REPUBLIC OF TURKEY
MINISTRY OF INTERIOR

AFAD

2019 OVERVIEW OF DISASTER MANAGEMENT AND NATURAL DISASTER STATISTICS

Republic of Turkey Ministry of Interior
Disaster and Emergency Management Presidency
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AFAD

REPUBLIC OF TURKEY MINISTRY OF INTERIOR
DISASTER AND EMERGENCY MANAGEMENT PRESIDENCY

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"Preventive and protective measures should be taken before a disaster occurs. There is little value in lamenting a disaster after it hits."

M. Atatürk

FOREWORD

“The fact that managers and decision-makers who will work on disaster management possess real data of past events, that this data is examined through modern analysis methods, and that disaster-related numbers and field experiences are recorded will increase the success of future generations in disaster management.”

Although the “experience” that contributes to our lives and successes is based on an individual accumulation, the scope of this concept has expanded in our era to include institutional and social experiences. Today’s executives can be successful not only through their personal experience, but also to the extent that they include these comprehensive experiences, which we essentially refer to as “data”, in decision-making processes.

Although kept in different media and with different methods, the availability of disaster records going back hundreds of years in Turkey, where there is a high risk of natural disasters, should be considered a gift to us from our ancestors. Beyond being able to take a snapshot of the current situation, the fact that managers and decision-makers who will work on disaster management possess real data of past events, that this data is examined through modern analysis methods, and that disaster-related numbers and field experiences are recorded will increase the success of future generations in disaster management.

Despite being a relatively young institution, AFAD has gained significant institutional capacity and experience based on its works both in Turkey and beyond our borders. It is, therefore, evident that the disaster-related data produced by this important institution will contribute to disaster management not only today, but also in the years to come.

In this respect, I congratulate all my colleagues who have contributed to this document published by AFAD, and take this opportunity to commemorate all of our citizens who have perished as a result of natural disasters.

Süleyman SOYLU
Minister

PRESENTATION

"We believe that when we consider risk reduction as the basis of successful disaster management, the planning, response and recovery processes will be carried out much more effectively."

Natural disasters are of critical importance due to the losses to human life and property, the economic damages on a macro-scale, and the serious disruption to development they bring.

Turkey is located in a geography where natural disasters, especially earthquakes, are a regular occurrence. Aside from the various natural disasters such as landslides, floods and avalanches faced in Turkey, its geopolitical location brings it also face-to-face with humanitarian crises that can best be described as man-made disasters.

According to a report prepared based on the Global Risk Management Index, of the countries facing humanitarian crises and disasters, Turkey is in the "high-risk" group of countries, and was ranked 53rd among 191 countries with an index score of 5.0 in 2019 in this regard. Turkey is the 10th most risky country according to the hazard and exposure subcomponent scores of the index.

The concept of "risk reduction" that we started to hear more often after the 1999 earthquake, and that became a key factor at the center of disaster management with the establishment of AFAD, focuses on the question of what can be done before disasters occur. Risk reduction has become the primary concern of disaster management, both in Turkey and around the globe. We believe that if we consider risk reduction as the basis of a successful disaster management approach, the planning, response and recovery processes will be carried out in a much more effective manner. To clarify this with two simple examples; if we minimize the number of risky buildings and make our buildings stronger in the earthquake zones, we can minimize loss of life; or, if we refrain from constructing houses in stream beds in regions prone to heavy rainfall, we can prevent floods from taking lives away from us. All of this would certainly be possible with a disaster-conscious society. The state has significant responsibility in the disaster management process, but it cannot carry out this process on its own. It would be a major step forward if civil society, the private sector, universities and the general public could participate in and raise awareness of disaster management and risk reduction.

This booklet summarizes our disaster management activities in 2019, and presents, as the phrase goes, the balance sheet of natural disasters. Compiling and interpreting statistics and putting them into a scientific framework are of great importance for seeing the activities that have yet to be completed, and which areas have been handled insufficiently.

Our stakeholders in the field of disaster management have provided significant support to the activities carried out under the coordination of AFAD. I would like to express my gratitude to all our ministries, institutions and organizations for their contributions. I also would like to take this opportunity to congratulate those who have contributed to the preparation of this report, and to thank members of the AFAD community not only for their efforts, but also for the heart they put into the activities carried out throughout the year.

Dr. Mehmet GÜLLÜOĞLU
Head of AFAD

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ABBREVIATIONS

ADEIPST: Analysis of Developments in Expectations, Institutions, Practices, Science and Technology
AFAD: Disaster and Emergency Management Presidency
AFAD-RED: Rapid Earthquake Damage and Loss Estimation Software
ARAS: Disaster Risk Reduction System
AYDES: Disaster Management and Decision Support System
CBRN: Chemical, Biological, Radiological and Nuclear
EDOK: Training and Doctrine Command
GIS: Geographic Information System
INFORM: Risk Management Index
JEMUS: Gendarmerie Integrated Communication and Information System
NATO: North Atlantic Treaty Organization
NMRT: National Medical Rescue Team
OCHA: United Nations Office for the Coordination of Humanitarian Affairs
OHS: Occupational Health and Safety
SHH: Self-Help Housing
SMS: Short Message Service
SRUC: Statistical Regional Units Classification
SWOT: Strengths, Weaknesses, Opportunities and Threads Analysis
TAMP: Turkey Disaster Response Plan
TİKA: Turkish Cooperation and Coordination Agency
TRNC: Turkish Republic of North Cyprus
UNDP: United Nations Development Program
UNESCAP: United Nations Economic and Social Commission for Asia and the Pacific
UNFPA: United Nations Population Fund
UNHCR: United Nations High Commissioner for Refugees
UNICEF: United Nations Children's Fund
UNU_EHS: United Nations University, Institute for Environment and Human Security
WFP: World Food Program

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2019 Overview for Disaster Management and Natural Disaster Statistics

1.

