilians during major events. In major disaster scenarios, the national military force can be deployed to assist local authorities. The Japanese Self-Defense Forces (JSDF) mobilize at the request of city authorities, subject to the approval of the Ministry of Defense. In the United States, by contrast, the authority to mobilize the National Guard rests with the state governor. Given that the JSDF and the US National Guard adhere to different internal procedures and legal frameworks, proactive coordination and information exchange becomes imperative to ensure smooth cooperation during crises.

At the same time, the obligation to inform and warn the public about natural disasters is a shared obligation that spans both sides of the Pacific. In response, Japan and the United States have implemented a variety of approaches to educate the public and have recognized this as an integral aspect of emergency planning. Japan, in particular, has achieved significant success in public education through the implementation of comprehensive disaster awareness programs, with special emphasis on starting these efforts in primary school. In contrast, the United States has recently integrated social media into its arsenal of disaster-related communication tools. However, an ongoing challenge facing emergency managers in both countries revolves around strategic considerations of how, when and where to effectively communicate key messages. The following highlights best practices and identifies persistent challenges in this area.

Best guidelines can be expressed as follows.

- Incorporate high-risk communities into disaster training initiatives to ensure comprehensive preparedness.
- Develop specific communication strategies tailored to effectively reach vulnerable communities.
- Opt for reader-friendly written messages rather than relying on technical language to enhance accessibility.
- Implement standardized disaster education and training programs within local schools for a widespread and consistent approach.
- Utilize diverse communication platforms to reach the public, encompassing outdoor sirens, mobile public address vehicles, email, on-demand alert programs for mobile phones, highway signs, storm warnings via television and radio, and social media platforms such as Facebook and Twitter.
- Regularly test and maintain loudspeakers, emergency warning systems, and other public communication infrastructure to ensure their reliability.
- Establish call centers capable of addressing public inquiries and concerns during prolonged crises, such as a pandemic.
- Ensure the continuity of services for emergency workers, including the creation of electronic message boards where public employees can securely leave password-protected messages for their families.
- Disseminate information to communities and individuals regarding their essential and optional insurance needs in the event of a natural disaster for informed decision-making.

Persistent Challenges can be expressed as follows.

- Ensuring the inclusion of vulnerable populations, including the elderly, individuals with disabilities, and migrant communities, in disaster preparedness initiatives.
- Sustaining public awareness efforts focused on natural disaster preparedness.
- Actively promoting citizen compliance with evacuation requests and other crucial instructions.
- Cultivating support and engagement from non-emergency organizations, including schools, community centers, civic groups, and the private sector.

- Formulating and nurturing positive relationships with media representatives to facilitate effective communication.

- Encouraging media outlets to provide accurate and balanced information to communities, steering clear of sensationalism in messaging.

- Accurately direct messages to a specific audience.

- Raise public awareness of sudden disasters,

One of the most important goals of competent public communication is the skillful management of public expectations during a crisis. This involves cultivating public cooperation and support, a crucial element for both public safety and the rapid resolution of the crisis at hand. The importance of securing such cooperation is underscored by its direct impact on the success of a particular response or recovery effort. Failure to meet public expectations can have negative effects on the perceived effectiveness of the overall response and recovery effort and can detrimentally affect subsequent efforts.

Sister city managers in the US and Japan have made some recommendations on disaster management. These recommendations are as follows.

- Foster seamless coordination of emergency management initiatives across the spectrum of government departments and jurisdictions, exemplified by models like the US Incident Command System.

- Clearly define roles, streamline communication pathways, and solidify chains of command during preparedness phases to enhance overall organizational readiness.

- Implement a standardized and centralized information management system, such as the Phoenix Disaster Management System crafted by Hyogo Prefecture, adept at systematically gathering data related to floods, typhoons/hurricanes, and seismic activity.

- Cultivate resilience strategies to adeptly navigate through both anticipated and unforeseen disasters, ensuring adaptability in crisis situations.

- Sustain robust information exchange mechanisms between local authorities and the national government to bolster effective communication channels.

- Institute a transparent chain of command between military forces and the states or provinces they support, expediting the prompt delivery of vital resources encompassing equipment, logistics, transportation, and the deployment of trained personnel for efficient disaster management.

- Enhance collaboration among military entities, non-governmental organizations (NGOs), and the private sector, aiming to significantly amplify the positive impact of military assistance during crises.

