

# URBAN AND DISASTER LEGISLATION: EXAMPLES FROM TURKEY AND ALL OVER THE WORLD

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## ABSTRACT

Disasters can cause major damages and can even lead to the complete destruction of urban areas. The casualties and structural damages caused by disasters have forced people to take preventions to protect themselves and their assets. The first written document on disaster legislation in Turkish history is an edict issued by the Ottoman Sultan after the 1509 Istanbul earthquake, called "little apocalypse", the earthquake also caused a fire. This edict is considered the first legal prevention regulating rules on reliefs for those who want to rebuild their houses, making references to the type of buildings and the recommended building materials to be used. These legal preventions mainly include response to a disaster and improvement attempts during reconstruction activities.

Based on the historical development of the legislation and practices for the prevention and risk reduction related to earthquake, flood, and mass movement in Turkey, these prominent disasters are divided into four periods: before 1944, 1944-1958, 1958-1999, and after 1999. Before 1944, the earthquakes of the 1939 Erzincan, 1942 Niksar-Erbaa, and 1943 Tosya-Ladik consecutively resulted in major casualties and serious damages. Subsequently, the Bolu-Gerede earthquake, the 1949 Karlıova earthquake, and the 1948 Eskişehir flood event led to further development of the legislation. Therefore, the 1944-1958 period involves post-disaster intervention and the development process of recovery-oriented approaches. The 1958-1999 period covered the 1966 Varto, 1970 Gediz, 1971 Bingöl, 1983 Erzurum, 1992 Erzincan, 1995 Dinar earthquakes, 1995 Senirkent landslide, 1995 İzmir and 1998 Western Black Sea flood events, which the legislation was improved by intervention and recovery approaches. Between 1990 and 2000, acceptance of the idea that reducing disaster risks will reduce post-disaster losses by the United Nations has led to developing an international strategy in reducing disasters. The year 1999, when Kocaeli and Düzce earthquakes occurred, represented an essential milestone in the development and regulation of legislation in Turkey. During this period, going beyond the crisis management perspective, pre and post-disaster processes has been handled integrated and systematically, and all processes were focused on preventing disaster risks and reducing losses.

Pre-disaster risk reduction studies were encouraged due to the Hyogo framework action plan constitution between 2005 and 2015 in the world. During the 2015-2030 period,

the Sendai framework for disaster risk reduction plan is aimed to prevent disaster risks, increasing resilience to disasters, and being prepared before the occurrence of disasters.

**Keywords:** Natural disasters, Earthquake, Urban, Disaster legislation, Turkey

## INTRODUCTION

Disasters had led to the destruction of human civilizations by threatening the settlement areas since hunter-gatherer societies were settled until today. To resist these natural disasters, which people could not understand or make any sense in the historical period, modern societies take many precautions to reduce structural damage, prevent loss of lives, and set off different prevention strategies.

Considering the established urban areas in the world, these areas are fertile regions where all the necessary needs to maintain human life are covered. However, urban areas, where geological properties are not adequately predetermined, and their location selection studies are not carried out, are exposed to many natural or man-made disasters such as earthquakes, mass movements, floods, and volcanic eruptions. Almost all of the developed and developing countries in the world more or less suffered from disasters. 226.500 people in the 2004 Indian Ocean tsunami, 27.000 people in the 2003 Iran earthquake (M 6.6), 2.700 people in the 2004 Haiti flood event, about 73.000 people in the 2005 Pakistan earthquake (M 7.6), and 1.322 people in the 2005 Hurricane Katrina lost their lives, where these disasters caused significant economic losses (Stanganelli, 2008; Erkan, 2010).