VIEW OF 2019 IN RISK INDEXES AND GLOBAL REPORTS

1. VIEW OF 2019 IN RISK INDEXES AND GLOBAL REPORTS

1.1. World Risk Index

This index valorizes the disaster risks of 180 countries attributable to extraordinary natural incidents. It is calculated each year on a country-basis by multiplying **"exposure"** by **"vulnerability"**. Exposure refers to threats to the population and other protected assets due to such events as earthquake, storm, flood, drought and rises in sea levels. Vulnerability covers the societal area and consists of three components that have equal weight in the calculation:

Susceptibility, describing the structural characteristics of a society, and indicating the potential outcomes of extraordinary natural incidents. Susceptibility is related to infrastructure, food supply and structural economic conditions.

Coping capacity, including the various abilities of society to mitigate the adverse effects of both natural hazards and climate change through both behavior and available resources. Coping capacity is related to governance, health, and social and physical security.

Adaptive capacity, including measures and strategies for dealing with and fighting against the future adverse effects of both natural hazards and climate change.

Unlike coping capacity, it is treated as a long-term process that includes infrastructural changes. Adaptive capacity is related to potential natural incidents, climate change and similar challenges.

The concept of the World Risk Index, including its adaptable structure, was developed by the United Nations University, Institute of Environment and Human Security (UNU-EHS). It was revised in 2017 and 2018 in the light of new findings, and these revisions led to changes at an indicator level. The index consists of a total of 27 indicators in open data sets that are accessible to everyone.

The index has been calculated by the Ruhr University Bochum, Institute for International Law of Peace and Armed Conflict since 2018, and is reported and published together with the Alliance Development Works (Bündnis Entwicklung Hilft). The World Risk Index serves as a guide for decision makers, and identifies areas of activity for the reduction of risks of disaster. The index, however, does not provide a probability or timing calculation for possible future disasters.

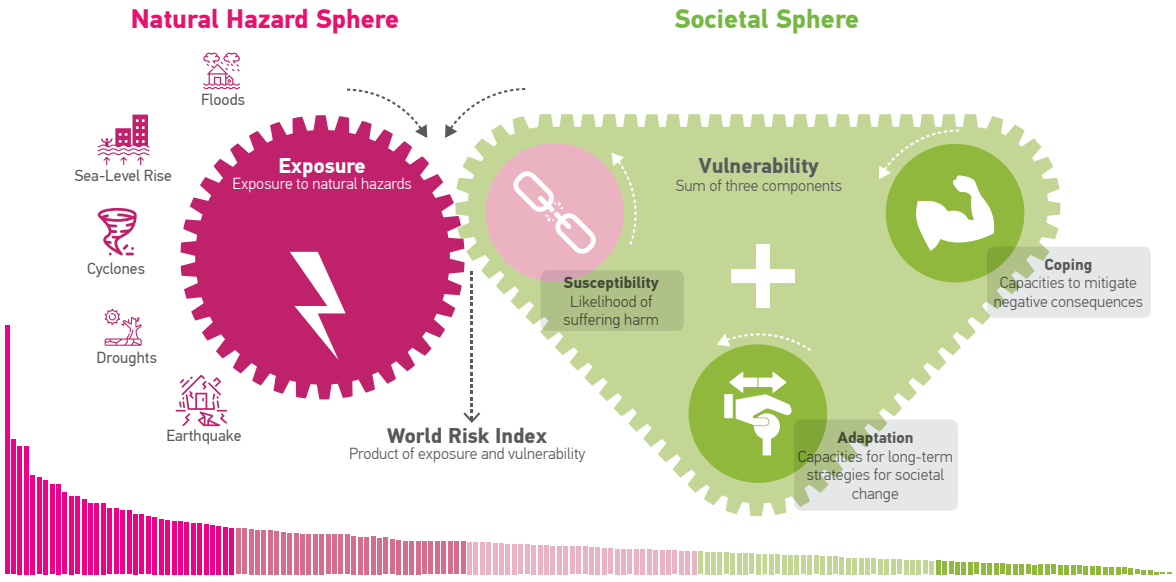

Figure 1. World Risk Index and its components (Source: WorldRiskReport 2019, www.worldriskreport.org)

Susceptibility - the vulnerability component of the index - consists of the following subcomponents: access to basic cleaning services, access to drinking water, shanty-type housing, lack of nutrition, labor parameters, ratio of the population living on $1.9 per day, gross domestic product based on purchasing power parity and GINI index. The sub-components of coping are identified as follows: corruption perception index, fragility index, disaster preparedness and early warning, number of physicians per thousand people, number of beds per thousand people, social networks and insurance. Finally, the sub-components of adaptation are as follows: adult literacy rate, gross enrollment rate, gender inequality index, water resources, conservation of biodiversity and habitat, forest and agriculture management, projects for natural hazards and climate change, public health expenditures, projected life expectancy, private health expenditures.

A very low index score is between 0.31 and 3.29, low risk is between 3.30 and 5.49, moderate risk is between 5.50 and 7.51, high risk is between 7.52 and 10.61, and very high risk is between 10.62 and 56.71. Accordingly, the highest risk score recorded for 2019 was 56.71 and the lowest risk score was 0.31.

The "World Risk Report" has been published since 2011 in light of the World Risk Index data. In 2018 and 2019, unlike in previous years, the report was prepared in a concept focused manner. The focus of the 2018 report was "Child Rights and Child Protection", whereas the focus of the 2019 report was "Water Supply".

