



TÜRKİYE COUNTRY REPORT

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Ministry of Interior, Türkiye

ASIAN DISASTER REDUCTION CENTER

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ABBREVIATIONS

AFAD	Disaster and Emergency Management Presidency
AFAD-EKA	AFAD Industrial Accident Impact Area Modeling Software
AFAD-RED	Rapid Earthquake Damage and Loss Estimation System
ARAS	Disaster Risk Reduction System
AYDES	Disaster Management and Decision Support System
AYMEP	Disaster Management Centers Platform
BSEC	Black Sea Economic Cooperation Organization
CBRN	Chemical, Biological, Radiological, Nuclear
CDRI	Coalition for Disaster Resilient Infrastructure
DAF	Eastern Anatolian Fault Line
DASK	The Natural Disaster Insurance Institution
DDB	AFAD Earthquake Department
DRR	Disaster Risk Recudtion
DEKAS	Earthquake Parameter Estimation and Analysis System
DEMEBIS	Earthquake Information System
DPPI SEE	South East Europe Disaster Preparedness and Prevention Initiative
ECO	Economic Cooperation Organization
GIS	National Geographic Information System
GDP	Gross Domestic Product
IRAP	Provincial Disaster Risk Reduction Plan
ISMEP	Istanbul Seismic Risk Reduction and Emergency Preparedness Capacity Enhancement Project
IPKB	Istanbul Project Coordination Unit
JICA	Japan International Cooperation Agency
KAF	Northern Anatolian Fault Line
NGO	Non-Governmental Organization
OIC	Organization of Islamic Cooperation
OIZ	Organized Industrial Zone
R&D	Research and Development
SIDERUS	Seismo Geodetic Earthquake Analysis System
SWOT	Strengths, Weaknesses, Oppurtunities and Threats
SFDRR	Sendai Framework for Disaster Risk Reduction
TAMP	Türkiye Disaster Response Plan
TARAP	Türkiye Disaster Risk Reduction Plan
TASIP	Türkiye Post-Disaster Recovery Plan
TAYS	Türkiye Disaster Management Strategy
TDVMS	Earthquake Data Center System
TBDY	Türkiye Building Earthquake Regulation
TL	Turkish Liras
UCPM	European Commission Civil Protection Mechanism
UDAP	National Earthquake Research Program
UDSEP	National Earthquake Strategy and Action Plan
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
YASIM	Building Health Monitoring Center

DISCLAIMER

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The views expressed in the report do not necessarily reflect the views of the ADRC. The boundaries and names shown and the designations used on the maps in the report also do not imply official endorsement or acceptance by the ADRC.

1. GENERAL DESCRIPTION OF REPUBLIC OF TÜRKİYE



Figure 1. Türkiye Map

Türkiye, officially the Republic of Türkiye, is a country mainly located in Anatolia in West Asia, with a smaller part called East Thrace in Southeast Europe. It borders the Black Sea to the north; Georgia, Armenia, Azerbaijan, and Iran to the east; Iraq, Syria, and the Mediterranean Sea to the south; and the Aegean Sea, Greece, and Bulgaria to the West (Figure 1). Türkiye is home to over 85 million people. Officially a secular state, Türkiye has a Muslim-majority population. Ankara is Türkiye's capital and second-largest city, while Istanbul is its largest city and economic and financial center. Other major cities include İzmir, Bursa, and Antalya [1].

1.1. Geography

Türkiye covers an area of 783,562 square kilometres (302,535 square miles). With Turkish straits and Sea of Marmara in between, Türkiye bridges Western Asia and Southeastern Europe. Türkiye's Asian side covers 97% of its surface, and is often called Anatolia. Another definition of Anatolia's eastern boundary is an imprecise line from the Black Sea to Gulf of Iskenderun. Eastern Thrace, Türkiye's European side, includes around 10% of the population and covers 3% of the surface area. The country is encircled by seas on three sides: the Aegean Sea to the west, the Black Sea to the north and the Mediterranean Sea to the south. Türkiye is bordered by Georgia, Armenia, Azerbaijan and Iran to the east. To the south, it's bordered by Syria and Iraq. To the north, its Thracian area is bordered by Greece and Bulgaria [1].

Türkiye is divided into "seven major regions": Marmara, Aegean, Central Anatolia, Black Sea, Eastern Anatolia, Southeastern Anatolia and the Mediterranean. As a general trend, the inland Anatolian Plateau becomes increasingly rugged as it progresses eastward. Mountain ranges include Köroğlu and Pontic mountain ranges to the north, and the Taurus Mountains to the south. The Lakes Region contains some of the largest lakes in Türkiye such as Lake Beyşehir and Lake Eğirdir [1].

1.2. Climate

The coastal areas of Türkiye bordering the Aegean and Mediterranean Seas have a temperate Mediterranean climate, with hot, dry summers and mild to cool, wet winters. The coastal areas bordering the Black Sea have a temperate oceanic climate with warm, wet summers and cool to cold, wet winters. The Turkish Black Sea coast receives the most precipitation and is the only region of Türkiye that receives high precipitation throughout the year. The eastern part of the Black Sea coast averages 2,200 millimetres (87 in) annually which is the highest precipitation in the country. The coastal areas bordering the Sea of Marmara, which connects the Aegean Sea and the Black Sea, have a transitional climate between a temperate Mediterranean climate and a temperate oceanic climate with warm to hot, moderately dry summers and cool to cold, wet winters [1].

Snow falls on the coastal areas of the Sea of Marmara and the Black Sea almost every winter but usually melts in no more than a few days. However, snow is rare in the coastal areas of the Aegean Sea and very rare in the coastal areas of the Mediterranean Sea. Winters on the Anatolian plateau are especially severe. Temperatures of -30 to -40 °C (-22 to -40 °F) do occur in northeastern Anatolia, and snow may lie on the ground for at least 120 days of the year, and during the entire year on the summits of the highest mountains. In central Anatolia the temperatures can drop below -20 °C (-4 °F) with the mountains being even colder. Mountains close to the coast prevent Mediterranean influences from extending inland, giving the central Anatolian Plateau a continental climate with sharply contrasting seasons [1].

1.3. Demography

According to the Address-Based Population Recording System, the country's population was 85,372,377 in 2023, excluding Syrians under temporary protection. 93% lived in province and district centers. People within the 15–64 and 0–14 age groups corresponded to 68.3% and 21.4% of the total population, respectively. Those aged 65 years or older made up 10.2%. Between 1950 and 2020, Türkiye's population more than quadrupled from 20.9 million to 83.6 million; however, the population growth rate was 0.1% in 2023. In 2023, the total fertility rate was 1.51 children per woman, below the replacement rate of 2.10 per woman. In a 2018 health survey, the ideal children number was 2.8 children per woman, rising to 3 per married woman [1].

1.4. Government

There are 16 Ministries in the Organization of the Republic of Türkiye. AFAD currently carries out its duties under the Ministry of Internal Affairs (Figure 2).

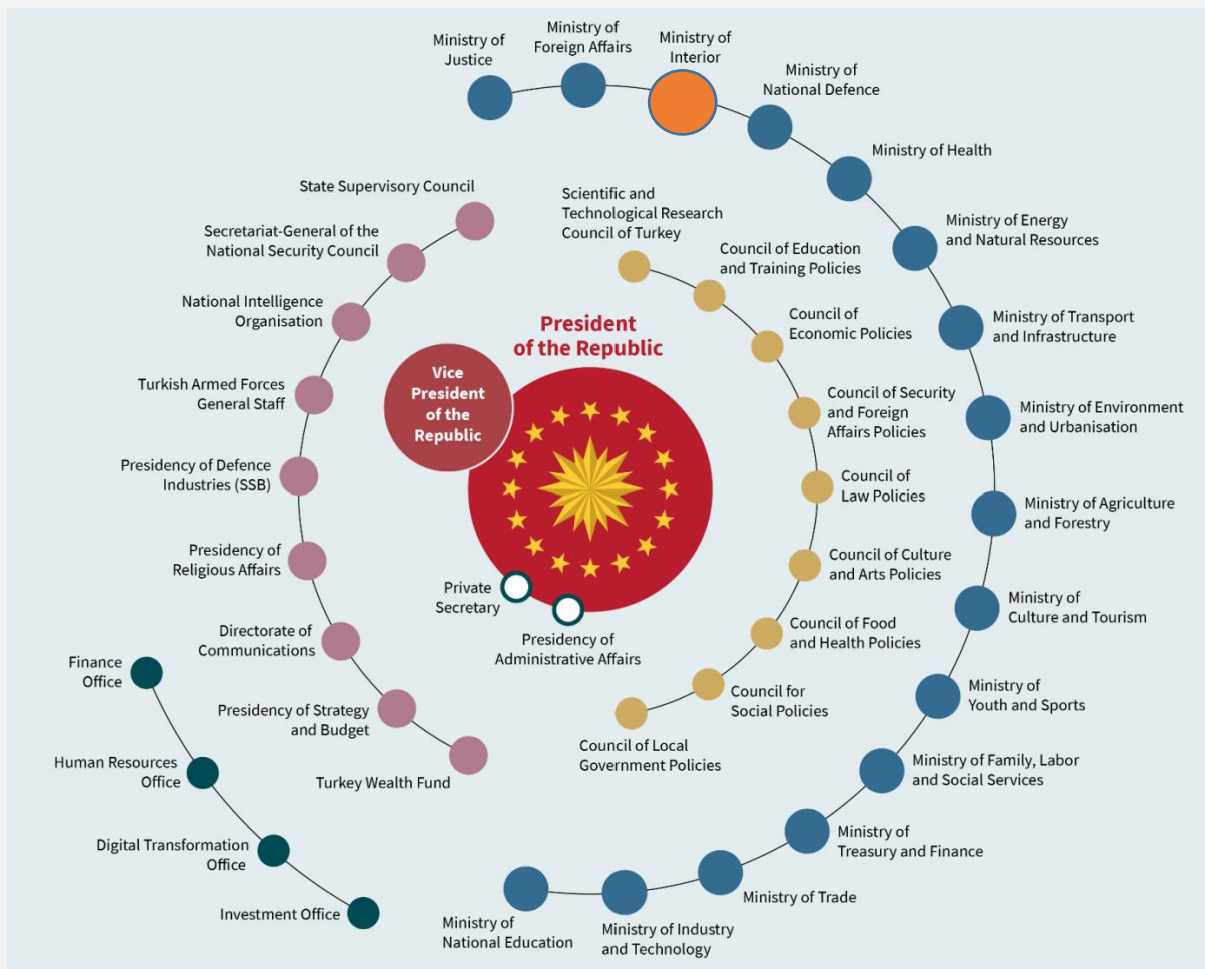


Figure 2. Organizational Structure of the Republic of Türkiye

2. HAZARD CHARACTERISTIC OF THE COUNTRY

Türkiye is located in the Mediterranean, Alpine-Himalayan earthquake zone, one of the most active earthquake zones on earth, where approximately 20% of the world's earthquakes occur and where a devastating earthquake occurs in the country on average every five years. In terms of human and economic losses caused by disasters, our country ranks first among the countries of the Organization for Economic Co-operation and Development (OECD) [2].

There have been 141,794 recorded events in Türkiye between 1900 and 2025. The distribution of these events is given in Figure 3. Forest fires and landslides are in the first two places among these events [3].

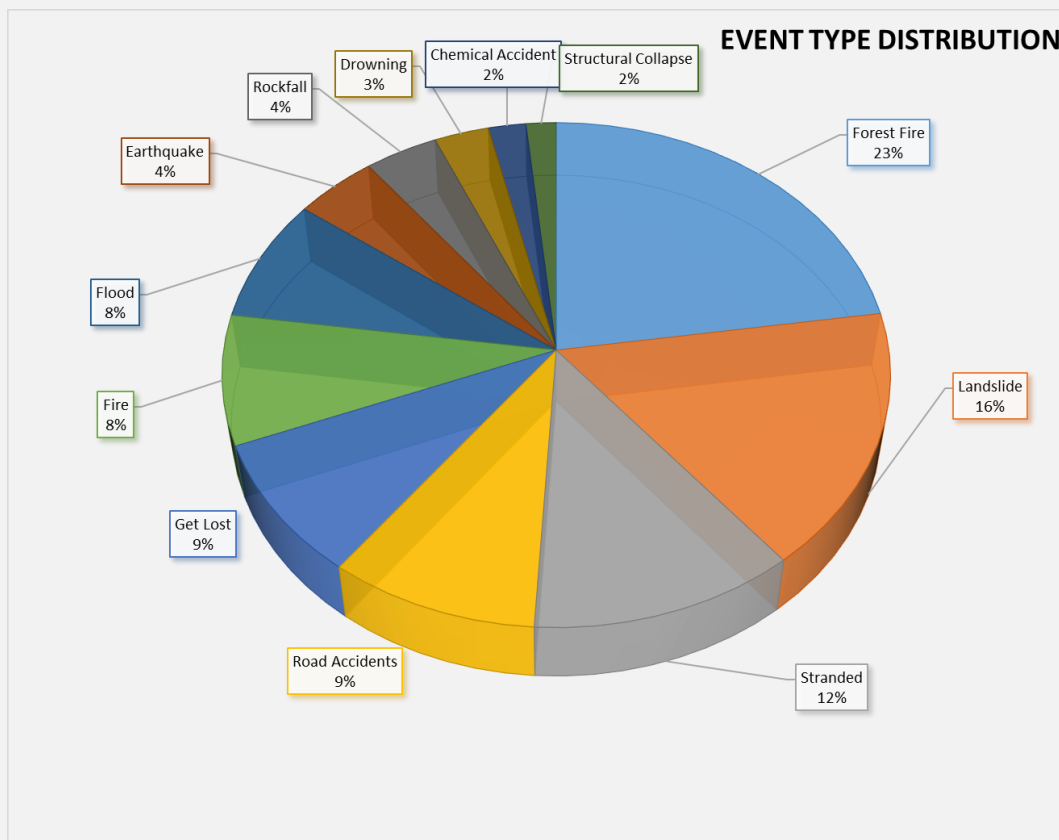


Figure 3. Distribution of Event Types Between 1900 - 2025

Türkiye is a country that is frequently exposed to different types of disasters due to its geological, topographic and climatic characteristics. Below, general information is provided on the types of disasters that are more common and effective in our country.

2.1. Earthquake

92% of Türkiye's surface area and 95% of its population are in the earthquake zone. This tectonic system, which has developed over millions of years, occasionally manifests itself through destructive seismic activities. Our country, which has a geologically young formation character, is constantly pushed northward by the African and Arabian plates from the south. The fact that the Eastern Anatolia and Southeastern Anatolia regions of our country are at the intersection of plates and are surrounded by active fault lines due to their young geological structure are the main causes of the tectonic activities that we have turned into disasters. The presence of major fault systems such as Northern Anatolian Fault Line (KAF) and Eastern Anatolian Fault Line (DAF) in these regions plays a major role in the occurrence of destructive earthquakes, as in the example of the February 6 earthquakes. The earthquakes that occurred on February 6, 2023 between 04.17 and 13.24 also occurred in the DAF system. Although centered in Kahramanmaraş, the earthquakes in question directly affected 10 cities and indirectly affected more cities. Apart from these initial effects, it caused the deaths of tens of thousands of people, the displacement of millions of people, and caused billions of TL in damage to the country's economy. In addition to this destructiveness, the psychological damage left in the social memory is somewhat understandable but immeasurable [4].

Due to the active intraplate faults surrounding our country, many earthquakes occur, and earthquakes of magnitude 5 and greater can cause damage and loss of life. When we look at earthquake statistics for the last one hundred and twenty years, we see that an earthquake of magnitude 7 or greater affects Türkiye every six years, and two earthquakes of magnitude 6 or greater every year, and these earthquakes cause significant loss of life and property [5].

In order to prevent or reduce the effects of physical, economic, social and environmental damages and losses that earthquakes may cause and to create new living environments that are resistant to earthquakes, safe, prepared and sustainable, the National Earthquake Strategy and Action Plan (UDSEP 2012-2023) was published in the Official Gazette dated August 18, 2011 and numbered 28029. Aiming to create an institutional infrastructure for the purpose of reducing earthquake risk and creating a society that is prepared and resilient in coping with earthquakes and to determine the priorities of research and development activities on the subject, UDSEP is the first strategic plan of our country in reducing earthquake risks [5].

In addition; "Renewed Türkiye Earthquake Hazard Map" and "Türkiye Building Earthquake Regulation" entered into force on January 1, 2019. In this way, by determining the earthquake hazard on a country scale, it was ensured that new buildings were designed against earthquake hazard and that existing buildings were evaluated and used more effectively in earthquake risk reduction activities.

In Türkiye, an earthquake country, 346 damaging earthquakes of magnitude 5 MW and above occurred between 1900 and 2024 (Figure 4) [6]. The largest earthquakes in terms of loss of life and heavy damage are the 2023 Kahramanmaraş-centered earthquakes on the EAF, the 1939 Erzincan Earthquake on the NAF, and the 1999 Gölcük-centered Marmara earthquakes, respectively [5].