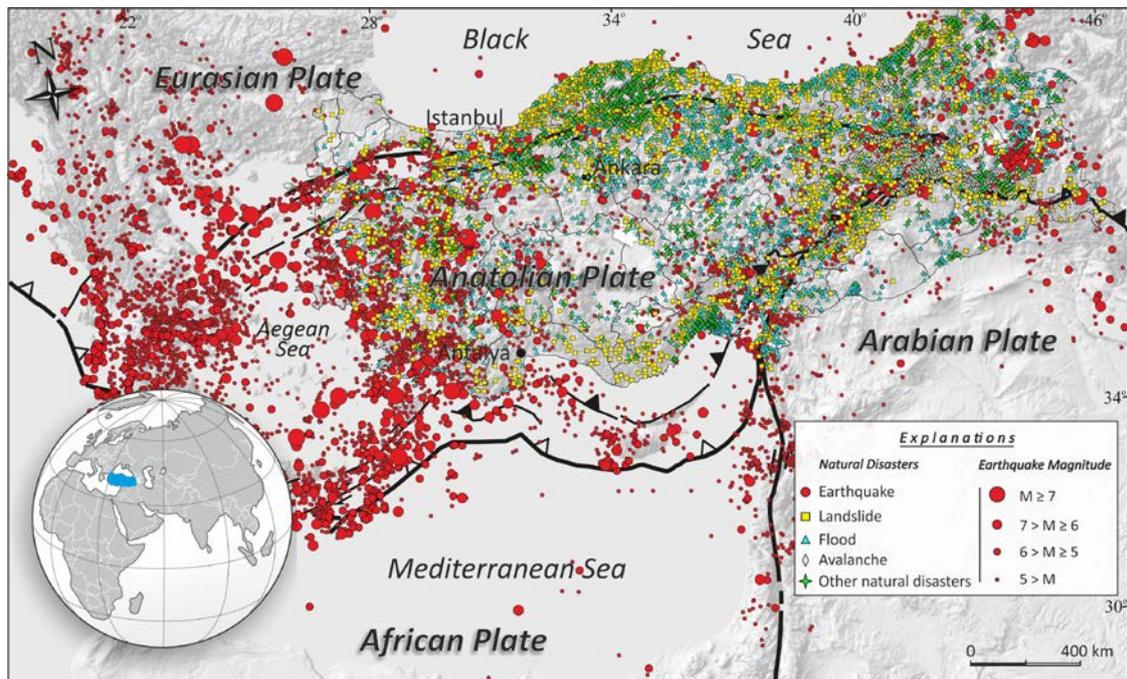


Figure 1. Simplified tectonic map showing the distribution of natural disasters occurred between 1900 and 2020 in Turkey (modified from Çağlayan et al., 2019). Natural disaster data are adopted from the General Directorate of Disaster Affairs (2008a, b) and AFAD (2020).

Referring to statistics on natural disasters in Turkey from 1900 to 2020, approximately 87.000 people lost their lives, and 600,000 houses were damaged in 215 earthquakes with a magnitude of 6.0 and higher (Figure 1). However, events of about 7.000 floods, 24.000 landslides/rockfalls, and 1.600 avalanches have occurred in the last century which inflicted substantial damages and loss of lives (AFAD 2020, Çağlayan et al., 2018; 2019, Işık, 2018) (Figure 1).

### **SOME EXAMPLES OF DISASTER LEGISLATIONS**

Considering the historical development of the legislation and practices in preventing disasters such as earthquakes, floods, and mass movements and mitigation of related damages, four different periods, before 1944, 1944-1958 period, 1958-1999, and after 1999 are defined. The determination of hazards and disaster risks and mitigation practices, and preparation for legislation, started with precautions taken for earthquake and consequent fire events. The Ottoman Sultan issued the first written legislation regarding the 1509 Istanbul earthquake, called the "small apocalypse" and earthquake-induced fires. At the time, the edict, which explains policies for rebuilding house aids and the explanations and rules regarding the type of building and the building material to be used, is accepted as the first legal measure. Such legal measures are essential in terms of disaster response and improvement processes during the reconstruction process. The 1939 Erzincan earthquake (M 7.9), the 1942 Niksar-Erbaa earthquake (M 7.0), and the 1943 Tosya-Ladik earthquake (M 7.2), which caused significant casualties and severe damages, have played an essential role in the development of legislation in the period before 1944. Regarding the "Law on Aid to be Provided to Those Who Suffered in Erzincan and the Areas Affected by the Erzincan Earthquake" prepared in 1940, all tax liabilities of taxpayers in the earthquake area were subjected to tax clearance, allocation free of charge, and construction material aid was provided to those whose houses were destructed or damaged. Considering the flood events in 1941, 1942, and 1943, the law number 4373 on "Prevention against Flood Water and Flooding" became effective.