The map presented in *Figure 2* divides the countries into five categories in terms of risk. Among the continents, Africa contains more high-risk countries than the any of the other continents. In particular, the countries in central Africa are more prone to disasters. Aside from Africa, the South East Asian region is of particular note in having zero countries in the low risk category.

The European continent is reported as low risk, aside from a few countries, whereas South America has greater risks than North America. The coastal countries on the west of South America are at the highest risk. Considering the entire map, it can be seen that the island countries tend to be classified as more risky.

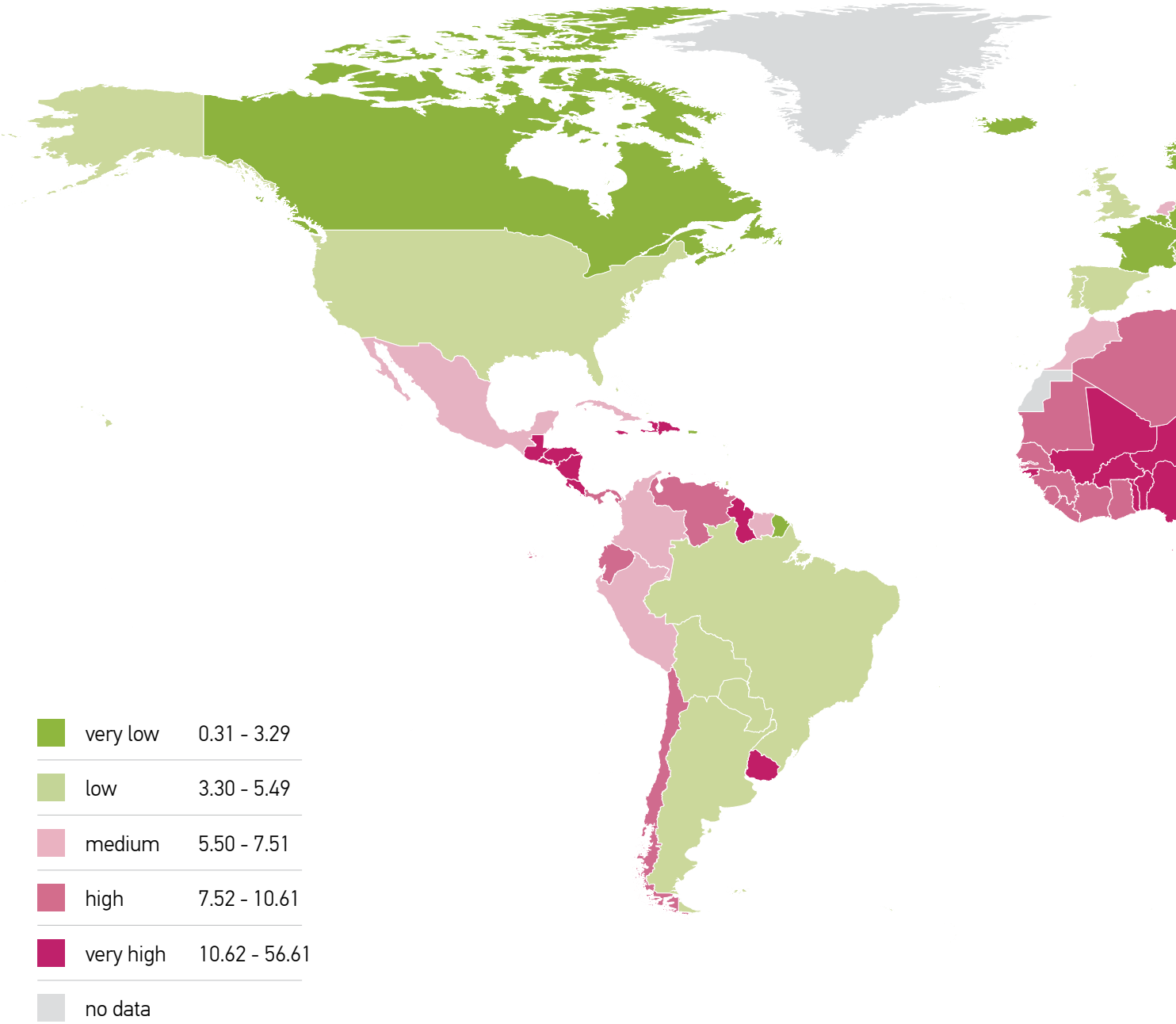

Figure 2. Distribution of countries by risk groups (Source: WorldRiskReport 2019, www.worldriskreport.org)

According to the World Risk Index, Vanuatu was the riskiest country in terms of disasters in 2019, with an index score of 56.71, followed by Antigua and Barbuda, and Tonga. The fact that eight of the 10 riskiest countries, being those other than Guyana and Brunei Darussalam, are island countries is worthy of note. Island countries are more exposed to the rising sea levels associated with climate change than other countries.

The country with the lowest risk is Qatar, with a score of 0.31, followed by Malta, and St. Vincent and the Grenadines.