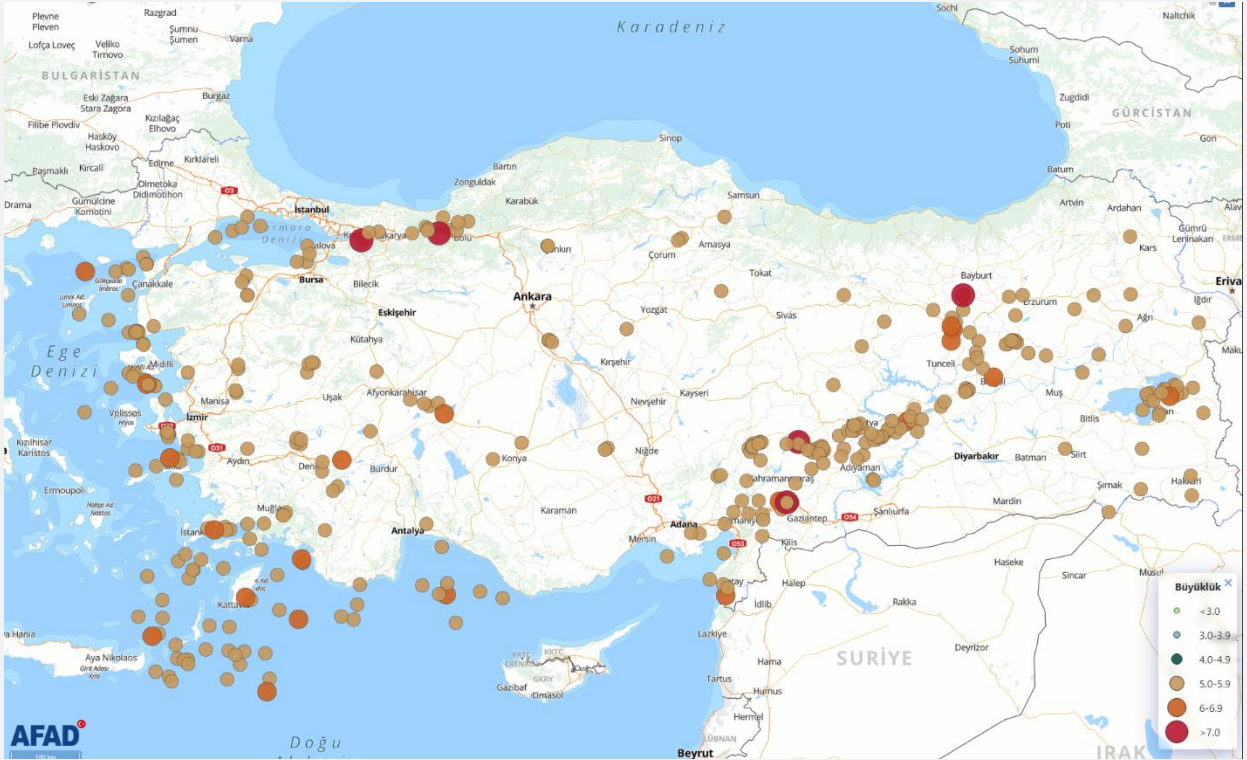


Figure 4. Magnitude 5 and Above Damaging Earthquakes That Occurred Between 1900-2024

According to the Türkiye Earthquake Hazard Map, which shows Türkiye's earthquake hazard most clearly and was published and put into effect in 2018, a large part of Türkiye's land is located in areas with high earthquake hazard (Figure 5) [5].

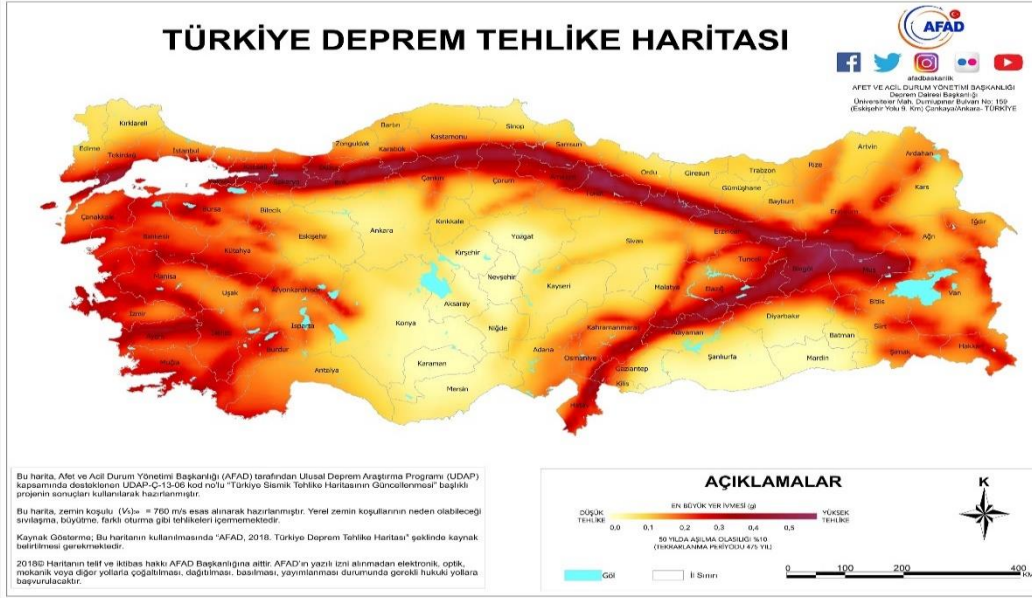


Figure 5. Türkiye Earthquake Hazard Map

6 FEBRUARY 2023 KAHRAMANMARAS EARTHQUAKES

According to the records of the Disaster and Emergency Management Presidency (AFAD), Earthquake Department (DDB), an earthquake with an instrumental magnitude of M_w : 7.7 occurred in Pazarcık (Kahramanmaraş) district at 04:17 local time. While the aftershocks of this earthquake continued, the second earthquake with an instrumental magnitude of M_w : 7.6 occurred in Elbistan (Kahramanmaraş) district at 13:24 on the same day and the Defne (Hatay) earthquake with a magnitude of M_w : 6.4 occurred on February 20, 2023. According to the AFAD-DDB records, between February 06 and March 25, 2023, a total of 20,231 aftershocks occurred after the main earthquakes, 4 of which were $M_w > 6.0$, 37 of which were $M_w > 5.0$ and 430 of which were $M_w > 4.0$. According to the distribution of epicenter locations of aftershocks and moment tensor solutions made by various seismology centers; 06 February 2023 Pazarcık (Kahramanmaraş) and Elbistan (Kahramanmaraş) earthquakes occurred with left-lateral strike-slip faulting mechanism, while 20 February 2023 Defne (Hatay) earthquake occurred with left-lateral strike-slip faulting mechanism with normal component [5].

The earthquakes in question were felt strongly in Gaziantep, Malatya, Batman, Bingöl, Elazığ, Kilis, Diyarbakır, Mardin, Siirt, Şırnak, Van, Muş, Bitlis, Hakkari, Adana, Osmaniye, Hatay and Syria, as well as Kahramanmaraş. According to the "Kahramanmaraş and Hatay Earthquakes Report" of the Strategy and Budget Presidency; it was stated that there were a total of 5,649,317 houses in the 11 provinces affected by the earthquakes, and 1,929,313 of these houses were damaged. Damage was

detected in 68.1% of the houses in Adıyaman, 57.8% in Kahramanmaraş, 55.6% in Malatya and 50.8% in Hatay, which were among the provinces most damaged by the earthquake. The area affected by the earthquake is larger than the surface area of 8 countries and the population of more than 6 countries [5].

The February 20, 2023 Defne (Hatay) Earthquake (Mw: 6.4) occurred on the 22 km long northern section of the Antakya Fault Zone. However, since the magnitude of the earthquake was not sufficient to create a surface rupture and the focal depth was relatively deep (21.7 km), no surface rupture developed. The rupture times of the Mw: 7.7 Pazarcık and Mw: 7.6 Elbistan earthquakes are approximately 100 seconds and 60 seconds, respectively. The location of the earthquake and its impact areas are given in Figure 6, Figure 7, Figure 8, Figure 9 [5].

On February 6, 2023, 3 major earthquakes occurred on the same day: Kahramanmaraş-Pazarcık at 04:17 with a magnitude of 7.7, Gaziantep-İslahiye at 04:36 with a magnitude of 6.5, and Kahramanmaraş-Elbistan at 13:24 with a magnitude of 7.6. A total of 7 major earthquakes and 70,797 aftershocks occurred [5].

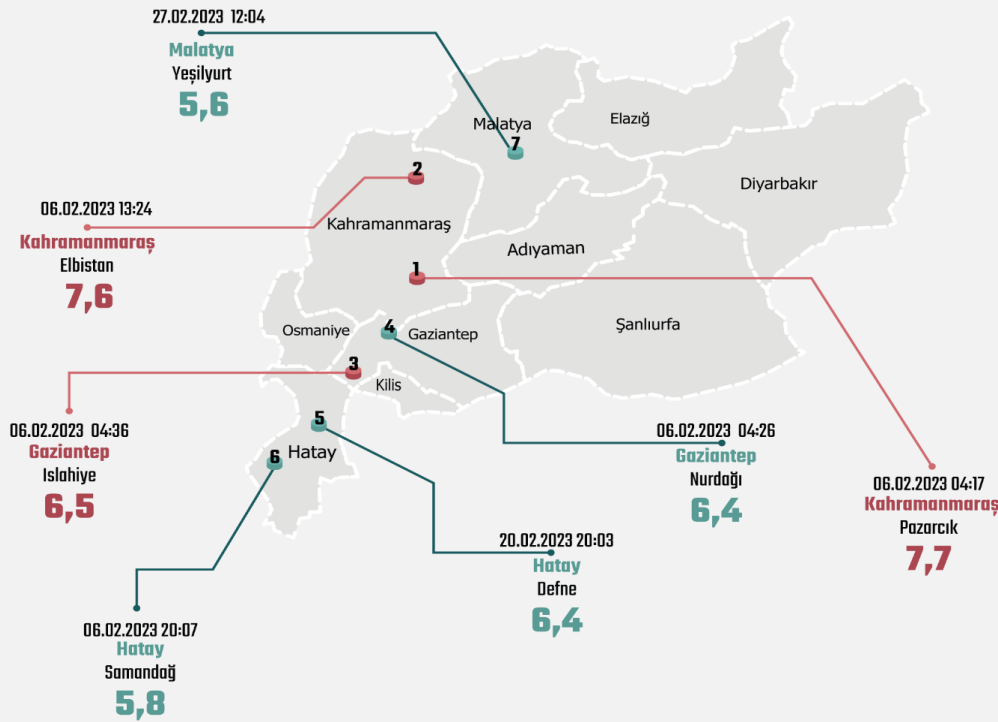


Figure 6: 7 Major Earthquakes

The Earthquake was heavily felt in Syria, Egypt, Lebanon, Turkish Republic of Northern Cyprus and Iraq (Figure 7 Figure 7. Impact Areas of Earthquakes).

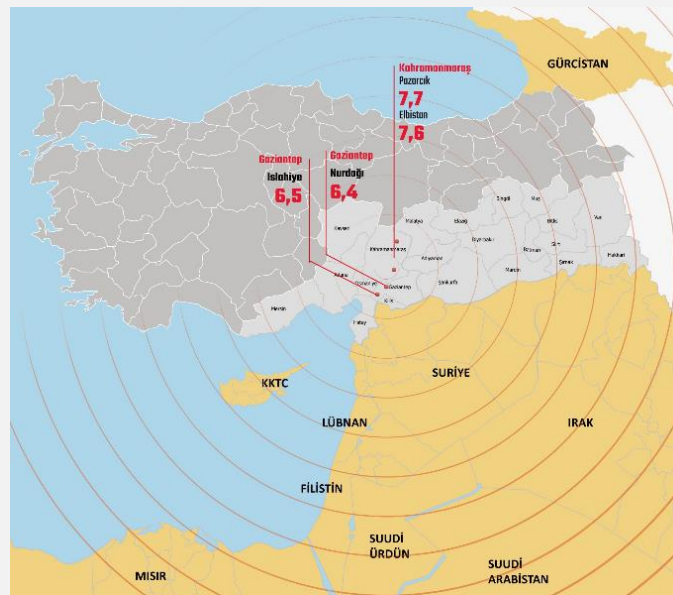


Figure 7. Impact Areas of Earthquakes

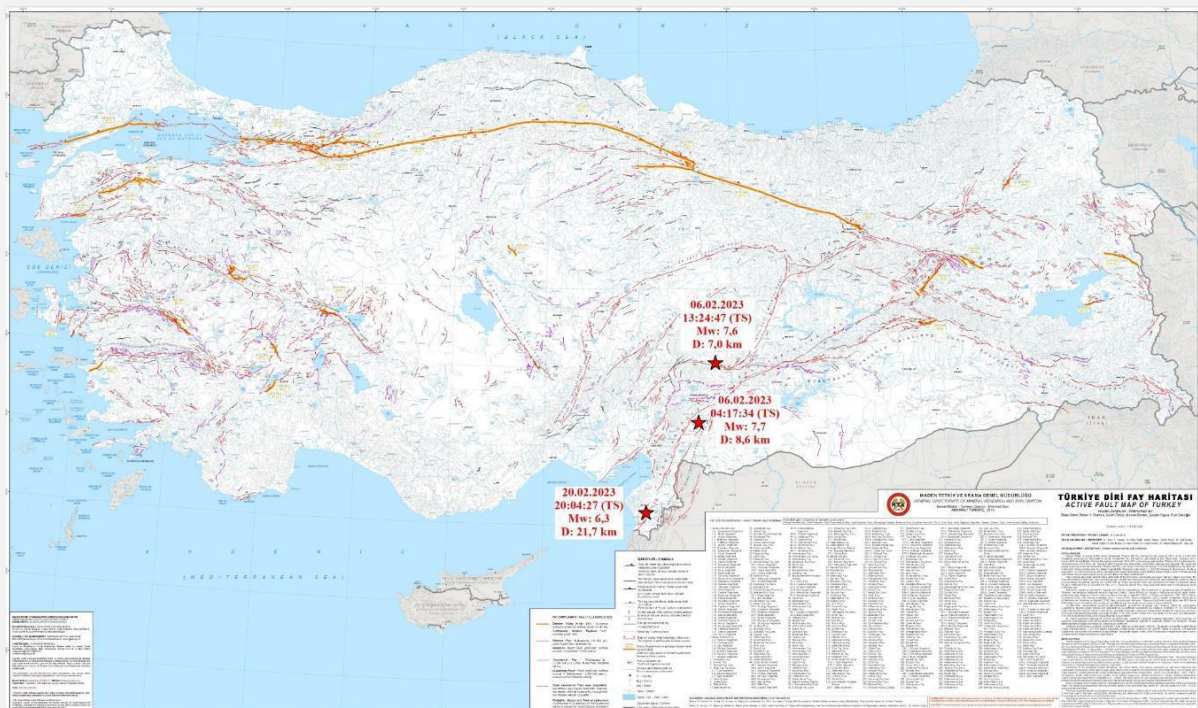


Figure 8. Locations of 06.02.2023 Pazarcık (Kahramanmaraş), Elbistan (Kahramanmaraş) and Defne (Hatay) Earthquakes on the MTA Türkiye Active Fault Map

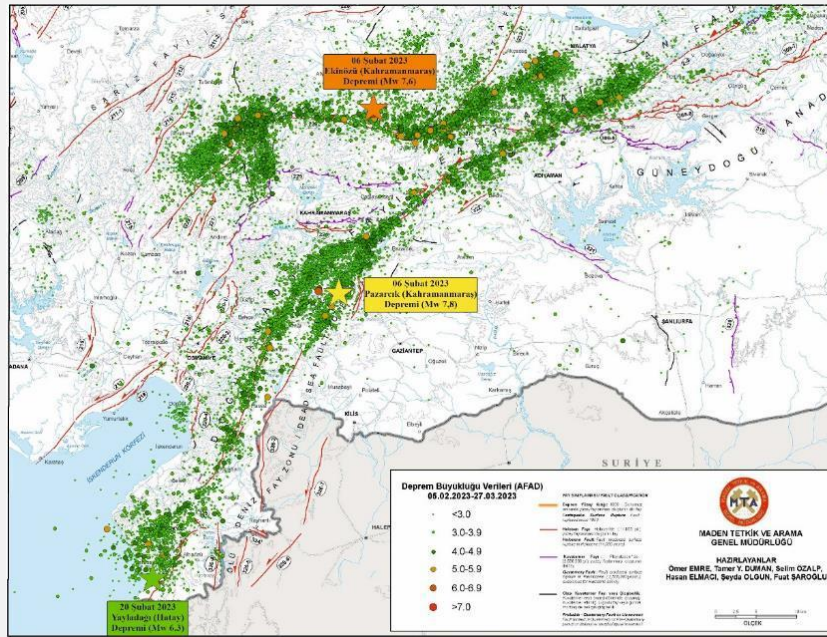


Figure 9. Locations of the 06.02.2023 Pazarcık (Kahramanmaraş), Elbistan (Kahramanmaraş) and 20 February 2023 Defne (Hatay) Main and Aftershock Earthquakes on the MTA Türkiye Active Fault Map

The earthquake affected 11 provinces (Kahramanmaraş, Hatay, Adiyaman, Osmaniye, Gaziantep, Sanliurfa, Malatya, Diyarbakir, Adana, Kilis and Elazig), 124 districts, 6,929 neighborhoods and villages. The earthquake's impact area is 120 thousand km² and the number of people affected is 14 million. The number of deaths in the earthquakes is 53,735 and the number of injuries is 107,213 (Figure 10).