The 1944 Bolu-Gerede earthquake (M 7.3), 1949 Karlıova (M 6.7) earthquake, and the 1948 Eskişehir flood event have led to the further development of legislation that includes approaches focused on post-disaster response and recovery activities. Accordingly, after the 1944 Bolu-Gerede earthquake, the law number 4623 on "Law for Precautions before and after Earthquakes" reducing the possible damages caused by disasters through the precautions and practices which have to be taken before the earthquakes, are aimed. In 1945, the first "Earthquake Risk Map of Turkey" and "Construction Directive for Earthquake Risk Zones in Turkey" were released upon obligatory pre-geological surveys in newly settled areas. In 1956, considering the 1949 Karlıova earthquake (M 6.7), the 6785 numbered law on "Development Law" was enacted.

In the 1958-1999 period, considering the 1966 Varto earthquake (M 6.9), the 1970 Gediz earthquake (M 7.2), the 1971 Bingöl earthquake (M 6.8), the 1983 Erzurum earthquake (M 6.9), the 1992 Erzincan earthquake (M 6.8), the 1995 Dinar earthquake (M 6.1), the 1995 Senirkent landslide, and 1995 Izmir and 1998 Western Black Sea floods, pre-disaster studies are also included in the legislation as well as approaches focused on post-disaster response and recovery activities. For this reason, in 1958, "Civil Defense Law" numbered the 7126, and in 1959, the 7269 numbered law on the

“Measures to be taken and Aids to be Provided due to the Disasters Affecting Public Life” also known as the Disaster Law, were enacted. Disaster preparedness and response activities were organized with the 88/12777 numbered law on " Regulation on Emergency Response. Organizations and Planning Principles for Disasters " released in 1968. In 1985, the 3194 numbered law on "Development Law", which reconfigured the zoning legislation, become effective. In 1987, regarding 1634 numbered circular of the Ministry of Public Works and Settlement, it was decided that all geological survey reports would be approved by individual institutions deemed appropriate from the Ilbank and the General Directorate of Disaster Affairs. In 1989, with the 4343 numbered circular, "Principles on Residential Geological and Geotechnical Study Report and Appendices", the legal basis of the earth science data as well as its scope and contents, and the evaluations regarding the applications in planning were clarified. After the 1992 Erzincan earthquake (M 6.8), the law number 3838 on “Execution of Service related to Damage and Destructions in Şırnak and Çukurca due to the Earthquake occurred in Erzincan, Gümüşhane and Tunceli” was enacted.

An important milestone in terms of the development and regulation of legislation in Turkey is 1999, after the two destructive earthquakes of Izmit (M 7.4) and Düzce (M 7.2). Within this period, moving beyond the understanding of crisis management, pre and post-disaster processes was handled holistically and systematically and have focused on preventing disaster risks and reducing damages in all processes. In this context, to eliminate the adverse effects of the disaster and take the necessary precautions, the law number 4452 on "Authorization Law on the Measures to be Taken Against Natural Disasters and Arrangements for the Elimination of Damages Caused by Disasters" become effective. In 2001, the "Regulation on the Establishment, Duties, Working Procedures and Principles of Civil Defense Search and Rescue Units and Teams", and the procedures and principles regarding the establishment, duties, communication, coordination, and equipment of the search and rescue units affiliated to the General Directorate of Civil Defense were determined. In 2008, based on the 10337 numbered circular, which was aimed to determine the disaster hazards and risks threatening residential areas and to eliminate these risks, the Circular on Geological Geotechnical/Microzonation Studies Based on the Development Plan has been issued, and the application method was redefined with 102732 numbered circular of the Ministry of Environment and Urbanization issued in 2011, subsequently. Based on the law number 5902 enacted in 2009, the “Disaster and Emergency Management Presidency” was established, where the authorities and responsibilities were aimed to gather under a single roof.