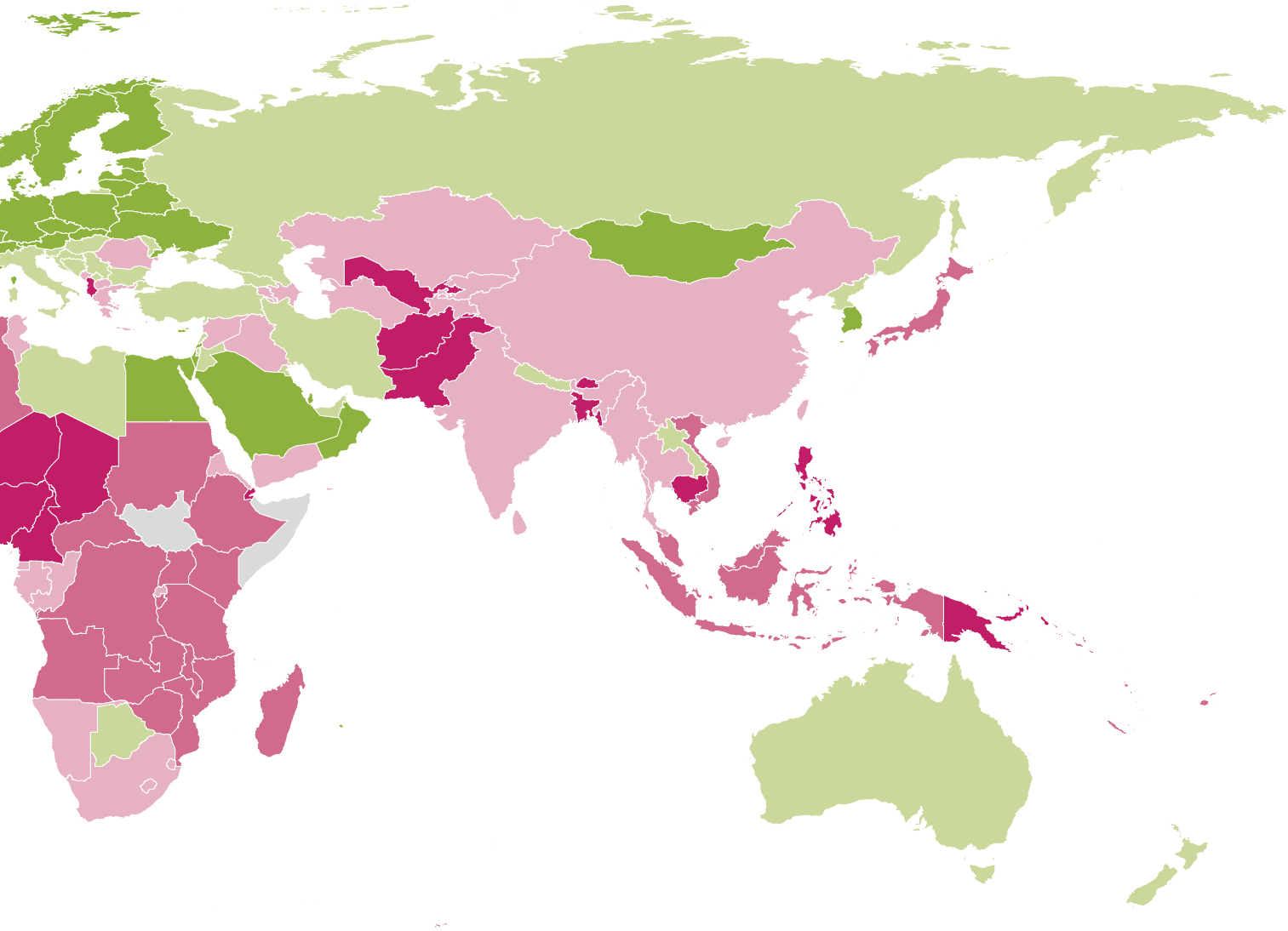

Table 1. 10 highest risk countries, 10 lowest risk countries, and Turkey (Source: www.worldriskreport.org)

Country	Rank	Index Score	Exposure	Vulnerability	Susceptibility	Lack of Coping Capacity	Lack of Adaptive Capacity
Vanuatu	1	56,71	99,88	56,78	35,32	84,36	50,66
Antigua and Barbuda	2	30,80	69,95	44,03	23,38	76,65	32,05
Tonga	3	29,39	61,41	47,86	28,19	79,92	35,47
Solomon Islands	4	29,36	48,31	60,77	46,37	80,95	55,00
Guyana	5	22,87	44,98	50,84	26,41	79,68	46,44
Papua New Guinea	6	22,18	32,54	68,18	55,45	86,21	62,88
Brunei Darussalam	7	21,68	57,62	37,62	15,26	67,14	30,45
The Philippines	8	20,69	41,93	49,34	28,86	80,98	38,16
Guatemala	9	20,69	38,56	53,65	32,19	83,96	44,80
Bangladesh	10	18,78	32,48	57,83	32,93	86,13	54,44
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Turkey	**113**	**5,06**	**12,30**	**41,11**	**17,91**	**75,19**	**30,23**
.	.	.	.	.	.	.	.
Estonia	171	2,04	6,78	30,06	16,40	53,77	20,00
Finland	172	1,94	8,34	23,32	15,03	40,28	14,65
Egypt	173	1,84	3,91	46,98	21,45	82,57	36,92
Iceland	174	1,71	7,16	23,88	13,82	46,66	11,16
Barbados	175	1,35	3,67	36,86	20,58	58,31	31,68
Saudi Arabia	176	1,04	2,91	35,85	13,31	69,44	24,79
Grenada	177	1,01	2,26	44,58	28,05	70,49	35,20
St. Vincent and the Grenadines	178	0,80	1,88	42,86	27,70	70,92	29,95
Malta	179	0,54	1,91	28,14	14,24	52,44	17,75
Qatar	180	0,31	0,90	34,35	8,75	66,29	28,01

Turkey is among the countries in the low risk class with an index score of 5.06. Recalling that the scores of countries in this class range from 3.30 to 5.49, Turkey is close to the upper limit of this class. Turkey is ranked the 113th riskiest country in the index, which lists 180 countries. It is ranked 108th with a score of 12.30 in terms of exposure, and 112th with a score of 41.11 in terms of vulnerability. Regarding the three sub-components of vulnerability, it is ranked 128th in terms of susceptibility, 93rd in terms of lack of coping capacity and 119th in terms of lack of adaptive capacity. Its risk class is calculated as medium for exposure and lack of coping capacity, and as low for the other parameters. *Figure 3* summarizes the risk classes of countries with sub-components through maps.