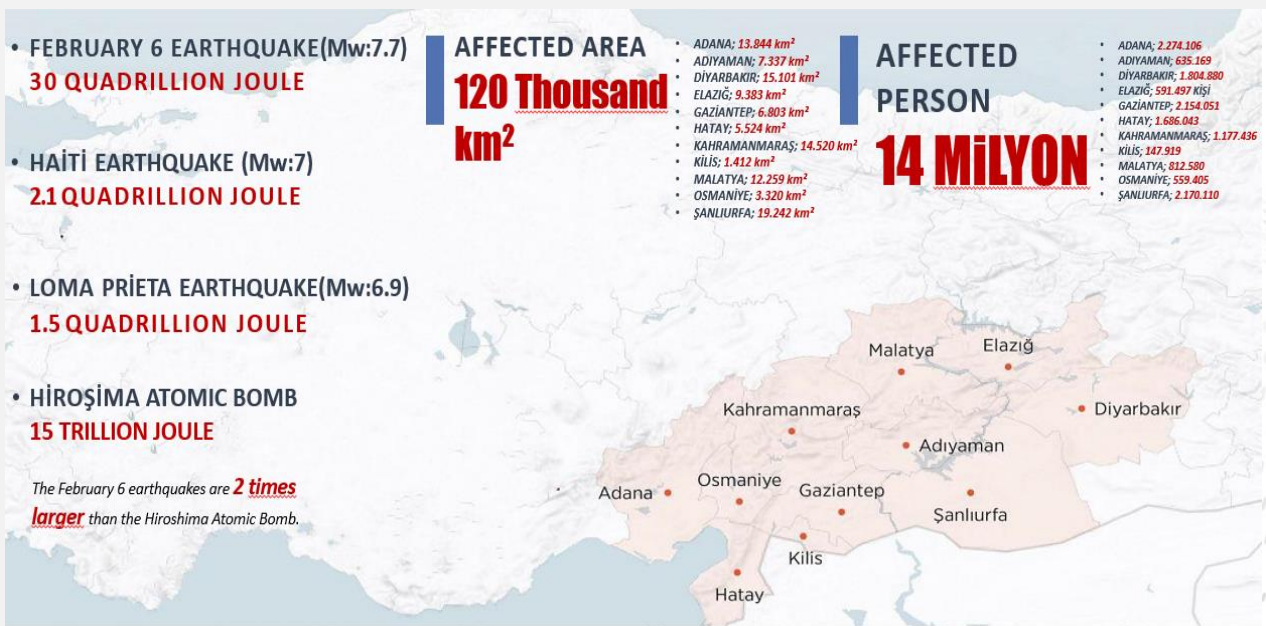


Figure 10: General Information About the February 6 Earthquakes

Following the disaster 39,546 buildings were destroyed (Photograph 1). 206,786 buildings were severely damaged. In 11 provinces and 124 districts, 39 thousand debris searches were carried out and 26,032 debris search and rescue operations were carried out(Photograph 2).

Within the scope of the work carried out, 20 thousand vehicles and construction equipment, 141 helicopters, 182 aircraft and 23 ships were assigned.



Photograph 1. Hatay After the Earthquake



Photograph 2. Fault Images from Kahramanmaraş and Hatay

A total of 3,549,443 disaster victims were evacuated from the disaster area.

Within the scope of the intervention efforts after the earthquakes, 35,250 search and rescue personnel 11,488 of whom were international (from 90 different country) worked (*Photograph 3*).



Photograph 3. Search and Rescue Teams

Within the scope of security and public order services in the earthquake region; a total of 142,860 security personnel, including 74,033 Police, 65,465 Gendarmerie and 3,362 Guards served (*Photograph 4*).



Photograph 4. Security Personnel

A total of 650 thousand personnel took part in intervention and recovery efforts.

Within the scope of the work carried out, 20 thousand vehicles and construction equipment, 141 helicopters, 182 aircraft and 23 ships were assigned.

Within the scope of nutrition services, an average of 4 million meals/persons were served daily by the Turkish Red Crescent, NGOs and Public Institutions under the coordination of AFAD.



Photograph 5. Mobile Kitchen

Approximately 20 million food parcels were distributed in the region, 2 million of which were distributed by AFAD, through the Red Crescent, NGOs, municipalities, philanthropists and institutions. Approximately 150 thousand aid trucks were delivered to the region.

Since the first moment of the earthquake, 1 million tents have been sent by AFAD as temporary shelter. 645 thousand tents were set up in 350 tent city areas and shelter was provided to approximately 2.5 million disaster victims (Photograph 6).



Photograph 6. Tent City and Container City Areas

With its infrastructure, including security services, social facilities (schools, mosques, playgrounds, mobile kitchens, psycho-social support service areas) and health centers, 404 container cities and 216,566 containers were installed. A total of 1,188,218 disaster victims were provided shelter in various dormitories and hotels. A total of 3,549,443 disaster victims were evacuated from the disaster area (Photograph 7).



Photograph 7. Disaster Victim Evacuation

Within the scope of damage assessment studies carried out in the earthquake region; damage assessment was carried out in 2,381,888 buildings and 6,612,685 independent sections. The debris of urgently demolished and collapsed buildings (60,763 buildings) was completely removed in 68 days (March 1-May 7, 2023). The number of severely damaged buildings to be demolished is 200,167, and the debris of 182,773 severely damaged buildings has been removed to date (*Photograph 8*).



Photograph 8. Debris Removal Work

There are a total of 440,752 beneficiaries, including 387,954 houses, 41,334 workplaces and 11,464 barns in 11 provinces. A total of 50,904 houses were delivered on turnkey basis. Housing construction work continues.

It is calculated that the total burden of the earthquake on the country's economy is approximately 2 trillion TL (103.6 billion dollars), corresponding to approximately 9 percent of the national income in 2023. The most important component of this cost was housing damage, estimated at 1 trillion 74 billion TL, at 54.9 percent (*Table 1*). The second weighted damage item was the cost of demolition of public infrastructure and service buildings, amounting to 242.5 billion TL [7].

Table 1: Total Cost - Damage and Emergency Expense

Total Cost Estimate	Billion TL	Billion USD	GDP Rate
Emergency Expenditure	128.0	6.8	0.6
Public Sector Damage Estimate	242.5	12.9	1.1
Private Sector Damage Estimate	222.4	11.8	1.0
Housing Damage Estimate (Urgent Demolition + Demolished + Severely and Moderately Damaged Housing)	1,073.9	56.9	5.0
Household Goods Cost	58.5	3.1	0.3
Excavation Cost (100-120 million cubic meters) + Crusher (Public + Private)	41.9	2.2	0.2
Private Motor Vehicle Damage	6.1	0.3	0.0
Motor Vehicle Insurance Payment Cost	1.2	0.1	0.0
DASK	36.4	1.9	0.2
Tradesmen Income Loss	13.9	0.7	0.1
GDP Output Loss	130	6.9	0.6
Total	1,954.8	103.6	9.1

2.2. Mass Movements (Landslide, Rockfall, Avalanche)

In the evaluation of the disasters that occur in our country based on the disaster event and the number of affected victims, the most damaging disaster types after earthquakes are landslides, rock falls and avalanches, which are grouped under the title of mass movements.

Mass movements, which have an extremely important place among natural disasters due to the negative effects they create both in the world and in our country, can cause loss of life and property in the settlement areas they affect, as well as damage and losses in areas with economic value.

Determining the hazards and risks related to mass movements, taking measures to reduce these hazards and risks in both newly planned areas and existing settlement areas, ensuring that individuals, institutions and organizations fully fulfill their duties in this regard, and allocating sufficient labor and financial resources for this purpose are important priorities and basic strategic goals in creating a society resilient to disasters [8].

Between 2010 and 2025, 6491 landslides, rockfalls and avalanches occurred in Türkiye. The distribution of these events is given in Figure 11 [9].

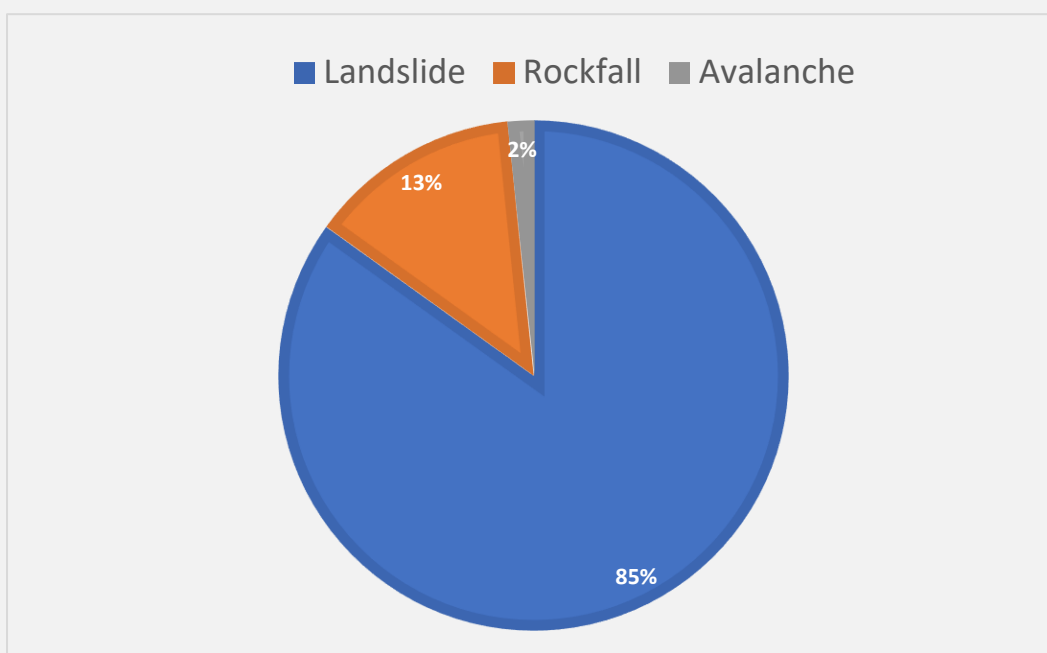


Figure 11. Distribution of landslides, rockfalls and avalanches in Türkiye between 2010 and 2025

2.3. Flood

In Türkiye, floods are among the disaster types that cause the most human and economic losses after earthquakes. As a result of climate change, industrialization and unplanned urbanization, there have been significant increases in the number of floods and inundations and the damage they cause in our country. In our country, where extremely significant losses are experienced in almost every region and in addition to our big cities, many of our institutions have direct or indirect responsibilities regarding the issue, and important projects and management plans have been put into practice in recent years [8].

An important step in developing resilience against disasters with a sustainable risk management approach is investments made in risk reduction activities. Structural or non-structural measures need to be taken in order to reduce the risks of flood-overflow disasters. In the studies to

be carried out in every process within the framework of risk reduction management; it is of great importance to create and implement a coordinated and integrated program approach within a broader perspective, considering the current situation and practices [8].

Being able to predict floods, which are a part of disaster management programs, and making early warnings based on this, provides significant reductions in loss of life and economic losses with planning and education.

The number of floods in 2023 is 565. There has been an increase in floods since the 2000s. In the last 10 years, approximately 100 or more floods have occurred each year. The year in which floods were most common since 1940 was 2023 (Figure 12) [10].

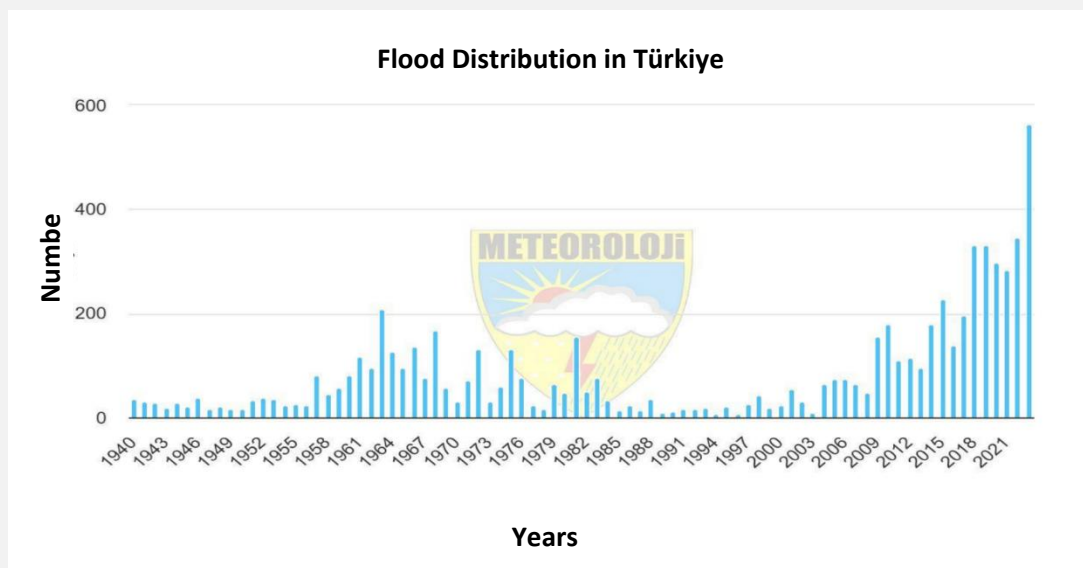


Figure 12. Distribution of Floods Occurring in Türkiye Between 1940-2023 by Year

2.4. Forest Fires

It has been determined that a large portion of the forest fires in our country occur as a result of negligence, carelessness and accidents. It has been determined that approximately 60 percent of our forested areas are likely to be exposed to fire. The destruction of forests and deforestation cause the loss of soil through erosion and climate change; and as a result of the disruption of the water system, it brings disasters such as desertification, floods, landslides, avalanches and drought [8].

The number of forest areas and fires burned between 2018 and 2023 are given in Figure 13. In the forest fires that occurred in 2021, 139,503 hectares of land were burned and 2,793 fires broke out [11].

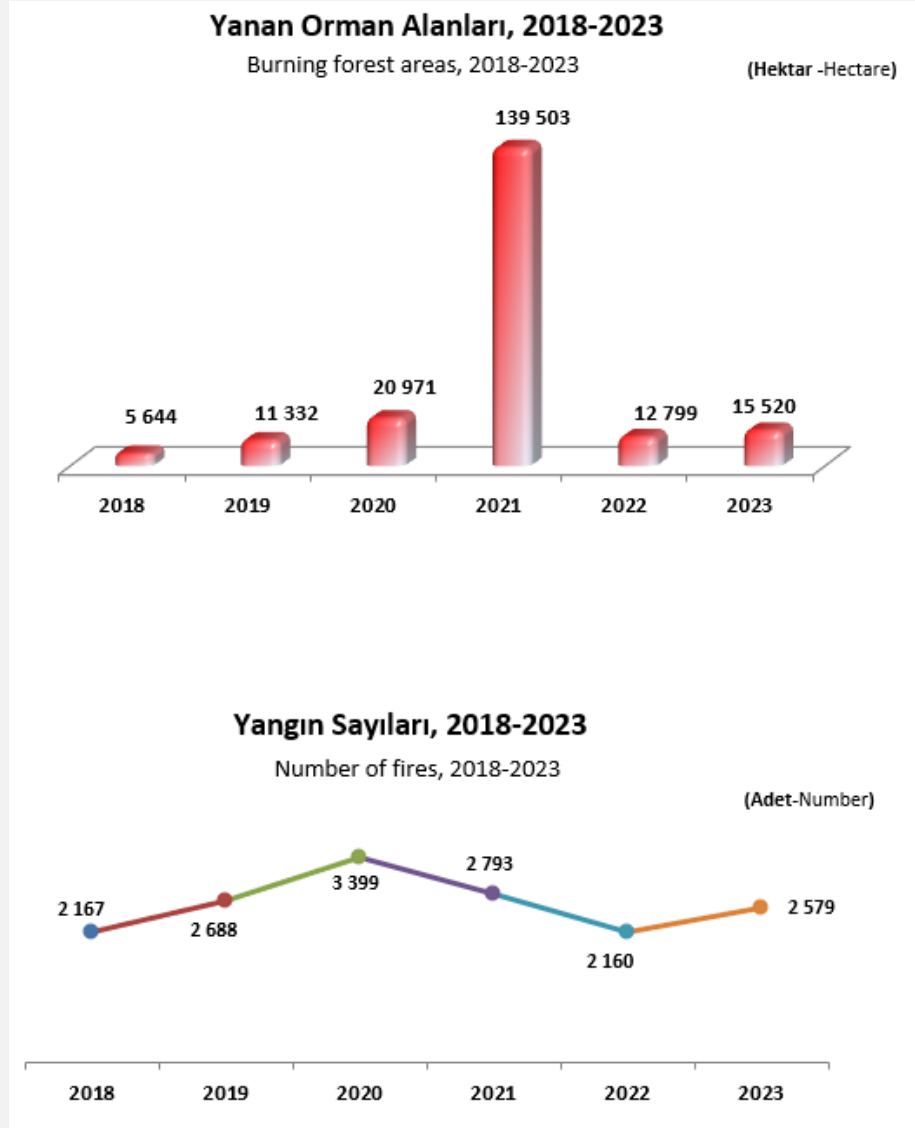


Figure 13. Burned Forest Areas and Number of Fires Between 2018 and 2023

2.5. Drought

Drought occurs when air temperatures exceed seasonal norms and annual precipitation averages fall below seasonal norms. Meteorologically, it is defined as temporary periods when precipitation falls below 80 percent of seasonal average values[8].

Water stress resulting from drought is the situation where water demand exceeds the amount of water that can be supplied from water resources under sustainable conditions. Drought and water stress have very serious economic, environmental and social effects, and as a result, human health and food security can be negatively affected [8].

The geography where Türkiye is located has been frequently exposed to the effects of drought throughout history. Drought occurs in our country at certain periods, but as a result of incorrect management and practices, the effect of drought, which exists in the natural cycle, can be large in economic and social dimensions [8].