- Develop a rigorous method for validating information entering emergency operations and disaster management centers. This could involve leveraging specific community leaders, chosen by Japan's disaster/crisis management centers, to assess conditions in disaster areas and communicate effectively with authorities.

- Conduct comprehensive "post-disaster assessments" aimed at refining coordination strategies for future disasters, as emphasized in the Japan-US Sister Cities Natural Disaster Preparedness and Response Exchange of 2010 (Japan-U.S. Sister Cities Natural Disaster Preparedness and Response Exchange, 2010).

It can be said that both in Turkey and the USA, the disaster and emergency management system has been shaped by past and present disaster and emergency events. The basic philosophy that has never changed in the USA has been that the system operates from the bottom-up, that is, from the smallest local government unit to the central government. The system has been shaped according to the answer to the question to what extent the central government will be involved in disaster and emergency management. In the USA, FEMA was established on April 1, 1979, and this service started to be controlled by an independent and powerful structure at the central level. With the expanded disaster and emergency approach, a modern structure focused on FEMA was organized, but the principle that the basic and first responsibility is local has not changed.

It is well known that similar transformations have taken place in Turkey's disaster and emergency management history, although the content and the systems applied are different. Similarities such as the gradual involvement and responsibility of the state, the disorganization caused by many institutions and complicated legislation, a period dominated by civil defense and the Red Crescent, the enactment of a special law after each disaster, and ultimately the efforts to bring the system together with AFAD show similarities.

Today, FEMA defines itself as "The Nation's Leading Emergency Management and Preparedness Agency". As the crisis management authority covering the entire country, FEMA emphasizes at every opportunity that it is "a part of the crisis management team, not itself". This large team is made up of national partners, state and local agencies, the private sector, civil society and all segments of society in general. It is an integrated, multi-disciplinary, all threats

and hazards focused organization that involves everyone in the work and management and gives responsibility to all sectors.

In the USA, it has created very professional, well-equipped and qualified disaster and emergency units at the local level. The training, systems, plans and equipment of these units are at a high level, and with the confidence this gives them, they are very enterprising and diligent in preparing for, responding to and recovering from incidents. They do not want a higher management unit to intervene in an incident they can handle. Especially fire and police departments and civil society organizations focused on disasters and emergencies are very active. FEMA provides all kinds of support to local units and works shoulder to shoulder with them. In order to be closer to local structures and events, it has established 10 regional offices and formed regional advisory teams.

Although similar objectives are emphasized in legal texts and strategic plans in the new structure that is being created in Turkey with AFAD, this power does not exist at the local level in practice. Local units are still waiting for the central administration or a higher administration unit to intervene in every disaster or emergency. Since there are no well-organized and trained local units, there is a lack of self-confidence and hesitation in responding to incidents. In particular, the effectiveness of fire brigade units and local civil organizations is almost non-existent. Local public units know their duties only on paper and do not adopt the subject sufficiently and perceive it as one of their basic duties and responsibilities. The central government is seen as the main responsible for combating disasters and emergencies.

In the USA, it is seen that private sector and contracting companies have taken important roles in disaster and emergency services and even management in recent years. Aside from their own disaster and emergency preparations, companies can take part alongside government units in disaster and emergency management planning, organization and operations according to their professionalism and fields of work. Their ideas and professionalism are utilized. It is recognized that disaster and emergency services are of a variety, scope and magnitude that cannot be provided only by state means. The rate of services (evacuation, accommodation, etc.) received from the private sector in the field of disaster management and especially in the field of response has reached 25%. Giving such a position to the private sector and contracting companies in Turkey may be considered risky even now, but the US experience shows that this fact of life should not be avoided, on the contrary, it is beneficial to introduce its advantages into the system (Çeber, 2014: 81-2-3-4).

The US and Japan sister cities practice includes international natural disaster preparedness and response exchange processes. This model proposal aims to prevent local public units from knowing their duties only on paper, to adopt the subject sufficiently and to perceive it as one of their basic duties and responsibilities. In addition, instead of the perception that the central government is the main responsible for combating disasters and emergencies, the perception that it will be carried out with the joint cooperation of local units, central government and non-governmental organizations can be brought to the forefront. Utilization of people from qualified professional groups in the disaster process can make significant contributions to the acceleration of response processes. This model proposal is based on national preparedness, response, recovery, risk and mitigation elements. The implementing organization of the model is the Disaster and Emergency Management Presidency. In the sister city disaster management model, cities in Turkey are paired with two sister cities. With this model, it is aimed to raise public awareness before disasters, minimize issues such as lack of coordination in risk reduction activities and disaster response process, late arrival of rescue teams to disaster areas, failure to provide regular aid, deficiencies in logistics network, etc. With the sister city disaster management model, it is thought that sharing of information and experience on past disasters among sister cities will provide significant contributions to the cities. Sister city information is given in Table 1.