Ordu, Aybastı (Source: Anadolu Agency)

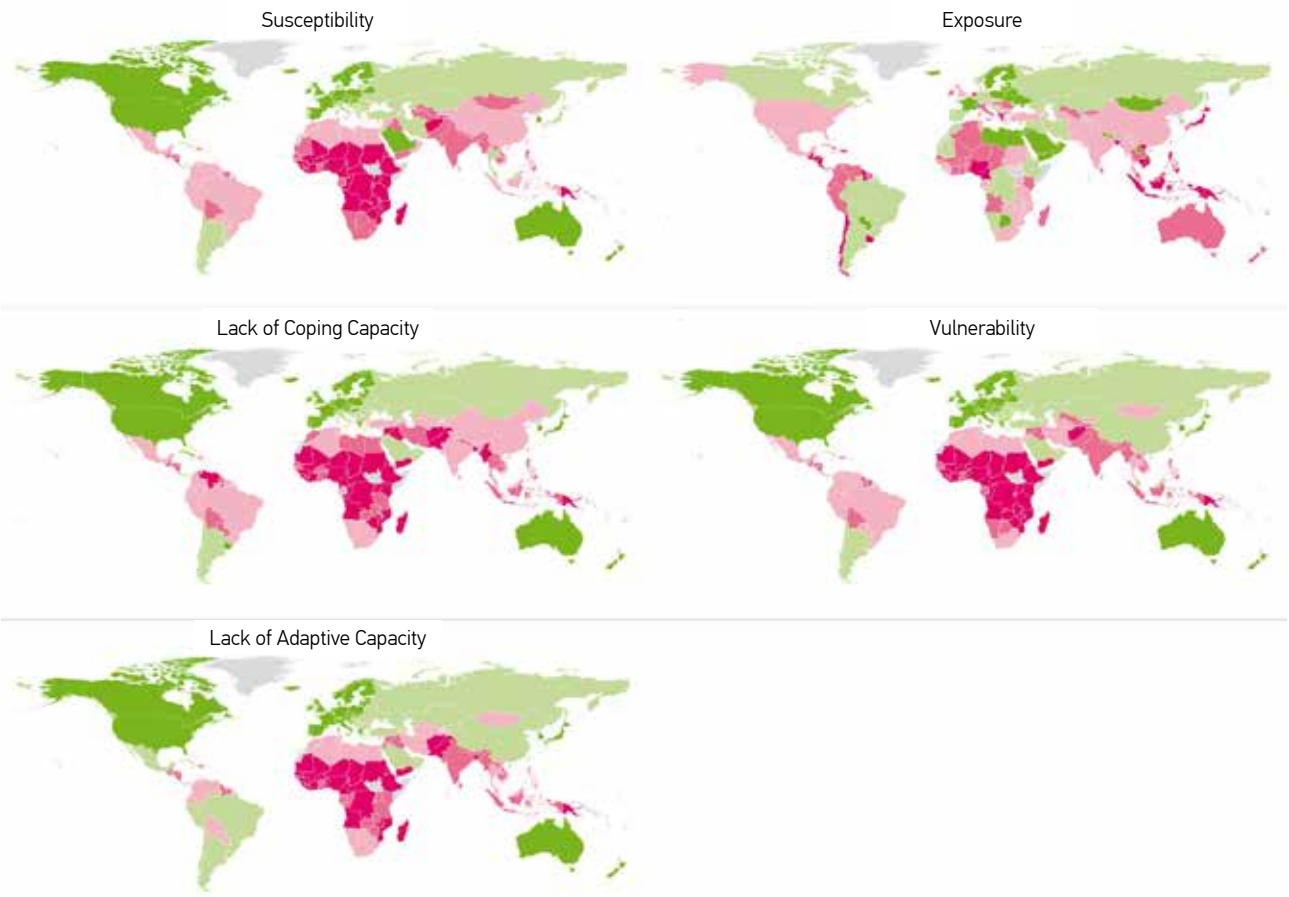


Figure 3. Risk class maps of the components of the index

Disaster management literature claims that main component of risk is not exposure alone, in that vulnerability also has a significant effect. The 2019 World Risk Index also confirms this. For example, Japan, Uruguay and Chile are countries that are frequently exposed to earthquakes due to their geographic proximity to tectonic plates, ranking 9th, 13th and 14th, respectively, in terms of exposure. However, their risk levels are significantly reduced due to them being ranked 173rd, 134th and 138th respectively, in terms of vulnerability.

Japan ranks 54th in the risk index, while Chile 27th and Uruguay 26th. Similarly, while the Netherlands is faces serious threats from rising sea levels, the level of risk is limited as its vulnerability is low. If we evaluate Turkey in this respect, although it is a medium risk country in terms of exposure, it is among the low risk countries in the general risk classification, as its vulnerability is relatively low.

Amasya (Source: Anadolu Agency)

1.2. Index for Risk Management (INFORM)

The Index for Risk Management (INFORM) was first modeled in 2012, being designed to assess and list humanitarian crises and disaster risks in 191 countries. INFORM is compiled jointly by the European Commission and the Inter-Agency Reference Group on Risk, Early Warning and Preparedness.