2.6. Storm

Storms affect thousands of people directly or indirectly every year. Storm disasters, which cause many effects such as the disruption or halt of land, sea and air transportation in residential areas, harm to animals, falling trees, damage to agricultural areas and greenhouse activities; also cause serious financial losses every year. In addition to the damage that storm disasters leave on people and the environment, it is also an important detail that they trigger other disasters with their effects. For example, one of the most important causes of forest fires is the energy transmission and distribution lines damaged by the storm, which cause fires to start. In addition, the fact that forest fires grow, change direction suddenly, and occur during snow and rainfall makes the event more serious [8].

According to the records of the General Directorate of Meteorology; when the number of storm disasters in long years is examined, it is seen that the number of storm disasters in the last 10 years is higher than in previous years. The 342 storm disasters that occurred in 2023 constitute 23.2% of all disasters. 2021 was the year with the highest number of storm disasters (Figure 14) [10].

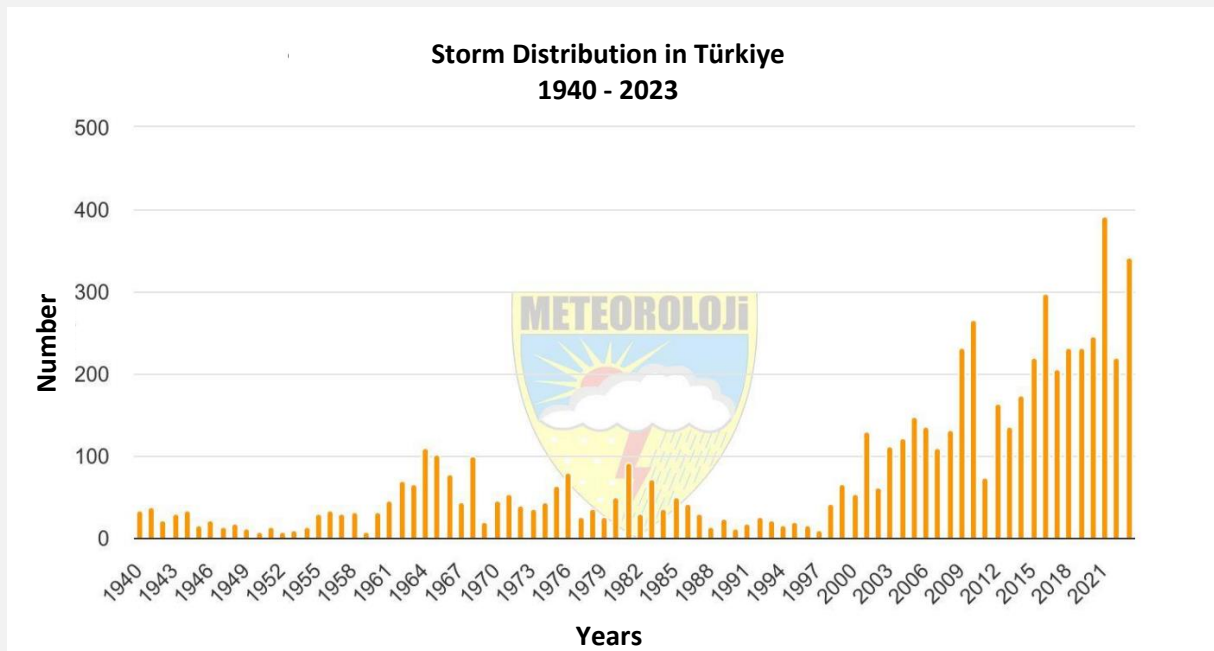


Figure 14. Distribution of Storms Occurring in Türkiye Between 1940-2023 by Year

When we look at the distribution of storm disasters by season in 2023, it is seen that they are mostly in the autumn season. 50.0% of the storm disasters recorded throughout the year occurred in the autumn, 24.4% in the spring, 15.4% in the winter and 10.2% in the summer (Figure 15) [10].

Seasonal Storm Distribution for 2023

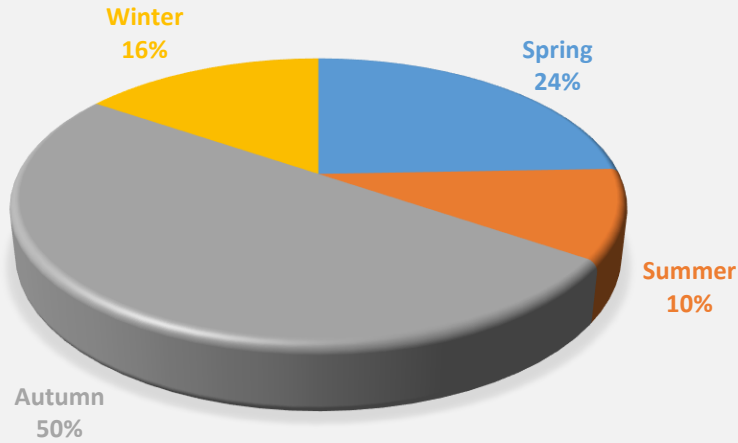


Figure 15. Storm Occurrence Percentages in Türkiye in 2023 According to Seasons

2.7. Major Industrial Accidents

Industrialization production processes require the use of chemicals. Chemicals are important components of agriculture, manufacturing, construction and service sectors in this production chain. A possible explosion, fire or spread of serious damage due to a malfunction during the storage, use, production, transportation and disposal of these substances are evaluated within the scope of major industrial accidents [8].

2.8. Chemical, Biological, Radiological, Nuclear Threats

With the technological advances that began in the last century, the possibility of using CBRN (Chemical, Biological, Radiological, Nuclear) substances as weapons of mass destruction has emerged. As a result, CBRN is considered an important threat both in our country and around the world. The fact that CBRN incidents have a very high potential to cause mass panic and chaos is effective in their evaluation as an extremely important type of disaster. The necessity of coordinated work of teams responsible for different areas in CBRN incident management, the necessity of intervention in CBRN incidents with competent and experienced personnel with special equipment, and the time-consuming nature of the process necessitate taking necessary precautions and making plans in the field of CBRN, and all these studies are of great importance for the future of our country [8].

2.9. Hazardous Material Transportation

In recent years, in addition to very important developments in transportation sectors such as highways, railways and seaways in Türkiye, the use and transportation of explosives, flammable materials and their derivatives in many sectors as solids, liquids and gases is considered a technological disaster element for our country [8].

3. DISASTER MANAGEMENT SYSTEM

The first regulation on disaster management in our nation's history was the edict issued by Ottoman Sultan Bayezid II in the aftermath of the Istanbul Earthquake of September 14, 1509, in which 13,000 people lost their lives and 109 mosques and 1,047 other buildings were destroyed. For the rebuilding of the destroyed houses, the edict called for 20 gold to be paid to each household. The edict also prohibited the construction of houses on land reclaimed from the sea, and promoted the construction of houses with wooden frames, probably to reduce such losses of property in the future [12].

Another important instrument was the Enbiye Ordinance, issued in 1848 to address the apparent need to establish rules related to urbanization and construction. The Ordinance prescribed a number of principles for structures to be constructed in Istanbul, and entered into force across the Empire in 1877 [12].

In the Republican Period, Municipality Law No. 1580 of 03.04.1930 assigned municipalities with responsibility for inspecting settlements and structures, as well as building houses for those in need. The Municipal Construction and Roads Law No. 2290 of 10.06.1933 prescribed provisions related to the development of zoning plans for cities, the obtaining of licenses, technical responsibility, building inspection, and the construction of buildings and roads in accordance with the urbanization approach of the time [12].

The concept of civil defense emerged out of the notion to develop passive protection measures to ensure that the public was protected from all kinds of dangers, and to mitigate the effects of war on civilians after they had died in their masses in World War I when the effects of wars began to extend beyond the fronts. In our country, civil defense was first regulated by the Defense and Protection of the Regions Behind the Fronts against Air Attacks, which entered into effect in 1928. In 1938, the Passive Protection Law No. 3502 was enacted, under which civil defense was ensured through the mobilization of directorates in the provinces [12].

The Erzincan Earthquake, one of the biggest in our nation's history, occurred on December 26, 1939, killing more than 30,000 people and destroying or severely damaging over 100,000 buildings. This led to the enactment of Law No. 3773 on the Aid to be Given to those Affected by the Erzincan Earthquake on January 17, 1940. The Law set forth the principles to be applied to the provision of post-earthquake aid, and for the first time, issues such as tax abatements, compensation for civil servants and construction material aid were addressed [12].

In the 1939 Erzincan Earthquake and the Niksar-Erbaa, Adapazari-Hendek, Tosya-Ladik and Bolu-Gerede earthquakes in the same period, over 43,000 people lost their lives, a further 75,000 were injured, and some 200,000 buildings were severely damaged or destroyed, leading to Law No. 4623 on Measures to be Taken Before and After Earthquakes being enacted on July 18, 1944 [12].

While the laws aimed at reducing disaster losses were effective only in Japan, the United States and Italy in this period, the first attempt to reduce losses from disasters in our country came with the enactment of Law No. 4623. Pursuant to the Law, Türkiye's Earthquake Zones Map, Building Regulations for Seismic Zones and Regulations regarding Buildings to be Constructed in Disaster Areas were issued in 1945 [12].

In the early 1940s, severe floods struck many parts of the country, after which Law No. 4373 on Protection against Floods was enacted on January 14, 1943, introducing, for the first time the measures to be taken before floods, as well as describing the rescue operations to be carried out during floods. [12].

In the subsequent period With the enactment of the Zoning Law of 1956, which contained provisions on the identification of disaster hazards during the determination of locations of settlements, as well as on the technical responsibility system and building inspection procedures; and the Law of 1958 on the establishment of the Ministry of Development and Housing; and Law No. 7269 on the Measures to be Taken and Aid to be Given Due to Disasters Affecting Public Life of May 15, 1959, which laid the foundation of the General Directorate of Natural Disasters, disaster management efforts started to be carried out more efficiently and effectively in our country [12].

In addition, Civil Defense Law No. 7126, which entered into force in 1959, prescribed provisions on the rescue and first aid operations to be conducted during disasters and laid the foundations of the General Directorate of Civil Defense under the Ministry of Interior [12].

Another important piece of legislation in the field of disaster management was the Regulation on the Disaster Relief Organization and Planning Principles, issued in 1988, which contained provisions regarding the planning and mobilization of public resources and the deployment of the state's forces as quickly as possible to the scene of a disaster in order to provide the most effective emergency relief to the affected citizens[12].

Law No. 7269 was amended to suit the requirements of the time, however the earthquake in Erzincan in 1992 served to prove that disasters caused not only physical losses, but also socioeconomic losses in the form of unemployment, migration, loss of production, etc. Thereupon, Law No. 3838 on the Provision of Relief Services to those Affected by the Earthquake in Erzincan, Gumushane and Tunceli and the Associated Damages in Sirnak and Cukurca was enacted. Upon the successful

implementation of this Law and the realization of the need for a similar law covering the whole country, Law No. 4123 on the Provision of Relief Services Related to Damage Sustained during Natural Disasters was enacted [12].

The earthquakes in the Marmara Region in 1999 were the most destructive disasters to hit our country in its history, affecting a very large and densely populated area containing numerous industrial establishments, and it thus became apparent that there was a need to review our disaster management system. In order to address the shortcomings in relation to coordination, the Turkish General Directorate of Emergency Management was established in 2000. Furthermore, the building inspection system was completely modified, and a mandatory insurance system was introduced. Despite these efforts, the problems in this area persisted, as the three main institutions involved in disaster management, namely the General Directorate of Emergency Management, the General Directorate of Natural Disasters and the General Directorate of Civil Defense, were operating under three different ministries [12].

In line with the lessons learned from past disasters, efforts have been launched to create a system in which local forces are strengthened while the central organization is responsible for coordination, based on the fact that disaster management is more effective if decentralized [12].

As a result of these efforts, Law No. 5902 was enacted in 2009, eliminating the problem of coordination among the institutions involved in disaster management by abolishing the three abovementioned general directorates in charge of disaster management, and paving the way for the establishment of the Disaster and Emergency Management Presidency under the Prime Ministry, and the Provincial Directorates of Disaster and Emergency Management under the provincial Governors. With this Law, an approach prioritizing risk management rather than crisis management was adopted. Our Presidency operates under the Ministry of Interior, in accordance with Presidential Decree No. 4 issued on July 15, 2018 [12].

With the Presidential Decree published in the Official Gazette dated June 9, 2022, our Disaster and Emergency Management Presidency (AFAD) central organization was restructured, and the existing departments were transformed into general directorates, aiming to increase institutional capacity. Our provincial organization carries out its work through 81 Provincial Disaster and Emergency Directorates and 16 Disaster and Emergency Search and Rescue Unit Directorates, which are directly affiliated to the governor in the provinces (Figure 16).

Our Presidency is a multi-faceted, multi-actor institution that ensures cooperation among all institutions and organizations of the country for the planning, direction, support, coordination and effective implementation of the activities required for the prevention of disasters and reduction of

their damage, intervention in disasters and rapid completion of post-disaster recovery works. It is a business-oriented, flexible and dynamic institution that takes into account the rational use of resources in this field and is based on interdisciplinary work in its activities.

AFAD has extended a helping hand not only to many countries nationally but also internationally, successfully carrying out humanitarian aid operations in countries such as Haiti, Japan, Chile, Bangladesh, Libya, Tunisia, Egypt, Syria, etc. and continues to do so.

The earthquakes of magnitude 7.7 Mw centered in Kahramanmaraş Pazarcık and 7.6 Mw centered in Elbistan on 06.02.2023 were declared Level 4 according to the Turkish Disaster Response Plan and a call for international aid was made. Under the coordination of our Presidency, all resources of our country were mobilized and the response efforts were completed selflessly with international support, and an unprecedented recovery and reconstruction process was initiated with both the donations collected and the budget opportunities transferred after the earthquake [13].

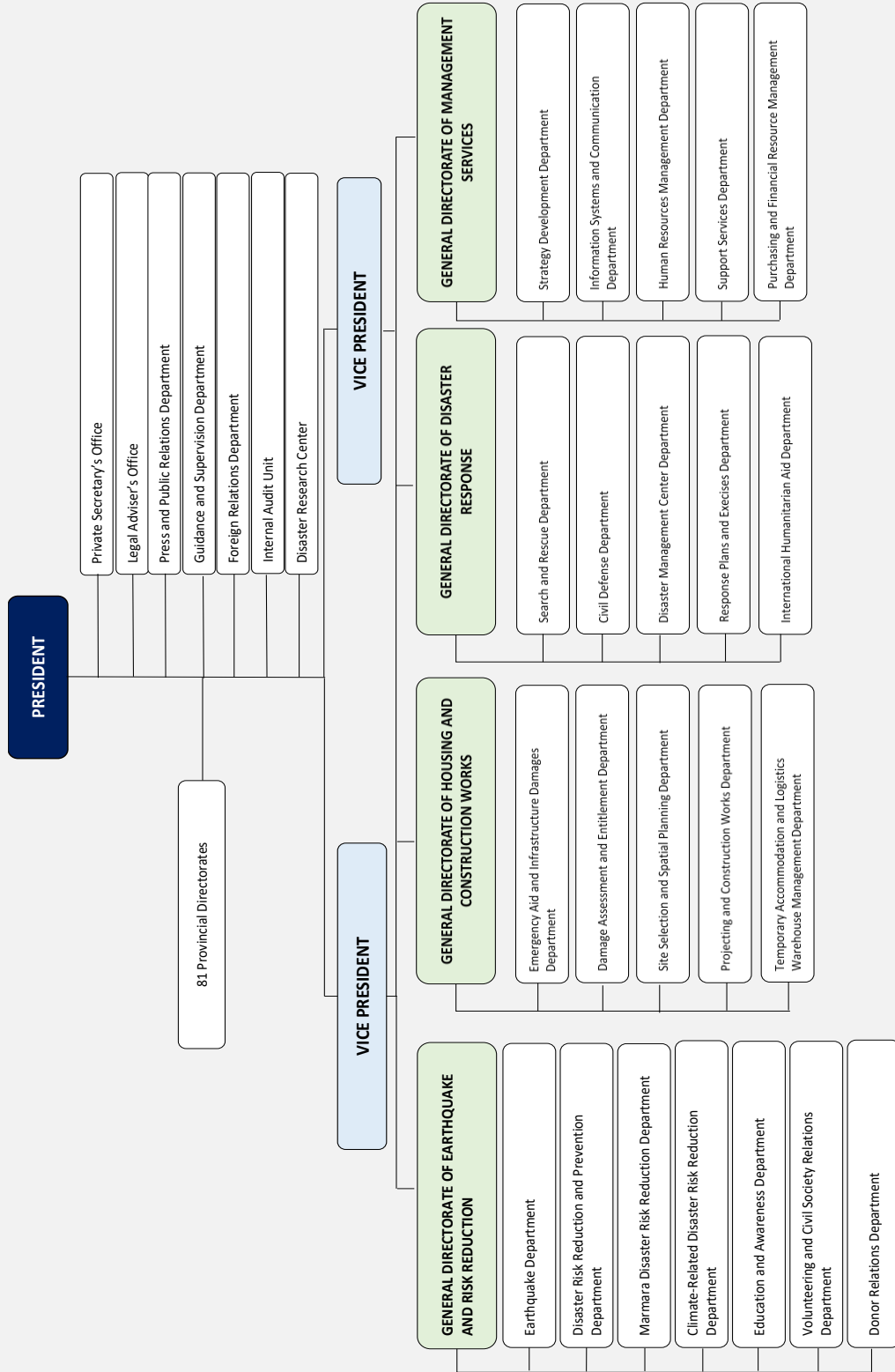


Figure 16. AFAD's Organizational Chart

4. BUDGET SIZE ON NATIONAL LEVEL

In Türkiye, the budget of institutions generally consists of 2 items. These are the current budget and the project budget. In addition to these budgets, some institutions have the authority to use special budgets. AFAD is one of the institutions that can use special budgets in disasters and emergencies.