Table 1.  
*Sister City Information (2024)*

Cities	Tectonic Faults	Sister City 1	Sister City 2
<b>İstanbul</b>	NAF	Ankara	Trabzon
<b>Kocaeli</b>	NAF	Konya	Rize
<b>Sakarya</b>	NAF	Samsun	Şırnak
<b>Düzce</b>	NAF	Kayseri	Ağrı
<b>Bolu</b>	NAF	Kırıkkale	Kars
<b>Amasya</b>	NAF	Batman	Ardahan
<b>Tokat</b>	NAF	Sivas	Tunceli
<b>Gümüşhane</b>	NAF	Yozgat	Mardin
<b>Erzincan</b>	NAF	Bartın	Manisa
<b>Erzurum</b>	NAF	Artvin	Şanlıurfa
<b>Van</b>	NAF	Karabük	Diyarbakır
<b>Çanakkale</b>	NAF	Giresun	Aksaray
<b>Balıkesir</b>	NAF	Ordu	Çankırı
<b>Bursa</b>	NAF	Sinop	Mersin
<b>Hatay</b>	EAF	Kırklareli	Malatya
<b>Osmaniye</b>	EAF	Karaman	İğdır
<b>Gaziantep</b>	EAF	Çorum	Adana
<b>Maraş</b>	EAF	Afyonkarahisar	Bilecik
<b>Adıyaman</b>	EAF	Edirne	Muğla
<b>Elâzığ</b>	EAF	Tekirdağ	Uşak
<b>Bingöl</b>	EAF	Yalova	Kütahya
<b>Muş</b>	EAF	Kırşehir	Siirt
<b>İzmir</b>	WAF	Antalya	Eskişehir
<b>Aydın</b>	WAF	Kastamonu	Niğde
<b>Denizli</b>	WAF	Zonguldak	Kilis
<b>Isparta</b>	WAF	Bayburt	Hakkâri
<b>Burdur</b>	WAF	Neşehir	Bitlis

\*NAF: North Anatolian Fault; EAF: Eastern Anatolian Fault; WAF: Western Anatolia Fault

With the city pairings made, it is aimed to determine the cities that will be the first responders in case of a disaster that may occur in any of the sister cities. These pairings were made by taking into account factors such as the fault line, the cities' proximity to each other, population, geographical location, etc. The main purpose of this matching is to prevent managerial uncertainty and other weaknesses that may arise in the event of a possible disaster and to act quickly. The administrators of the disaster-stricken city may not be able to take an active role in the disaster management process due to factors such as the desire to save their families, mental state, grief of losing their relatives, etc. in the process after the disaster occurs. For this reason, in case of a possible disaster that may occur in the paired cities, the administrators of the sister cities should move to the disaster area and take an active role in the disaster management process. As a result of the joint works carried out between the sister cities before the disaster, it will be ensured that the region will be introduced and the necessary information will be given about the disaster management of the region and thus, it will be possible to act faster and easier. Some of the joint works to be carried out between sister cities

for the disaster management process to be effective and efficient are as follows.

- With the national disaster information system to be established, information that will enable rapid action in the disaster process will be easily accessible. In this information system, information related to sister cities (disaster response plans, risk plans for important buildings in the city, etc. documents) should be made available to the administrators unlimitedly.

- A common plan on what should be done in sister cities to reduce risk and damage in disasters should be created and a continuous control mechanism should be implemented for the realization of the elements targeted in these plans.

- Through mukhtars, people with qualifications such as operators, plumbers, miners, disaster volunteers, etc. who live in the cities and can take active role in disasters should be identified and their contact information should be defined to the disaster information system by district governorships. Especially plumbers are among the important human resources that can be utilized in the processes of rescuing the injured from the rubble since they can act technically and quickly due to their work.

- Information on private construction equipment (license plates, information on owners, technical specifications, etc.) available in the cities through mukhtars should be defined to the disaster information system by district governorships. Information of public vehicles and operators should also be defined by public institutions.