Numerous agencies of the United Nations (e.g. UNICEF, WFP, UNHCR, OCHA, UNDP, UNFPA) are described as partner organizations of INFORM. Recently, the "INFORM Global Risk Index 2020" was released, providing data for 2019.

Table 2. INFORM index's concept, function and components levels (Source: http://www.inform-index.org/ Results/Global)

Ranking Level	INFORM																			
Concept Level (Dimensions)	Hazard and Exposure							Vulnerability					Coping Capacity							
Functional Level (Categories)	Natural					Human-induced		Socio-economic			Vulnerable Groups		Institutional		Infrastructure					
Components Level	Earthquake	Tsunami	Floods	Epidemic	Droughts	Current Conflict Density	Projected Conflict Risk	Development & Deprivation	Inequality	Dependence on Aid	Displaced People	Other Vulnerable Groups	Disaster Risk Reduction	Management and Inspection	Communication	Physical Infrastructure	Access to Healthcare System			

According to the INFORM index, scores between 0 and 1.9 indicate a very low risk; between 2 and 3.4, low risk; between 3.5 and 4.9, medium risk; between 5 and 6.4, high risk; and between 6.5 and 10, very high risk. According to 2019 data, the INFORM index score of Turkey was calculated as 5.0, the same as the previous year. As part of Western Asia, Turkey is among the group of upper medium-income level countries, and ranks 53rd among the 191 countries in terms of its INFORM index score. Turkey's neighbors have the following scores: Greece 3.1; Bulgaria 2.4; Syria 7.3; Iraq 7.0; Iran 5.2, Azerbaijan 4.6 and Georgia 3.9.

The highest risk countries according to the INFORM index score are Somalia, Central African Republic, South Sudan and Yemen. In contrast, Estonia, Liechtenstein, Luxembourg, Finland and Singapore are the countries with the lowest risk.

In addition to being considered as a high risk country with an index score of 5.0, Turkey is also one of the countries in which risk has followed a rising trend over the past three years. Turkey thus falls under the category of high-risk countries where risk is also rising, along with Cameroon, Congo, Guinea, Rwanda and Sierra Leone.

Table 3. INFORM index scores of Turkey at conceptual, functional and component levels

Ranking Level	INFORM																			
	5,0																			
Concept Level (Dimensions)	Hazard and Exposure							Vulnerability					Coping Capacity							
	7.9							4.9					3.2							
Functional Level (Categories)	Natural					Human-induced		Socio-economic			Vulnerable Groups		Institutional		Infrastructure					
	6.2					9.0		2.3			6.8		3.8		2.6					
Components Level	Earthquake	Tsunami	Floods	Epidemic	Droughts	Current Conflict Density	Projected Conflict Risk	Development & Deprivation	Inequality	Dependence on Aid	Displaced People	Other Vulnerable Groups	Disaster Risk Reduction	Management and Inspection	Communication	Physical Infrastructure	Access to Healthcare System			
		7.0	5.7	6.1	2.6	9.0	9.6	2.2	4.2	0.5	9.4	0.2	2.1	5.1	2.6	1.8	3.3			

The scores assigned to the subcomponents of the index are highly important. At the conceptual level, Turkey's risk scores have been calculated as 7.9 for hazard and exposure, 4.9 for vulnerability and 3.2 for lack of coping capacity. Its hazard and exposure scores place Turkey as the 10th riskiest country among the 191 countries in the study, and ranked 54th in terms of vulnerability and 140th in its lack of coping capacity. In the light of the above assessments, it would be appropriate to characterize Turkey as a very high risk country in terms of hazard and exposure; medium risk in terms of vulnerability; and low risk with respect to coping capacity.

Figure 4 shows the distribution of the risk, hazard, vulnerability and lack of coping capacity of the eight countries in which risk has increased the most during the 10-year period covering from 2010 to 2019. Syria, Turkey's southern neighbor, is among these countries. While there has been no significant change in the vulnerability of Syria in the 2010–2019 period, the increase in hazard and exposure is worthy of note.