Türkiye's budget for 2024 is approximately 348 Billion Dollars. AFAD's budget for 2024 is approximately 20 Billion Dollars. General Directorate of Earthquake and Risk Reduction budget for 2024 is approximately 4 Billion Dollars (Figure 17).

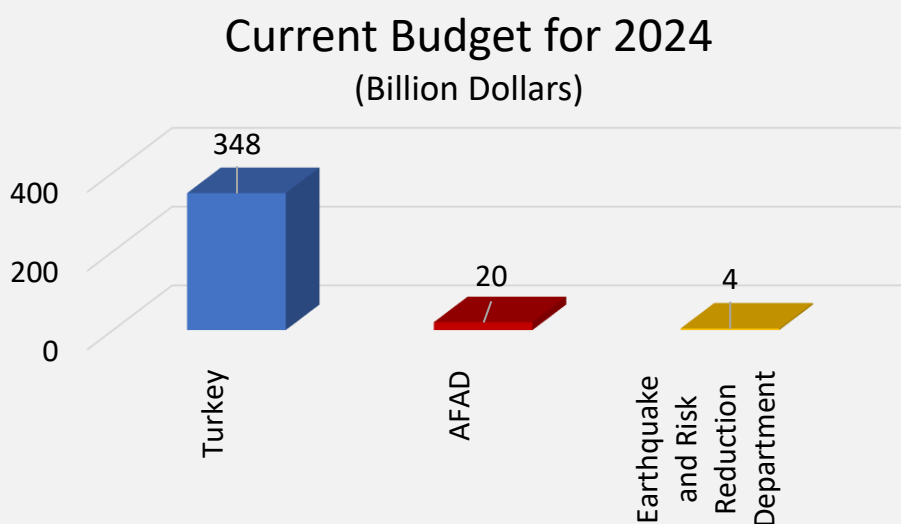


Figure 17. Current Budget for 2024

In 2024 there are total 3,799 Main Project in Türkiye. (Budget: Approximately 29 Billion Dollars). AFAD is carrying out a total of 63 projects in 2024 (Budget: Approximately 87 Million Dollars). 26 projects are under the responsibility of the General Directorate of Earthquake and Risk Reduction (Budget: Approximately 14 Million Dollars) (Figure 18) [14].

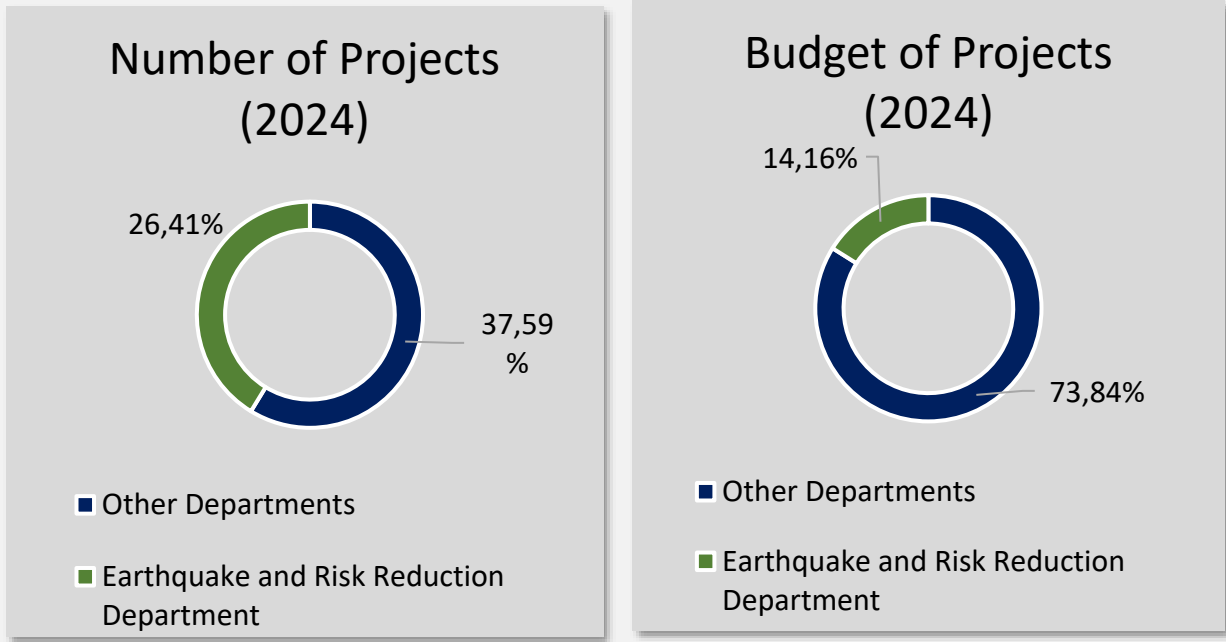


Figure 18. Number and Budget of Projects (AFAD)

General Directorate of Earthquake and Risk Reduction Projects (Ongoing Projects in 2024)

1. Dissemination of Earthquake Maps and Regulations
2. Deep Well Seismometer Survey
3. Establishment of Early Warning and Preliminary Damage Estimation Systems
4. Marmara Region Earthquake Risk Reduction
5. Turkish National Union of Geodesy and Geophysics Program
6. Development of the National Seismic Network and Earthquake Research
7. National Earthquake Research Program
8. Determination of Earthquake Parameters with Satellite System
9. Establishment of Building Health Monitoring Center in AFAD
10. Disaster Ready Türkiye
11. Establishment of a Dog Breeding and Training Center for Search and Rescue
12. Simulation Systems Revision and Maintenance Work (Bursa)
13. Development of Volunteerism in the Field of Earthquake Civil Protection

14. Provincial Disaster Risk Reduction Plan (IRAP)
15. Preparation of Türkiye Disaster Risk Reduction Plan (TARAP)
16. Disaster Prevention Measures
17. Production of Integrated Disaster Hazard Maps
18. Producing a Prototype for Avalanche Protection
19. Economic Impact Modeling and Disaster Indices
20. Generation of Sinkhole Susceptibility Maps and Early Warning System
21. Preparation of Technological Disaster Risk Maps
22. Risk Reduction in Geomedical Disasters and Tuzkoy Example
23. Technical Cooperation in the Field of Disaster and Risk Reduction
24. Earthquake Resistant Schools (EReS)
25. Preparation of Risk Reduction Guide for Disasters Caused by Climate Change in Cultural Heritage Areas in Türkiye and a Model Implementation
26. Incorporating Nature Based Solutions into Disaster Risk Management to Strengthen Türkiye's Resilience

Special Budgets in Disasters and Emergencies

This budget is used to carry out precautionary projects that require very large budgets in the field of disaster risk reduction, especially in cases of landslides, rock falls, etc. Within the scope of disaster prevention project implementation work, from the special budget between 2020 and 2024; 103 Projects have been completed, 66 Projects are ongoing, 32 Projects are in the evaluation phase.

5. NATIONAL POLICIES AND DEVELOPMENT PLANS

5.1. Development Plans

Our country has been carrying out its socio-economic development with a plan since 1963. Up until now, eleven five-year development plans have been implemented (the 9th Development Plan is 7 years), and the twelfth development plan is still being implemented as of 2024 [15].

In the seven development plans implemented until the Eighth Five-Year Development Plan, instead of providing the work done and to be done regarding disasters and the precautions to be taken collectively under a separate heading, each development plan has a limited format and is distributed among the pages [15].

The earthquakes experienced in 1999 constituted a turning point in terms of disaster management in Türkiye, and steps were taken to transition from crisis management to risk management and to activate integrated disaster management. In the Eighth Development Plan (2001-2005), prepared immediately after the 1999 Marmara earthquake, the title of “Natural Disasters” was opened for the first time as a separate heading for the disaster sector, and the importance of reducing disaster risks before they occur was emphasized in order to prevent economic and social losses that may occur after a disaster [15].

Important legal regulations were made regarding disasters during the Ninth Development Plan period. Within this framework, the Disaster and Emergency Management Presidency was established with Law No. 5902 in 2009, the National Earthquake Strategy and Action Plan was prepared in 2011, and the Disaster Insurance Law No. 6305 and the Law No. 6306 on the Transformation of Areas Under Disaster Risk were put into effect in 2012.

In the Tenth Development Plan (2014-2018), while progress has been made in disaster management and pre-disaster risk reduction measures under the axis of Livable Spaces and Sustainable Environment, it has been stated that the need to prepare integrated disaster hazard and risk maps and include them in settlement order and zoning planning processes continues, and policies have been determined for this need.

In the Eleventh Development Plan (2019-2023), the Disaster Management sector has been included as a separate heading. The plan also includes disaster related policies and measures in the urbanization, housing, environment and urban transformation sectors. The main purpose of disaster management in the plan has been determined as increasing social awareness against disasters, creating disaster resistant and safe settlements, ensuring the resilience of the public to disasters and

minimizing the loss of life and property that may be caused by disasters by carrying out risk reduction studies.

In the Twelfth Development Plan (2014-2028) is prepared with the vision of positioning “Türkiye as an environmentally friendly, disaster-resilient, high value added production based on advanced technology, fair distribution of income, stable, robust, and prosperous nation within the Century of Türkiye”. Under the axis of “disaster resilient habitats, sustainable environment”, policies are included to increase the resilience of settlements and society against disasters, to protect the environment, to improve the quality of life in cities and rural areas, and to reduce development gaps between regions [16].

The following policies were included under the title of "Disaster Management" in the Twelfth Development Plan [16].

- Prioritization will be made according to disaster hazard types in line with the socioeconomic and physical characteristics of the regions throughout the country, and efforts will be made to reduce disaster risks and damages (Policy 829).
- Disaster management will be strengthened in terms of legislation, human, institutional and technical capacity (Policy 830).
- In order to increase effectiveness in disaster management, data generation and and inter-institutional sharing will be improved and IT infrastructure and decision support systems in the area of disaster management will be continued to be developed (Policy 831).
- The resilience of all existing and new infrastructure and superstructures against disasters will be ensured (Policy 832).
- Adaptation capacity will be strengthened by increasing social resilience to climate change related disaster hazards (Policy 833).
- A rapid, effective and comprehensive response to all kinds of disasters and emergencies will be ensured by increasing disaster and emergency response capacity (Policy 834).
- Capacity for post-disaster recovery actions will be improved (Policy 835).
- Disaster risk transfer methods and financing opportunities will be improved (Policy 836).
- Recovery actions will be pursued to alleviate the effects of Kahramanmaras and Hatay earthquakes (Policy 837).
- In order to minimize the loss of life and property in the aftermath of a possible earthquake, necessary risk mitigation efforts will be continued in the Marmara Region (Policy 838).
- Public awareness on disaster and emergencies will be increased and the volunteering system will be improved (Policy 839).

- R&D activities will be intensified to develop new techniques and technologies to reduce disaster risks and ensure faster and more effective post-disaster response (Policy 840).
- Differentiated needs of disabled, elderly, women and children will be taken into consideration in disaster management (Policy 841).

5.2. Strategic Plans in Disaster Management

In order to effectively manage disasters and emergencies in our country, the “Integrated Disaster Management System” was adopted with the establishment of AFAD in accordance with Law No. 5902. In this context, it was aimed to coordinate and supervise disasters and emergencies from a single center and to determine the standards of training related to these services. The number and frequency of disasters, as well as the social and economic damages they cause, have been increasing exponentially in recent years. In order to cope with these losses, a disaster management system has been established that has shifted from the “Crisis Management” approach to the “Risk Management” approach, and tries to minimize the damages of disasters with pre-disaster preparation, planning and risk reduction studies, education and awareness activities, early warning and uninterrupted communication projects [5].

In order to be successful in combating disasters, risk reduction studies based on hazard and risk analysis are needed in addition to social awareness studies. For a sustainable and effective disaster management; it is necessary to combine data on demographic characteristics such as population growth and urbanization with reliable, fast and easy-to-use techniques and technologies and implement them within an integrated management system [5].

In this context, the relational representation of the national plans prepared and being prepared by AFAD is presented in Figure 19. The main purpose of all plans is to manage disaster management from a single source and coordinate all institutions and organizations.



Figure 19. Strategic Plans in Disaster Management (AFAD)

AFAD works to prevent disasters and minimize disaster related damages, plan and coordinate post-disaster responses, and promote cooperation among various government agencies. Notwithstanding its position as the sole authority on disasters and emergencies, AFAD cooperates with a range of government institutions and non-governmental organizations depending on the nature and severity of disasters.

5.2.1. AFAD Strategic Plan

AFAD's strategic plan, developed with a participatory approach on a solid foundation that takes into account national and international conjuncture, was created around six components, which are "Coordination and Communication, Risk Mitigation, During and Post-disaster, Social Awareness, International Influence and Institutional Capacity", as well as the goals that serve these themes. As the successor of the Hyogo Framework for Action, covering the period from 2015 to 2030, the Sendai Framework seeks to reduce losses resulting from disasters, prevent new risks, mitigate existing risks and enhance resilience to disasters. **The Sendai Framework for Disaster Risk Reduction** defines the basic building blocks for disaster management until 2030 and is the main reference source for the national development plans and programs, as well as for AFAD's Strategic Plan.

The Integrated Disaster Management System consists of four axes:

- 1. Mitigation:** This axis covers activities focused on reducing or eliminating the likelihood of loss or lessening its intensity through risk evaluation.

2. **Preparedness:** This axis covers preparation and training activities for disaster intervention procedures through coordination of people and institutions.
3. **Response:** This axis covers activities focused on determining and meeting all necessities that may arise as a result of disasters and emergencies as promptly as possible.
4. **Recovery:** This axis covers the activities that are focused on normalizing, and if possible, further improving all life systems that have been disrupted due to disaster or emergency, in the fastest and most targeted way.

5.2.2. Türkiye Disaster Management Strategy (TAYS)

Within the framework of the integrated disaster management system, there are various initiatives designed to correctly distribute tasks among all stakeholders and to encourage effective monitoring and evaluation of these tasks for management policies, strategies and practices regarding disasters and emergencies. Türkiye Disaster Management Strategy (TAYS), a strategic plan that will serve as the framework document of Türkiye's disaster management system, is being prepared. TAYS will include the responsibilities and task distribution of all stakeholders related to disaster management. The objectives of this plan are (i) to increase the effectiveness of all sectors in disaster management, (ii) to prioritize urgent needs and (iii) to increase social resilience against disasters.

5.2.3. Türkiye Disaster Response Plan (TAMP)

After the Van Earthquake in October 2011, the need for a comprehensive action plan became clear as then current legislation in Türkiye was no longer fulfilling present day's needs. New studies and plans on disaster management emerged due to advances in technology and increased disaster awareness. Following a detailed inspection of various types of events; a plan was created to define the roles and responsibilities for all parties involved in disaster and emergency response situations to determine the basic principles of a response plan in all three phases: before, during and after disaster and emergency situations. AFAD named this plan Türkiye Disaster Response Plan (TAMP).

TAMP is flexible, modularly structured and adaptable to all types and scales of disasters and guides the planning and coordination of public institutions and non-governmental organizations in the event of a local or national level disaster to minimize the loss of life and property via efficient resource management [17]. TAMP gives responsibilities to personnel of all parties involved (ministries, the public institutions and non-governmental organizations) in the wake of a local or national level disaster to work under different working groups. Personnel, equipment and resource analysis is carried out to analyze the current situation and identify the strengths and weaknesses in current disaster response procedures so as to increase the disaster and emergency management capacity in Türkiye. Currently, TAMP is in force and is applied in every disaster situation.

5.2.4. Türkiye Post-Disaster Recovery Plan (TASİP)

Recovery is considered as the process that includes the return to normal life and long-term reconstruction following the intervention to disasters, and the reduction of risks related to subsequent disasters. The Turkish Post-Disaster Recovery Plan has been prepared to plan the effective management of this process. TASİP aims to make post-disaster recovery activities planned and systematic, to ensure the efficient use of resources by prioritizing, to effectively monitor and evaluate the applications, and to report on expenditures. TASİP Implementation Plan (TASİP-UP) is the part of the plan prepared after the disaster occurs. The plan in question enables the planning, implementation, monitoring and evaluation of recovery and reconstruction activities after all types and scales of disasters experienced in settlements of all sizes in our country with 3 separate forms. TASİP consists of 10 Sectors and 39 Main Task Areas determined within the scope of recovery activities to be carried out after the disaster, institutions responsible for these, and objectives-strategies-actions [18].

5.2.5. Türkiye Disaster Risk Reduction Plan (TARAP)

The frequency of disasters and the damages that they cause continue to increase in Türkiye and around the world. The cost of disasters, which have devastating effects on people and the environment, is quite overwhelming. For this reason, more importance has been attributed to the risk reduction studies that should be carried out before the emergence of disasters to minimize the loss that may be caused by disasters and efforts to create a disaster culture in societies to be more sensitive about disasters have gained momentum.

Türkiye Disaster Risk Reduction Plan (TARAP) is a sustainability plan that defines the activities that need to be carried out before the outbreak of disasters to minimize disaster risks, together with those responsible and responsibilities within a process. With TARAP, it is the major aim to reduce the risk by means of effective and efficient use of resources. Disaster related losses will be prevented or mitigated, if possible, by creating resilient societies and safe living spaces. TARAP is a roadmap plan in this regard and will contribute to sustainable development.