- Information on marine vessels such as ships etc. located in coastal areas should be defined by the Ministry of Transport and Infrastructure to the disaster information system and made accessible.

- The information of the people in the disaster response team and the updating of this information should be done by the institutions.

- Logistics centers should be determined in each district with the joint evaluations of sister city managers. Priority criteria should be that these centers should be close to transportation networks and suitable for landing of helicopters. In addition, more than one alternative transportation routes from the nearest city center, bus station and airports to the logistics centers to be established should be created and defined to the disaster information system by the relevant district governorship.

- Sister city administrators should sign protocols with non-governmental organizations and include them in this process.

- The paired cities are responsible for the management of the disaster management process in the disaster stricken city as well as the collection and delivery of aid from their

cities. In aid campaigns launched across the country at the same time, there are problems in reaching the target audience due to factors such as excessive participation, lack of coordination, etc. In order to ensure the sustainability of the aid process, assistance can be requested from other cities in case of need. In cases where sister cities are insufficient, support should be requested from other sister cities.

- Standardized emergency plans and priorities should be established in critical sectors such as telecommunications, transportation and energy by determining the areas of responsibility and authority before the disaster.

- Sister city administrators should be in constant communication with disaster volunteers and non-governmental organizations and inform them about their duties in disaster plans. They should be in communication regarding what to do after the disaster.

- Standardized disaster trainings should be given to the inhabitants of sister cities, especially disaster volunteers, through mukhtars' offices and non-governmental organizations.

- Implementation principles for the sister city disaster management model should be published in the Official Gazette and confusion of duties should be prevented.

- Defined information should be updated in 4-month periods.

#### **4. Conclusions and Recommendations**

Sister cities cooperate in many social and cultural fields. This cooperation process has been utilized as a model proposal for disaster management at national level. This model proposal is based on the elements of preparedness, response, improvement, risk and mitigation and the disaster management process is carried out under the coordination of the Disaster and Emergency Management Presidency. Cities are paired with two cities. In these pairings, factors such as the fault line, proximity of the cities to each other, population, geographical location, etc. were taken into consideration. The main purpose of these pairings is to prevent managerial uncertainties and other weaknesses that may arise in the event of a possible disaster and to ensure that rapid action can be taken. The administrators of the disaster-stricken city may not be able to take an active role in the disaster management process due to the conditions they are in. In order to prevent these and similar situations, in case of a possible disaster, sister city administrators should move to the disaster area and take an active role in the disaster management process. Factors such as joint studies between sister cities before a disaster, providing information about the management processes in case of a possible disaster and getting to know the region closely will enable faster action.

Creating social disaster and emergency awareness in Turkey should be considered as the highest priority task and every means should be used for this purpose. In addition, a high level of awareness should be created by involving all segments of the society in disaster and emergency management. Non-governmental organizations should be given more place in disaster response plans and their active participation in the process should be ensured. Especially local public units should be prevented from knowing their duties only on paper and should adopt the subject sufficiently and realize that it is one of their basic duties and responsibilities. In addition, instead of the perception that the central government is the main responsible for combating disasters and emergencies, the perception that it will be carried out with the joint cooperation of local units, central government and non-governmental organizations should be brought to the forefront. Utilization of people from qualified professional groups during the disaster process can make significant contributions to the acceleration of response processes. With the sister city model, these problems experienced in the disaster management process in Turkey will be solved more quickly as local administrators and non-governmental organizations will be more involved in the process of creating disaster and emergency awareness and local public units will have a better command of the problems related to the region. In addition, it is thought that this model will eliminate the problems related to risk and mitigation and preparedness phases of risk management, which is the first phase of integrated disaster management in Turkey. A good disaster management plan in which local public units are more actively involved in the process of reducing disaster damages, maintaining social and working life in a safe manner and ensuring sustainable development will enable faster action in the implementation process.

With this model proposal, it is aimed to raise public awareness before disasters and to minimize issues such as lack of coordination, late arrival of rescue teams to disaster areas, failure to provide regular aid, and deficiencies in the logistics network during disaster response. It is thought that the sharing of information and experiences on past disasters among sister cities will contribute significantly to the cities. In addition, provinces are matched in this model. In the following process, the applicability of the model can be further elaborated by making matches between the districts of the provinces.

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