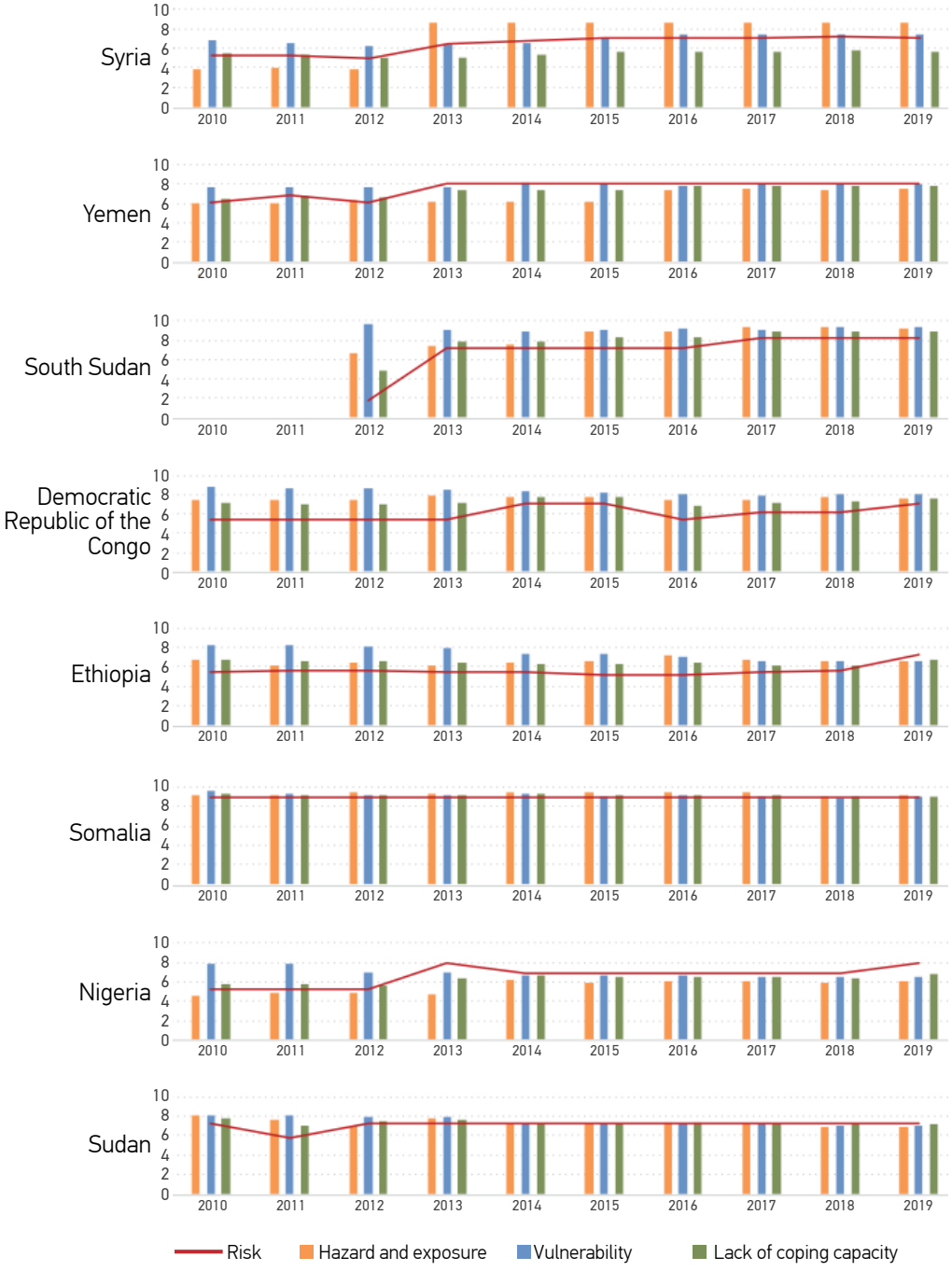


Figure 4. Countries witnessing the highest increase in risk in the 2010–2019 period

Denizli, Acıpayam (Source: Anadolu Agency)

Denizli, Acıpayam (Source: Anadolu Agency)

1.3. Asia-Pacific Disaster Report 2019 (UNESCAP)

The Asia-Pacific Disaster Report 2019 was published by the United Nations Economic and Social Commission for Asia and the Pacific, also known as UNESCAP. The Commission is one of five commissions of the Economic and Social Council. Having been founded in 1947, the Commission aims mainly to promote cooperation aimed at inclusive and sustainable development.

As of 2020, the Commission has 53 member countries along with nine candidate countries. This structure makes UNESCAP the largest regional international platform. Turkey has been also a member of the Commission since 1996. The current strategic focus of the Commission is to strengthen and deepen regional cooperation and integration for its "2030 Sustainable Development Agenda".

Figure 5. Map of member and candidate countries of the Economic and Social Commission for Asia and the Pacific (Source: www.unescap.org/ about/member-states)

The Asia-Pacific Disaster Report 2019 is a highly comprehensive report that provides considerable data on a country by country basis, as well as best practices/learned lessons related to disaster risks. The report is compiled under five main headings: outlook of disaster risks in Asia-Pacific countries; reaching survivors; investing in disaster risk reduction; technological innovations for disaster resilience, and resilience in the axis of risk view.

The report makes a classification of the concept of disaster risk, and defines intensive, common and slow occurring risks as follows:

- **Intense disaster risk** refers to disasters such as earthquakes, tropical storms, floods and tsunamis, which have high severity but medium–low frequency.
- **Common disaster risk** refers to hazards with low severity but high frequency.
- **Slow occurring disaster risk** is used for hazards such as droughts, which have considerable effects and scope but, occur and continue slowly.

Of the total, 64 percent of the annual material losses from earthquakes in the UNESCAP countries are experienced in Japan, followed by 14 percent in China. These countries are followed by Turkey, Iran, Indonesia and the Philippines. Some 28 percent of the annual material losses due to floods are experienced in China, followed by 13 percent in India; 47 percent of annual material losses due to tropical storms are experienced in Japan, followed by 16 percent in the Republic of Korea; and a significant proportion, i.e. 91 percent, of the annual material losses due to tsunamis are experienced in Japan.

The report states that the average annual loss due to intense, common and slow occurring disasters is $675.4 billion. This loss is 2.4 percent of the gross domestic product of the countries within the Commission.