During the preparation process for TARAP, the current situation throughout the country has been determined, need analyses have been made, workshops have been organized, and national and international disaster risk reduction priorities and strategies have been taken into account. According to the results of the SWOT analysis made by AFAD, the problems and solution proposals we encountered in disaster risk reduction have also been reflected in this document. Strategic priorities in line with the Sendai Disaster Risk Reduction Framework (2015-2030) have been set forth in the document, which has been shaped thanks to the contributions of academics, stakeholders, and experts

within the institution. The internationally accepted strategic priorities in the Sendai Framework have also formed the strategic priorities of TARAP. In the content of each strategic priority, the target, purpose, actions, the institution responsible for their realization as well as the relevant institutions and organizations that will support the responsible institution have been defined. In addition, short, medium, and long terms provided to the relevant and responsible institution for each action have also been specified.

Types of disasters for which a strategy is developed are as follows: “Earthquake, Mass Movements, Flood, Climate Change, Forest Fires, Infectious and Epidemic Diseases, Chemical-Biological-Radiological-Nuclear Threats (CBRN), Major Industrial Accident, Hazardous Material Transportation, Mining Accidents, Mass Migration and Other Disasters”. There are 17 goals, 66 targets and 227 risk reduction actions in TARAP (Figure 20). TARAP; was published on 8 July 2022 with the approval of our president and entered into force. In the current process, the monitoring and evaluation process continues [8].



Figure 20. TARAP

5.2.6. Provincial Disaster Risk Reduction Plan (IRAP)

IRAP is a plan that reveals the disaster nature of the province and the possible effects of disasters, and defines the responsible people, demonstrating the works to be done without disasters in the form of actions to minimize these effects [19].

It is planned as a Road Map that should be produced with the institutions/organizations in the provinces and all other relevant stakeholders. It is a plan that should be adopted by the entire province, not by any particular institution or organization. Since the provinces have different Dynamics and Disaster Risks, each one will reveal its own priority Dangers, Risks and Risk Reduction Actions by all Local Stakeholders and will be implemented as soon as possible.

IRAP is a plan that includes goals, objectives and actions reduce risk in our cities. Responsible stakeholders are identified in the plan for each actions to reduce disaster risks. IRAP addresses the need to manage underlying disaster risk drivers and strengthening good governance in disaster risk management, with a focus on local governments including authorities and managers at the city or other subnational levels. It provides an important boost to efforts to meet a key target in the **Sendai Framework, Target (E)** which seeks to increase the number of countries with national and local strategies for DRR and also directly related with other **Sendai Disaster Risk Reduction Framework** targets.

All of the IRAPs were completed and entered into force by the end of 2021. Earthquake, flood, landslide and industrial accidents, each province has carried out risk reduction studies specific to their own disaster risks.

Each province's plan consists of 5 modules:

- **Module 1:** General situation of the province
- **Module 2:** Hazard and risk assessments
- **Module 3:** SWOT analysis
- **Module 4:** Goals, targets and actions
- **Module 5:** Monitoring and evaluation

In total, 221 goals, 1,288 targets and approximately 17,780 actions were determined. 81 provinces prioritized their actions and determined 2,201 actions as red (priority) actions.

5.3. Climate Change Mitigation Strategy And Action Plan 2024-2030

Today, the adverse impacts of climate change have started to be felt prominently, with increased regional and global occurrences of extreme climate and weather events such as extreme heatwaves, sudden and heavy precipitation, floods and drought. The main cause of this situation is

regarded as the rapid increase in greenhouse gas (GHG) emissions released to the atmosphere as a result of increased fossil fuel use in the age of Industrial Revolution. Accordingly, the global average temperature increased by nearly 1.1°C from 1850 to 2020 and if this continues, global temperature rise is expected to reach 3°C by the end of this century [20].

5.4. Climate Change Adaptation Strategy And Action Plan (2024-2030)

Adaptation can be defined as the process of strengthening and implementing strategies to address and manage the impacts of climate change. It involves adjusting to changing climate conditions, mitigating adverse effects and turning challenges into opportunities wherever possible. Adaptation to climate change is a dynamic and integrated process, involving decision-making across numerous areas such as agriculture, food, water, public health, tourism, disaster management, insurance, infrastructure, biodiversity and ecosystems, energy, finance, urbanization, transport, industry, migration, and social development [21].

Climate and disaster risks are increasing worldwide, with a significant rise in both severity and frequency climate-related disasters over the past 50 years.

Türkiye is located in the Mediterranean Basin, which, according to IPCC reports, is one of the regions most vulnerable to climate change. Due to its geographical position, Türkiye is already impacted by climate-related disasters such as droughts, floods, and extreme weather events, and projections indicate that the country's vulnerability to such disasters will increase in the future.

The Climate Change Adaptation Strategy and Action Plan (CCASAP) for 2024-2030 was drafted, defining the strategies and actions to be implemented by 2030 with a vision for "Türkiye that is more resilient, more sustainable and greener in economic, social and ecological terms to ensure the preparedness and adaptation of the people in Türkiye, and of public and private institutions to the impacts of climate change".

The strategies and actions outlined in the Plan are described under a total of 12 chapters, covering 11 sectors, namely: Urban , Water Resources Management, Agriculture and Food Security, Biodiversity and Ecosystem Services, Public Health, Energy, Industry, Tourism and Cultural Heritage, Transport and Communication, Social Development, and Disaster Risk Reduction, as well as cross-cutting issues.

As part of the preparatory work for the Strategy and Action Plan, a general framework outlining the current situation was developed. In this process, the climate change adaptation efforts currently undertaken by the public and private sectors, academia and NGOs were reviewed. Additionally,

national and international legislation, ongoing plans, programmes, and relevant documents were evaluated, alongside national-level practices.

In the second phase, current and future climate hazards were analyzed based on the results of the regional climate projection studies carried out by different institutions. Vulnerability and risk assessments were conducted at the national level for each sector, aligned with the results of these analyses. The action options derived from the sectoral vulnerability and risk assessments were discussed in stakeholder consultation meetings, which included participants from 180 different public and private sector institutions, academia and NGOs. In addition to the meetings, stakeholder opinions were incorporated into the Action Plan through official letters, e-mails and bilateral discussions.

The CCASAP comprises 40 strategic goals and 132 actions designated for 11 main sectors and crosscutting issues, and the key strategic goals include:

- Identifying and transforming urban and buildings at risk of flooding,
- Increasing the quantity of treated wastewater and raising the reuse rate of treated wastewater to 15% by 2030,
- Updating agricultural policies to ensure climate resilience, efficient use of technology, and alignment with basin product patterns and water budgets,
- Contributing to the global efforts to raise the share of marine and land protected areas to 30%,
- Establish a system to develop indicators and health impact chains based on Türkiye Climate and Health Profile,
- Identifying climate-related risks in the energy sector and strengthening production, transmission, distribution, and storage infrastructure to enhance climate change adaptation,
- Drafting guides to identify and manage climate risks to movable and immovable cultural heritage elements and areas,
- Identifying facilities at risk of major industrial accidents and developing priority adaptation actions,
- Ensuring the resilience of urban vehicle, bicycle, and pedestrian roads and all public transport infrastructure to climate-related risks,
- Incorporating social development elements into the 2053 long-term climate change strategy,
- Prioritizing investments to build resilience against climate-related disasters in critical sectors, 32
- Drafting Local Climate Change Action Plans (LCCAP) for all 81 provinces.

6. PROGRESS AND SITUATIONS OF THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION (SFDRR)

The four priorities identified in Sendai are:

- Priority 1: Understanding Disaster Risk
- Priority 2: Strengthening Disaster Risk Governance to Manage Disaster Risk
- Priority 3: Investing in Disaster Risk Reduction for Resilience
- Priority 4: Enhancing Disaster Preparedness for Effective Response, and to “Build Back Better” in Recovery, Rehabilitation and Reconstruction [22].

Some of the studies carried out within the scope of these four priorities in Türkiye are given below (Table 2).

Table 2. Some projects that align with the priorities of the Sendai Framework

Name of the Study	Priority 1	Priority 2	Priority 3	Priority 4
Istanbul Seismic Risk Reduction and Emergency Preparedness Capacity Enhancement Project (ISMEP)	✓	✓	✓	✓
Disaster Hazard Maps	✓	✓		
National Geographic Information System (GIS)	✓	✓		
Hazardous Materials Risk Map	✓	✓		
AFAD Industrial Accident Impact Area Modeling Software (AFAD-EKA)	✓	✓		
Identification of Critical Infrastructures	✓	✓		
Research Programs	✓	✓		
Disaster Management and Decision Support System (AYDES)	✓	✓		✓
Remote Sensing Technologies	✓	✓		

Name of the Study	Priority 1	Priority 2	Priority 3	Priority 4
Disaster Awareness Training and Volunteering	✓	✓	✓	✓
National and Local Level Plans	✓	✓		
Flood Management Plans	✓	✓		
Drought Management Plans	✓	✓		
Hospital Plans	✓	✓		
Business Continuity Plans	✓	✓		✓
Türkiye's Climate Change Adaptation Efforts	✓	✓		
Accreditation Studies	✓	✓		
Türkiye Disaster Risk Reduction Platform	✓	✓	✓	
Disaster Management Centers Platform (AYMEP)	✓	✓		
Cooperation with International Organizations	✓	✓	✓	✓
Türkiye Building Earthquake Regulation (TBDY)		✓	✓	
Structural Health Monitoring Center	✓		✓	
Stream Improvement Works			✓	
Natural Disaster Insurance			✓	
Renovation of Disaster Risk Buildings		✓	✓	
Spatial Planning		✓		✓
Transportation Infrastructures	✓	✓		✓
Energy Infrastructures	✓	✓		✓

Name of the Study	Priority 1	Priority 2	Priority 3	Priority 4
Improvement and Temporary Shelter Preparation Works				✓
Uninterrupted Communication System		✓		✓
Warning and Alarm System		✓		✓
Establishment of a Joint Disaster Relay		✓		✓
Mobile Communication		✓		✓
Disaster and Emergency Assembly Areas and Temporary Shelter Areas			✓	✓
International Humanitarian Aid Activities		✓		✓
Inventory of Public Service Buildings				✓

Istanbul Seismic Risk Reduction and Emergency Preparedness Capacity Enhancement Project (ISMEP)

The Istanbul Seismic Risk Reduction and Emergency Preparedness Capacity Enhancement Project (ISMEP), which is carried out to strengthen public buildings against a possible earthquake in Istanbul and to rebuild those that cannot be strengthened, is carried out by the Istanbul Project Coordination Unit (IPKB) operating under the Istanbul Governorship. Focused on the reinforcement and reconstruction of public buildings that are vulnerable to disasters, IPKB is a specialized unit that carries out earthquake preparedness studies in cooperation with relevant institutions, using resources provided by international credit institutions, and excluded from the general budget with a special law enacted to reduce the disaster risk in Istanbul.

Within the scope of ISMEP, activities are carried out to increase emergency preparedness capacity, reduce seismic risk for priority public buildings and effectively implement zoning and building regulations in order to prevent possible damages due to the earthquake risk to which Istanbul is exposed. As of January 2023, the number of school buildings in Istanbul whose reinforcement work has been completed has reached 932, the number of hospital buildings has reached 48; the number of school buildings whose reconstruction has been completed has reached 404, and the number of

hospital buildings has reached 6. Within the scope of the project, the reinforcement work of a total of 1,126 public buildings and the reconstruction of 444 buildings has been completed.

Natural Disaster Hazard Maps (ARAS)

AFAD is developing standards and guidelines for the preparation of integrated disaster hazard and risk maps that address all hazards that may affect settlements in our country. Landslide, rockfall and avalanche susceptibility and hazard maps have been completed using the Disaster Risk Analysis System (ARAS).

The system is designed to share hazard and risk maps to be used in local and national scale plans with relevant institutions and organizations, and disaster data at any desired location can be obtained from the system. Our Provincial Directorates collect inventory information on landslide (Figure 21), rockfall (Figure 22), avalanche (Figure 23) and sinkhole disasters that occur in their provinces. Data produced by other institutions are also integrated into the system.



Figure 21. Landslide Susceptibility Map

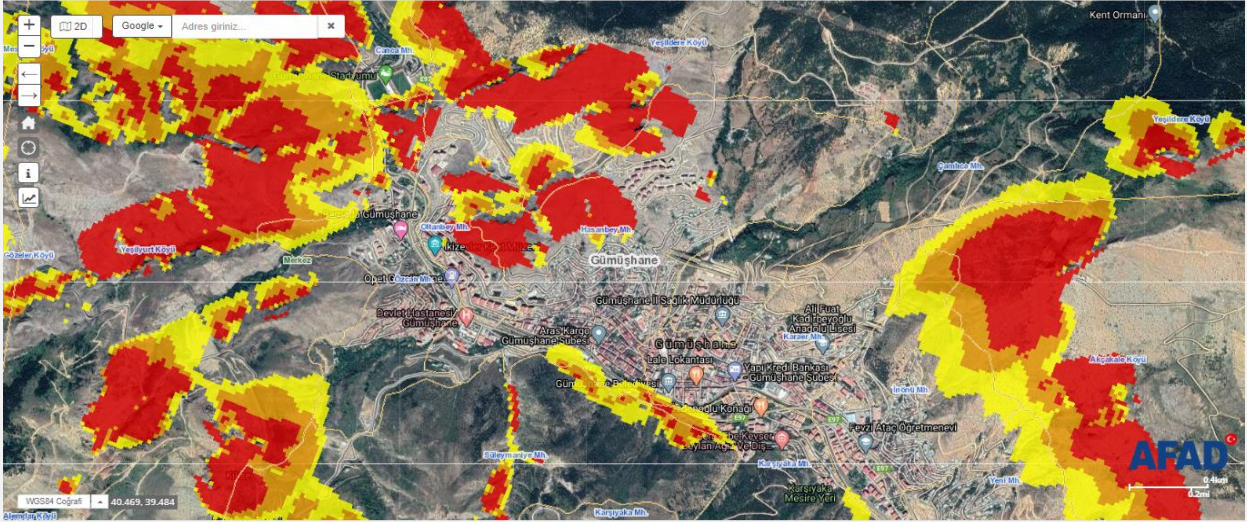


Figure 22. Rockfall Susceptibility Maps

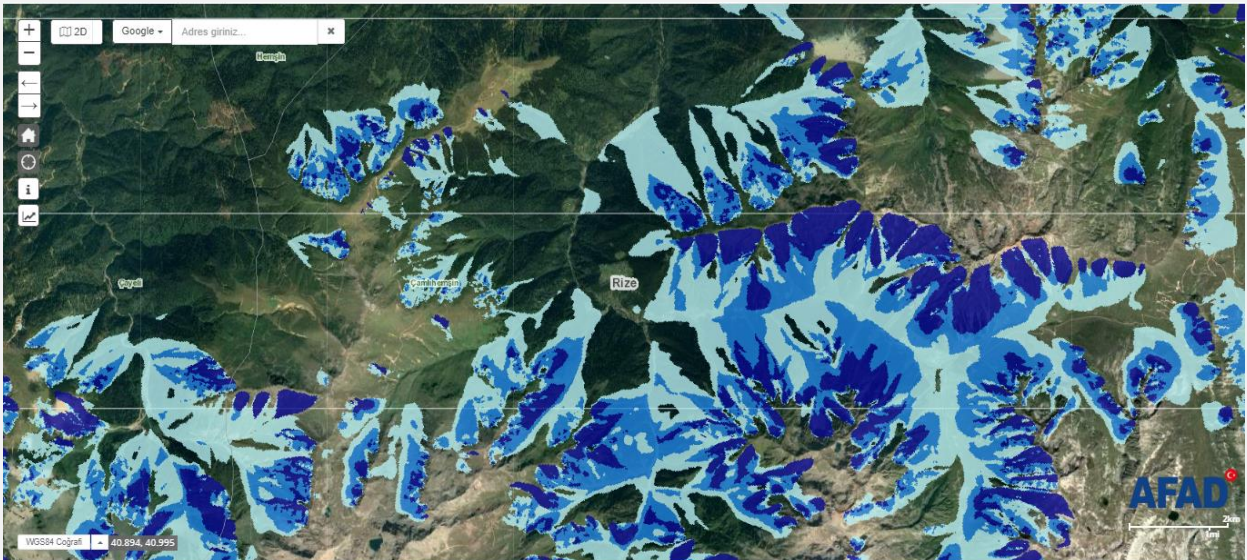


Figure 23. Avalanche Susceptibility Maps

Due to the developing information infrastructure, technology and calculation methods, updating of earthquake catalogs with national and international projects, obtaining more reliable seismological data with developing technological devices, and updating of active fault maps, there has been a need to update the Türkiye Earthquake Hazard Map. In line with this need, the Türkiye

Earthquake Hazard Map was prepared by AFAD in cooperation with public institutions and universities and published in the Official Gazette dated 18.03.2018 and numbered 30364 (Figure 24).