Many countries, such as the United States of America (USA), Japan, New Zealand, Ecuador, Italy, Taiwan, Indonesia, China, Tibet, Pakistan, Iran, and Chile, frequently suffer from natural disasters. The 1959 Ise-Wan typhoon in Japan resulted in the death of 5.856 people and significant damages in settlement areas. This disaster was a milestone for the development of disaster legislation in Japan. The basic principles of the Japanese Disaster Management System were determined upon the "Basic Law of Measures to be Taken Against Disasters" enacted in 1961. The loss of lives and properties caused by the 1995 Kobe earthquake (M 7.2) has led the Japanese Government to question their current disaster systems. Based on the regulations made in 2001, the responsibilities of the central and local government, private sector, and individuals were rearranged. Therefore, significant progress has been made with disaster

prevention and preparedness activity and studies, and an important place has been given to the development of a culture of living with disasters in Japanese society.

In the USA, the disaster management system has been established on the Integrated Emergency Management System, and an approach that deals with all kinds of disasters in a single plan have been adopted. As part of disaster prevention and mitigation in the USA, “The Robert T. Stafford Disaster Relief and Emergency Assistance Act”, “The Earthquake Disaster. Mitigation Act”, “The Disaster Mitigation Act”, and “The Alquist-Priolo Earthquake Fault Zoning Act” were established. On the other hand, New Zealand has started to work on new principles for disaster management in the early 1990s. Thus, by publishing the " Civil Defence Emergency Management (CDEM) Act" in 2002 and " Planning for Development of Land on or Close to Active Faults Guide" in 2003, The mapping of the surface rupture caused by active faults and the criteria for establishing fault zone preventive areas are defined.

On the international level, a new strategy to change the post-disaster actions applied to reduce disaster damages with new insights emphasizing developing measures to be taken before disasters and increasing social resilience is noticed. Identification and risk reduction activities before the occurrence of natural disasters were planned by the United Nations (UN) decision within the scope of the International Decade for Natural Disaster Reduction (IDNDR) between 1990 and 2000. The new strategies and principles of the mitigation approach were determined in the Yokohama conference held in 1994. The International Strategy for Disaster Reduction (ISDR) organization, which established in 2000, has encouraged to carry out pre-disaster risk reduction studies in the world regarding the ten-year (2005-2015) damage reduction principles defining the measures to be done before the disaster in the Kobe (Japan) conference held in 2005 and Hyogo 2005-2015 action plan. International cooperation issues have been highlighted in reducing the damages caused by the 2011 disasters in Japan and China. Prevention of disaster risks, enhancing resilience to disasters, and preparedness before disasters occur are priority issues in the 2015-2030 Sendai Disaster Risk Reduction Framework Plan.

## **CONCLUSIONS**

Determining the disaster hazards and risks before the selection and planning of urban and development areas is essential. Determination of disaster hazards and applying mitigation policies are priority actions that should be done before disasters in all countries. In Turkey, the development process of legislation and practices toward disaster prevention and reducing the damages caused by disasters as a result of years of experience, by going beyond the crisis management approaches, pre and post-disaster issues were handled holistically and systematically, and all processes are focused on prevention of disaster risks and reduction of damages.

Many legal arrangements and practices are made to determine the disaster hazards and reducing the damage in the world, especially in developed and developing countries suffered from disaster risks. Increasing risk resilience by improving the missing aspects of these legislations and practices to determine and prevent disaster hazards and risks is adopted as a priority objective.

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