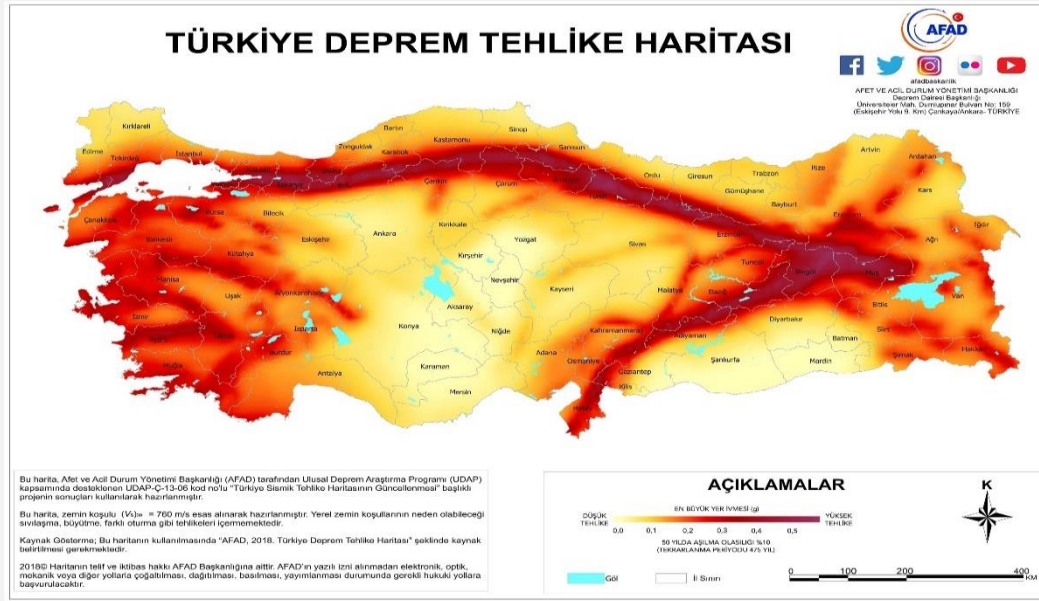


Figure 24: Türkiye Earthquake Hazard Map

Earthquake movements are monitored with a total of 1,187 earthquake observation stations, including 331 speedometers and 856 accelerometers (Figure 25). We have the largest seismic observation network in Europe. Earthquake analysis is carried out for 18 countries, and earthquake data is shared for 7 countries and provinces. 74,230 earthquakes were solved in 2023 and 25,377 in 2024.

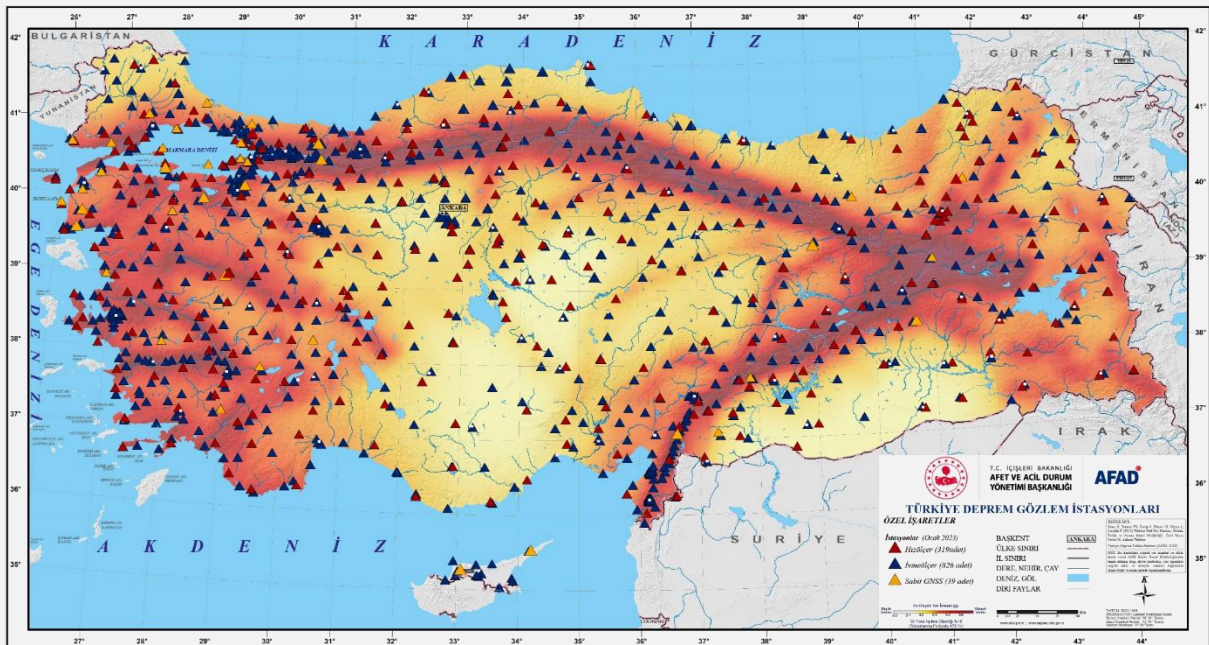


Figure 25: Earthquake Hazard Map and Earthquake Observation Stations

Instant data flow from 1,187 stations is provided and data is processed with various software.

- **DEKAS** (Earthquake Parameter Estimation and Analysis System): Earthquake Magnitude, Location, Focal Mechanism
- **SIDERUS** (Seismo Geodetic Earthquake Analysis System): Displacement Waveforms
- **AFAD-RED** (Rapid Earthquake Damage and Loss Estimation System): Damaged Structures, Death and Injury Estimates
- **DEMEBIS** (Earthquake Information System): Automatic SMS, Email, Tweet
- **TDVMS** (Earthquake Data Center System): Automatic Data Sharing

Turkish Geographic Information System (T-GIS)

The duties and authorities of the Turkish Geographic Information System Board and the Turkish Geographic Information System Executive Board, established with the Presidential Decree No. 49 published in the Official Gazette dated 7.11.2019 and numbered 30941, in order to ensure coordination between public institutions and organizations regarding the National Geographic Information System (GIS) and its infrastructure, have been determined. Following the GIS Board meetings, decisions were made regarding the free sharing of data between public institutions and organizations and municipalities; it was decided that the provision and sharing of data needed by the relevant institutions and organizations for use in disasters, emergencies and extraordinary situations would be carried out in accordance with the procedures and principles determined by AFAD, and that these data would also be shared with the National Geographic Information Platform.

With the Earth Scientific Survey Information System Application, disaster hazards are determined and settlement suitability maps are produced with 1/1000 and 1/5000 scale Zoning Plan Basis Geological-Geotechnical and Microzonation Studies. Avalanche hazard maps are produced by the General Directorate of Combating Desertification and Erosion for use in studies such as winter sports centers and/or development plans, master zoning plans in mountainous areas (areas to be avoided and/or areas with avalanche precautions). These 1/25000 scale avalanche hazard maps are used by institutions that request them in the relevant plans.

Hazardous Materials Risk Map

Along with the rapidly increasing transportation activities parallel to the development of technology, the need for the displacement of hazardous materials is also increasing rapidly. The Project for the Preparation of Risk Maps for the Transportation of Hazardous Materials by Road was carried out by AFAD Presidency. The project aims to be prepared for accidents in the transportation of

hazardous materials by road, to reduce the loss of life and property by conducting Sensitivity and Hazard analyses for fuel, LPG and ammonia transportation with the help of GIS, to compare routes, to select the least risky route, to develop national dynamic Sensitivity and Hazard models for accidents in the transportation of hazardous materials by road, to produce Sensitivity and Hazard maps, and to create an internet based Decision Support System that can be queried interactively

AFAD Industrial Accident Impact Area Modeling Software (AFAD-EKA)

Within the scope of the Industrial Accidents Fire, Explosion and Toxic Release Modeling Software Project, the first national software in its field, the Industrial Accidents Impact Area (AFAD-EKA) Modeling Software, has been developed. With this software, industrial accidents (explosion, fire and toxic release) can be modeled and possible accident impact areas, physical accident results and dimensions can be determined. Update studies on the software are ongoing.

Identification of Critical Infrastructures

Studies are being carried out on critical infrastructures in order to reduce disaster losses and risks, prevent new risks and increase resilience against disasters, and AFAD prepared a roadmap document for the Protection of Critical Infrastructures in 2014. The document defined critical infrastructures and determined sectors throughout the country. Critical infrastructures are the totality of assets that can cause loss of life, property and reputation when damaged, and have vital importance on the environment, society and public services. Critical assets are defined as physical structures and facilities that are prioritized to be prepared for disasters and emergencies under the critical infrastructure sectors. Energy, transportation, water management and dams, communication, banking and finance, agriculture and food, culture and tourism, health, critical public services, critical production/commercial facilities are critical infrastructure sectors. AFAD has determined a disaster based risk methodology for the energy and health sectors, and developed the Critical Infrastructures Disaster Risk Analysis System software.

National Earthquake Research Program

Research and development projects are supported to better understand disaster risks. Within the scope of the National Earthquake Research Program (UDAP) to date 65 projects have been supported by various institutions and universities. It was decided to support 51 of the 232 projects submitted in the call made in 2024. "Research Platform for Determination of Paleosismological Features of Türkiye's Active Fault"s has been established. Within the scope of paleoseismology studies in Türkiye, research studies will be carried out on 132 fault segments together with 23 universities and other institutions until the end of 2025.



Photograph 9. Kahramanmaraş Earthquake Before and After Images

Remote Sensing Technologies

Remote sensing systems are used in monitoring and risk reduction studies of disasters such as landslides and rock fall. Pre and post-disaster monitoring can be done with Unmanned Aerial Vehicle Based Monitoring Systems (Figure 27).

This technology can be used for the following studies:

- Rapid mapping operations before and after landslide and rockfall disasters,
- 3D terrain modeling,
- Obtaining 3D lidar and optical images that will form a basis for precautionary projects,
- Monitoring surface deformations with periodic measurements in areas at risk of disaster.

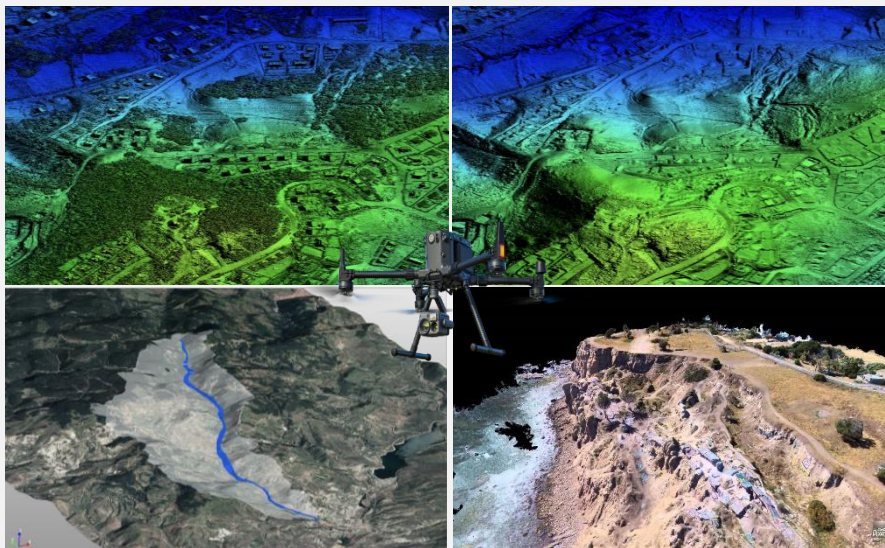


Figure 27: Terrain Models Created with Drone Images

Disaster Awareness, Training and Volunteering

- 2020 was declared as the "Disaster Preparedness Year" and 32 million people were given Disaster Awareness Training.
- 2021 was declared as the "Disaster Education Year" and approximately 57 million people were given Disaster Awareness Training.
- 2022 was declared as the "Exercises Year" and 33 million people were given Disaster Awareness Training, 97,360 national and 2 international exercises (Turkish Republic of Northern Cyprus, INSARAG SIMEX) were conducted (*Photograph 10*).
- After the February 6, 2023 Kahramanmaraş earthquake, the slogan "100 Thousand Search and Rescue Guardians In The 100th Anniversary of The Republic of Türkiye" was determined for 2023. For this purpose, the target of increasing the number of our search and rescue teams to 100 thousand has been set. 113,343 people were trained in 2023-2024 (Table 3 and *Photograph 12*).



Photograph 10. Exercises-2022

The total number of AFAD Volunteers is approximately 1.5 million (Figure 28) . Among these volunteers, support AFAD volunteers who have completed their training carry out work in disasters. In the 2023 Kahramanmaraş earthquake, 39 thousand AFAD Volunteers worked in the field (Photograph 11).

Number of AFAD Volunteers

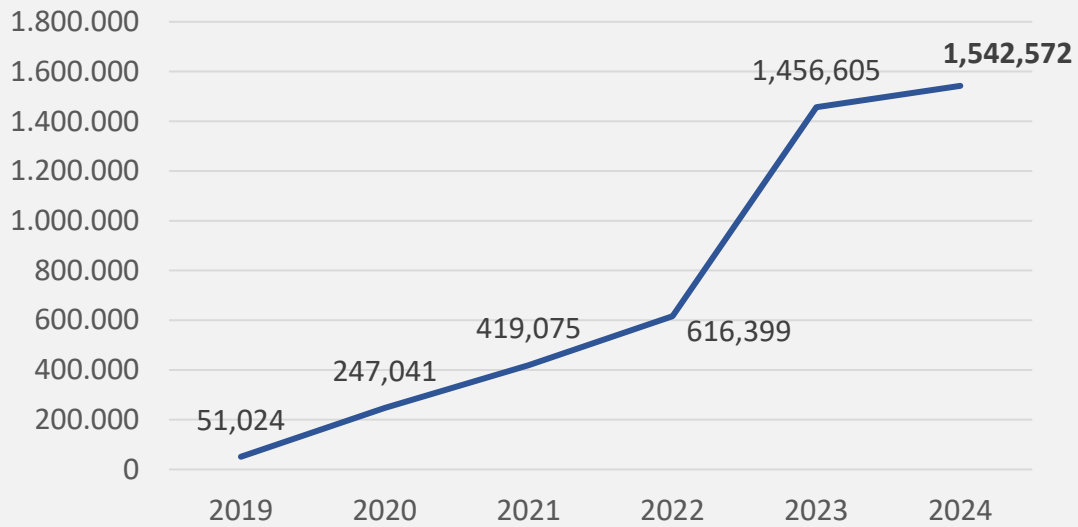


Figure 28: Number of AFAD Volunteers (2019-2024)



Photograph 11. AFAD Volunteers-Kahramanmaraş 2023

Table 3. Number of Personnel Who Completed Earthquake Search and Rescue Training

Institution Name	2023	2024	Total
AFAD	2,520	173	2,693
Ministry of National Defense	1,692	10,605	12,297
Ministry of National Education	2,031	6,583	8,614
Ministry of Energy and Natural Resources	684	2,714	3,398
Ministry of Agriculture and Forestry	726	1,776	2,502
Ministry of Justice	114	2,259	2,373
Ministry of Environment, Urbanization And Climate Change	2,267	8,773	11,040
Ministry of Health	680	1,705	2,385
Presidency of Religious Affairs	533	1,112	1,645
Ministry of Youth and Sports	766	3,749	4,515
Gendermerie General Command		21,745	21,745
General Directorate of Security	1,352	3,793	5,145
Other	18,335	2,443	20,778
NGO	3,981	10,232	14,213
Total	35,681	77,662	113,343



Photograph 12. Search and Rescue Trainings

National and Local Level Plans

As explained in detail in the Strategic Plans in Disaster Management (Title-3) section, there are national and local plans in Türkiye. Türkiye Disaster Management Strategy (TAYS), prepared at the national level, constitutes our disaster management strategy and preparation work continues.

Risk reduction plan TARAP and respond plan TAMP have been completed and work on the recovery plan TASIP is ongoing. A risk reduction plan (IRAP) and response plan have been prepared for 81 local levels.

The preparation process of all these plans was carried out in cooperation with stakeholders and with a participatory approach. Although the plans were prepared by AFAD, many institutions and organizations across the country are responsible for the implementation of the plans. Necessary updates are made to ensure the functionality of the plans and monitoring and evaluation are carried out at certain intervals to learn the latest status.

Flood Management Plans

Work continues on the reorganization of settlements at risk of flooding and the preparation of risk management plans. The Ministry of Agriculture and Forestry Water Management General Directorate continues to implement flood management plans in 25 basins, using preliminary flood risk

assessment, flood hazard maps and flood risk map outputs to determine the work to be done and the measures to be taken before, during and after the flood.

- Flood Management Plans have been completed in 23 basins (Yesilirmak, Antalya, Sakarya, Susurluk, Ceyhan, Aras, Kizilirmak, Northern Aegean, Gediz, Kucuk Menderes, Western Black Sea, Buyuk Menderes, Akarcay, Firat-Dicle, Lake Van, Eastern Black Sea, Coruh, Seyhan, Asi, Konya, Western Mediterranean, Burdur, Eastern Mediterranean).
- Flood Management Plan preparation studies continue in 2 basins (Marmara and Meric Ergene).
- Flood Management Plans prepared in 5 basins (Sakarya, Susurluk, Ceyhan, Antalya and Yesilirmak) are ongoing.

Drought Management Plans

Drought Management Plans are being prepared to determine the possible drought risk and the necessary precautions to be taken. As of 2022;

- Drought Management Plans of 15 basins (Konya, Antalya, Eastern Mediterranean, Western Mediterranean, Burdur, Akarcay, Kucuk Menderes, Northern Aegean, Van Lake, Firat-Dicle, Seyhan, Ceyhan, Asi Basins, Gediz and Buyuk Menderes) have been completed.
- Preparation of Drought Management Plans continues in 10 basins (Merik-Ergene, Marmara, Susurluk, Sakarya, Western Black Sea, Kizilirmak, Yesilirmak, Eastern Black Sea, Coruh and Aras).
- Update studies of Drought Management Plans prepared in 2 basins (Konya and Akarcay) continue.

Hospital Plans

There is a plan prepared for the use of hospitals in providing health services, which is one of the most important services in disasters. Hospital, disaster and emergency plans are a hospital plan prepared at the national level and can be applied as a standard in all hospitals.

Business Continuity Plans

Organized Industrial Zones (OIZs) are exposed to many threats and dangers, both natural and technological (human-based). An effective business continuity study will be one of the inevitable priorities of all businesses today. Having a comprehensive plan prepared in case of sudden and unexpected situations is very important when considering the loss of life, economy and reputation of the business.

Within the scope of the project initiated with the application support provided by AFAD and the World Bank, the Business Continuity Plan Preparation and Implementation Guide was prepared to ensure that businesses are better prepared against disasters and emergencies, and the implementation continued in the pilot Organized Industrial Zones located in Hatay and Iskenderun provinces. Pilot OIZs (Hatay and Iskenderun) risk assessment and prioritization reports, Pilot OIZ Business Continuity Plans, Business Continuity Preparation Guide, Business Continuity Plan Trainer Training documents were prepared within the scope of the project.

It is aimed to use the prepared business continuity plan guide for 325 organized industrial zones in Türkiye and to disseminate the plans.

Türkiye's Climate Change Adaptation Efforts

Within the scope of Türkiye's Climate Change Adaptation Strategy and Action Plan (2011-2023), the Strengthening of Climate Change Adaptation Action in Türkiye Project is being carried out to achieve a more resilient structure against the effects of climate change in our country. Priority actions are being taken in the fields of Public Health, Energy, Agriculture, Livestock and Fisheries, Social Development, Urban, Biodiversity and Ecosystem Services, Transportation and Communication, Water Resources Management, Tourism and Cultural Heritage, Disaster Risk Management, and Industry sectors, with the participation of public institutions, academic institutions, civil society and private sector representatives, according to the criteria to be determined for each sector.

Accreditation Studies

Teams are accredited in the areas included in the Türkiye Disaster Response Plan (search and rescue, shelter, health, psychosocial support, etc.). During the accreditation process, AFAD receives the applications, provides coordination, but the accreditation is done by the relevant institution. To date, a total of 286 teams and 8,652 members have been accredited the fields of "Urban Search and Rescue, Nutrition, Psychosocial Support, Donations and Warehouse Management, Disaster and Emergency Training, Emergency Shelter In Disaster" (Table 4).

Table 4: Number of Accredited Teams and People by Sector

Sector	Team	Member
Municipality	61	1,730
Non-Governmental Organization	176	5,442
University	5	142
Organized Industrial Zone	3	78
Private Institution	26	694
Public Institution	13	521
Hospital	2	45
Total	286	8,652

Türkiye Disaster Risk Reduction Platform

In light of these developments in the world, the Turkish Disaster Risk Reduction Platform was established in our country, and the Council of Ministers Decision No. 2011/1320 dated 17.01.2011 regarding the "Establishment, Duties and Working Principles of the Turkish Disaster Risk Reduction Platform" was published in the Official Gazette No. 27844 dated 12.02.2011 and entered into force. The "Turkish Disaster Risk Reduction Platform Directive" and "Platform Member List" prepared in accordance with Article 3 of this Decision were approved by the Ministry in 2018. The Platform aims to prevent hazards at the country level regarding disasters and emergencies, increase the sensitivity of society to disasters, ensure the continuity of risk reduction efforts, and ensure the integration of risk reduction into plans, policies and programs at all levels.

The Türkiye Disaster Risk Reduction Platform consists of 73 high level members, including relevant public institutions and organizations, non-governmental organizations, professional organizations, universities, local governments, the private sector, and media representatives. In addition, if needed, non-member national and international experts, institutions, and organizations may be invited to the platform's activities. The first meeting of the platform was held on August 21, 2020, with the theme of "Understanding Disaster Risk", and the second meeting was held on October 13, 2023, with the theme of "Strengthening Risk Governance".

Disaster Management Centers Platform (AYMEP)

AYMEP was established to support the projects of University Research Centers related to disaster processes and to carry out joint studies, to facilitate coordination and communication, and to publish academic studies such as theses and articles on disaster management and risk reduction on a common platform. AYMEP continues its work on building risk assessment, suitability for settlement in geological disasters, suitability for settlement in climatic disasters, suitability for settlement in fires, disaster education, volunteering and similar issues through the sub-commissions it has established within its own body.

Cooperation with International Organizations

Joint projects are developed, training activities are carried out, and meetings aimed at ensuring coordination and cooperation are attended with many organizations such as Japan International Cooperation Agency (JICA), United Nations Office for Disaster Risk Reduction (UNDRR), UN Economic and Social Commission for Asia and the Pacific (UNESCAP), South East Europe Disaster Preparedness and Prevention Initiative (DPPI SEE), Economic Cooperation Organization (ECO), European Commission Civil Protection Mechanism (UCPM), Black Sea Economic Cooperation Organization (BSEC), Coalition for Disaster Resilient Infrastructure (CDRI), Asian Disaster Damage Mitigation Center, and Organization of Islamic Cooperation (OIC).

Türkiye Building Earthquake Regulation (TBDY)

Earthquake regulations aim to ensure life safety and limit damage against earthquakes by determining the minimum principles for building safety. AFAD is responsible for preparing the necessary umbrella legislation, regulations, circulars and notices regarding the design and construction of new buildings and building types and the evaluation and reinforcement of existing buildings. TBDY was published and entered into force in 2018 in order to prevent different practices that may occur between local implementing institutions. Based on this regulation, studies on the "Communication on Emergency Measures for Reduction of Building Earthquake Risk in Türkiye" are being carried out.

Structural Health Monitoring Center

With the Türkiye Building Earthquake Regulation, AFAD was tasked with establishing a building health monitoring center. In accordance with Article 5 of the Presidential Decree No. 31861 dated June 9, 2022, a "Building Health Monitoring Center (YASIM)" has been established in our Presidency. With the establishment of YASIM, it is aimed to raise awareness and disseminate Structural Monitoring and Evaluation for other Public Institutions and Organizations and the Private Sector and to develop standards. If the critical threshold is exceeded in events such as earthquakes, the relevant institutions

and building owners will be warned through automatic systems. Critical thresholds will be determined through R&D studies, taking into account life safety. R&D projects for High-Rise Buildings Structural Health Monitoring System, Historical Mosques Structural Health Monitoring System, Bridges and Viaducts Structural Health Monitoring System are ongoing (*Photograph 13*).



Photograph 13. AFAD Building Health Monitoring Center (YASIM)

Stream Improvement Works

"Cooperation Protocol for Stream Improvement Works within The Scope of Risk Reducing Activities" was signed between AFAD and the General Directorate of State Hydraulic Works for stream improvement. Within the scope of this protocol, 100 excavators are working in 14 provinces. To date, 6,146,475 m³ and 486.8 km of stream improvement has been carried out (*Photograph 14*).



Photograph 14. Stream Improvement Works

Natural Disaster Insurance

The Natural Disaster Insurance Institution (DASK) was established in 2000. DASK aims to ensure that citizens can safely continue their lives after an earthquake by adopting the approach of “The earthquake will pass, life will go on”. Compulsory Earthquake Insurance provides financial security to insured homeowners against earthquakes and the risks of fire, explosion, landslide and tsunami caused by earthquakes. Whether the building is uninhabitable or partially damaged, it compensates for the damage as quickly as possible and helps life return to normal. Compulsory Earthquake Insurance is a coverage system that covers the material damage caused by an earthquake in the building you live in. In this way, it is aimed to ensure that life continues at the basic standards before the earthquake. Earthquake insurance coverage rates in our country are given in Table 5.

Table 5: Insurance Rates for 7 Geographical Regions

Region	Number of Residences	Number of Insured Houses	Insurance Rate
Marmara	6,840,000	4,378,913	64.00%
Central Anatolia	3,780,000	1,899,404	50.20%
Aegean	2,970,000	1,659,825	55.90%
Mediterranean	2,517,000	1,380,797	54.90%
Black Sea	1,933,000	864,883	44.70%
South East Anatolia	1,124,000	570,204	50.70%
Eastern Anatolia	868,000	528,108	60.80%
Total	20,032,000	11,282,134	56.30%

Renovation of Disaster Risk Buildings

The Law No. 6306 on the Transformation of Areas at Disaster Risk was enacted to transform areas at disaster risk and risky structures, and to create healthy, safe and livable environments throughout the country. It is aimed to prevent further loss of life as a result of disasters and to transform cities into healthy and safe living environments. The renovation of disaster risk structures is carried out by the Ministry of Environment, Urbanization and Climate Change and Municipalities within the scope of this law (*Photograph 15*).

Renovation of disaster risky structures is carried out in 4 stages:

1. Risk Assessment Application
2. Risk Assessment
3. Demolition of the Risky Structure
4. Post-Demolition Implementation



Photograph 15. Transformation of Disaster Risk Structure

From 2012, when Law No. 6306 entered into force, to October 2022, risky building identification was carried out for 249,605 structures containing a total of 874,448 independent units, of which 756,796 were residences and 117,652 were workplaces, throughout the country. Of these, 231,250 risky structures containing a total of 781,653 independent units, of which 683,279 were residences and 98,374 were workplaces, were demolished, and 1,662,809 new independent units were constructed in their place.

Spatial Planning

The 6th article of the Regulation on the Construction of Spatial Plans titled “Spatial planning stages and relations” states that “Spatial plans are prepared as Spatial Strategy Plans, Environmental Development Plans and Zoning Plans in terms of the area they cover and their purposes. Accordingly, planning stages consist of Spatial Strategy Plan, Environmental Development Plan, Zoning Plan and Implementation Zoning Plan, respectively, from the upper stage to the lower stage.” Within the scope of the aforementioned Regulation, provisions regarding the preparation of geological studies have been determined in the procedures and principles regarding the preparation process of each type of plan, and in this direction, the said studies are prepared and approved before spatial plans are prepared. It is mandatory to comply with the settlement suitability maps in the approved geological-geotechnical studies or microzonation reports that form the basis of the zoning plan. The suggestions made in these studies are evaluated in the analysis and synthesis stages carried out before the production of planning decisions. In addition, planning principles, plan note arrangements and plan implementation provisions are regulated in spatial plans by taking into account the issues specified in the geological survey report. In addition to these, the Regulation also includes provisions regarding the reflection of the opinions of institutions and organizations on zoning plans regarding energy transmission lines, stream protection zones, flood risk areas, disaster prone areas and similar areas that have direct or indirect negative effects on human health and safety.

Transportation Infrastructures

Efforts to reduce disaster risks related to transportation infrastructure are ongoing. In this context; studies are ongoing on what can be done in the field of transportation by monitoring meteorological conditions in real time. Studies are being conducted on strengthening buildings and transportation infrastructure, including horizontal surface movements and surface liquefaction risks. Pilot studies are ongoing to monitor the temperatures of rails and send warnings to relevant authorities against the risk of railways expanding due to excessive heat.

Energy Infrastructures

The Ministry of Energy and Natural Resources is taking measures to increase physical resilience by constructing transformer centers, moving transformers to risky locations, relaying natural gas pipelines that overlap earthquake fault lines, etc.

Improvement and Temporary Shelter Preparation Works

Türkiye Post-Disaster Recovery Plan studies continue. In 81 provinces, areas that will provide temporary shelter(Figure 29) for disaster victims have been determined since the moment a disaster occurs.

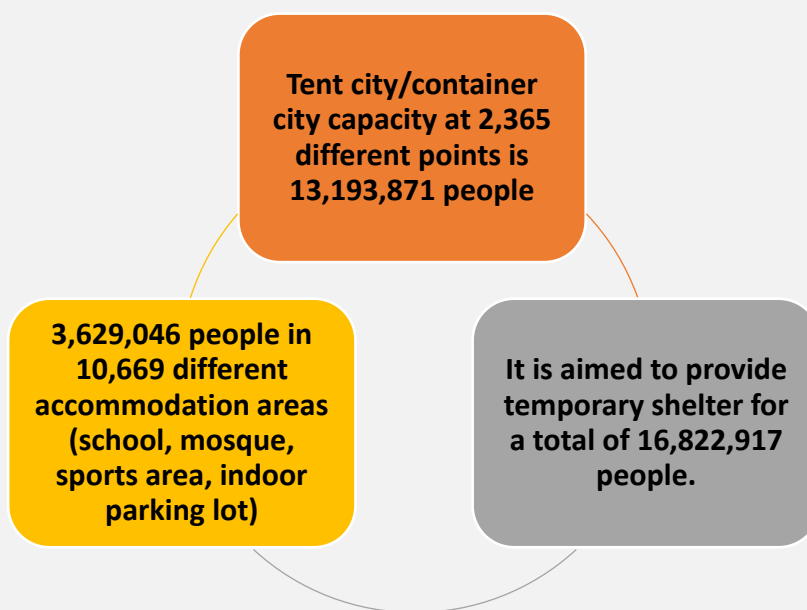


Figure 29: Temporary Shelter Capacity

There are Disaster Regional Logistics Warehouses (*Photograph 16*) in 27 provinces and Logistics Support Warehouses in 54 provinces. To be used in possible disasters; tent and tent interior materials (pillows/sheets, blankets, mattresses) and container interior materials (refrigerator, kitchen set, bunk beds) are stocked. In strategically determined provinces, 1,949 living containers, 438 WC containers, 366 shower containers, 71 office containers, 1,540 general purpose tents are kept in stock.



Photograph 16. AFAD Logistics Warehouse

In addition to the logistics warehouses established by AFAD, the Red Crescent also has 28 logistics warehouses. These warehouses contain shelter (tents, blankets, sleeping bags, family kitchen sets, beds) and nutrition equipment (field kitchen, mobile kitchen, mobile oven, catering vehicle, nutrition vehicles, etc.). In addition, local governments, especially metropolitan municipalities, have warehouses for emergency supplies such as tents and blankets.

After the February 6, 2023 Kahramanramas earthquakes, 1 million tents sent in 350 tent cities. 146,123 containers were established in 404 container cities. There are a total of 440,752 beneficiaries, including 387,954 houses, 41,334 workplaces, and 11,464 barns for 11 provinces. To date, 50,904 houses have been delivered as turnkey (*Photograph 17*).



Photograph 17. Newly Built Disaster Housing

Assistance such as rental assistance, moving assistance, support payments are provided to disaster victims. A total of 143,888,176,387 TL resources have been transferred to the region after February 6.

Uninterrupted Communication System

AFAD continues to expand the communication systems needed to establish an uninterrupted and secure communication infrastructure for more effective disaster response throughout the country. The installation of an uninterrupted and secure communication system (based on APCO25) has been completed in 33 provinces. In order to optimally utilize the capacities of the radio networks currently established in AFAD provincial directorates and other public institutions and organizations, another fiber optic-based secure communication radio system has been established in 81 provinces by the end of 2022.

AFAD Emergency Mobile Application has been developed. AFAD Emergency users in disaster areas can make voice calls to the 112 Emergency Call Center over the internet with a single click and their location information is instantly transmitted to the system. Our citizens will be able to reach the nearest assembly area by getting directions from the application.

Features such as one-click emergency call and disaster training videos can be accessed through the application (Figure 31).



Figure 31: AFAD Emergency Mobile Application

Disaster and Emergency Assembly Areas and Temporary Shelter Areas

Disaster and Emergency Assembly Areas are safe areas where people can gather away from the dangerous area in order to prevent panic and to ensure a healthy exchange of information until temporary shelters are ready after disasters and emergencies. Assembly areas are determined by the relevant municipalities in areas for public use such as public treasury lands, recreation areas, sports areas, parks, parking lots and open markets, as much as possible.

Disaster and Emergency Assembly Areas where our citizens will gather in disasters and emergencies have been determined for 81 provinces. In addition, the determined gathering areas have been added to the Provincial Disaster Response Plans. The closest gathering areas to the building can be queried via the e-government application. 29,865 disaster and emergency assembly areas have been determined throughout the country.

Temporary Shelter Areas are places where disaster victims whose homes have become unusable due to a disaster or emergency or whose use of the home is risky and those who are subject to evacuation are provided temporary shelter individually or collectively in their current locations or elsewhere. Temporary shelter areas are organized according to the Directive on the Establishment, Management and Operation of Temporary Shelter Centers (AFAD, 2015/b) issued by AFAD on 04.11.2015.

Work is ongoing to determine and update the temporary shelter areas planned to be used in possible disasters and emergencies throughout the country, to prepare the electricity, water and sewage infrastructures of temporary shelter centers by the governorship and the relevant municipality in these areas to be determined and to include them in the zoning plans.

International Humanitarian Aid Activities

Extending a helping hand to people in 72 countries on 5 continents, AFAD is an institution that coordinates humanitarian aid efforts not only within the borders of our country but also internationally. When the global humanitarian aid reports for 2018-2022 are examined, our country ranks 1st among the countries providing international humanitarian aid in the world. Türkiye is the country that provided the most humanitarian aid according to its gross national income with 7.2 billion dollars in 2022 (*Photograph 18*).



Photograph 18. Humanitarian Aid Packages

Inventory of Public Service Buildings

Within the scope of studies to determine the risk inventory of public service buildings against possible disasters and to strengthen those deemed necessary, the prioritization of the building stock, including public buildings and infrastructures, according to disaster risks at the settlement scale continues. A practical measurement-evaluation-prioritization methodology has been developed by Ministry of Environment, Urbanization and Climate Change for the preparation of a program for inventorying public service buildings across the country and prioritization, in which the earthquake risks of buildings can be numerically determined, which can be completed in a very short time on a

building basis, and which does not require high cost, advanced expertise and labor, and which is developed separately for each different load-bearing system type. The methodology was piloted in Duzce and the web-based Public Buildings Inventory System software was developed.

7. ADRC COUNTERPART

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