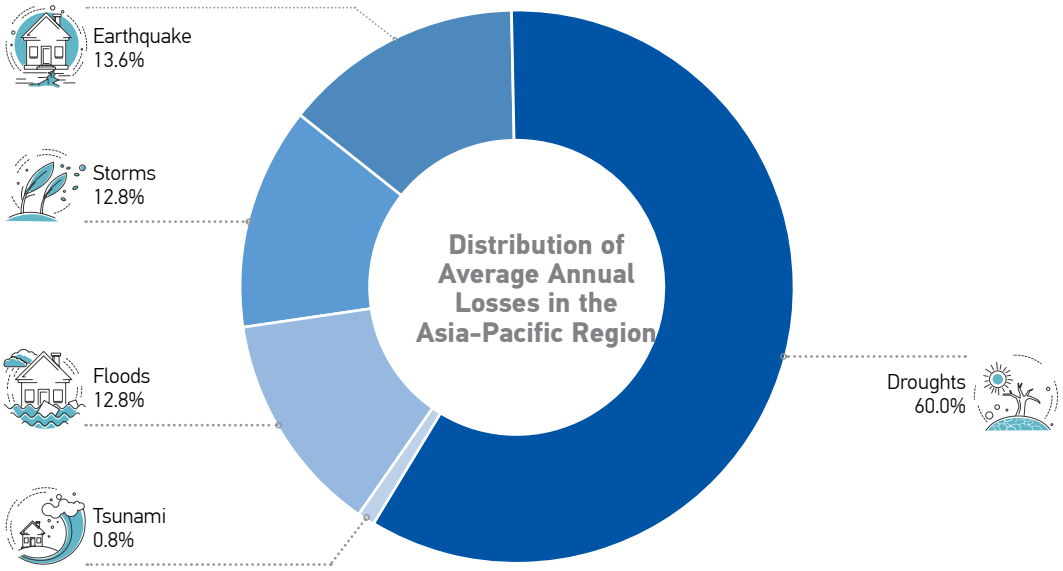


Figure 6. Distribution of average annual losses in the Asia-Pacific region (Source: UNESCAP, Asia-Pacific Disaster Report 2019)

In the section of the report where annual average losses are assessed, Turkey is listed especially for losses in the area of agricultural drought. Losses other than those related to droughts are at low levels. More than 80 percent of the material loss due to drought in the countries of the region has been experienced in five countries, being China, India, Indonesia, Pakistan and Turkey. Figure 6 presents the distribution of annual losses in the Asia-Pacific region by disaster type. Droughts, which are a slow occurring disaster types, unlike common and intense risks, caused 60 percent of all losses. This was followed by earthquakes, with approximately 14 percent.

If droughts are excluded, Japan ranks first in terms of annual losses, followed by China, Korea, India and the Philippines. When the total losses including drought are examined, it is seen that China ranks highest, followed by Japan, India, Indonesia and Korea, respectively. Turkey ranked 10th in the overall ranking, regardless of whether or not slow occurring disasters were excluded *(Figure 7)*. Since Turkey ranks 10th in terms of losses in a 62-member Commission when evaluated together with the candidate countries, it can be concluded that Turkey is a country with a high risk of disaster.

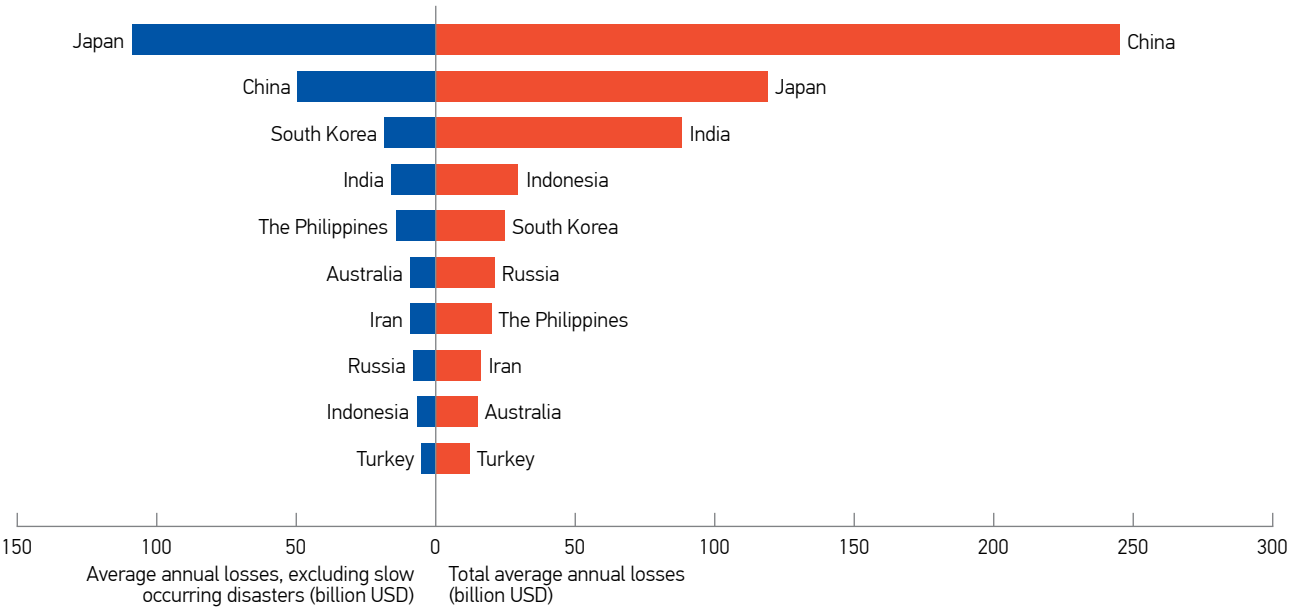


Figure 7. Distribution of average annual losses by country (Source: UNESCAP, Asia-Pacific Disaster Report 2019)

The report makes some geographical assessments of the average losses by disaster type as well as disaster risks. Figure 8 presents the ratio of population living in regions where there is a high risk of disaster to the total population by country. Bangladesh ranks first, with 78%, followed by Vietnam and the Philippines.

Over three-quarters of the total population in these three countries live in areas where there is a high risk of disaster. Turkey ranks 10th on this list, as is the case of average losses. A significant proportion (51.7%) of the country's population lives in regions where the risk of disaster is high.

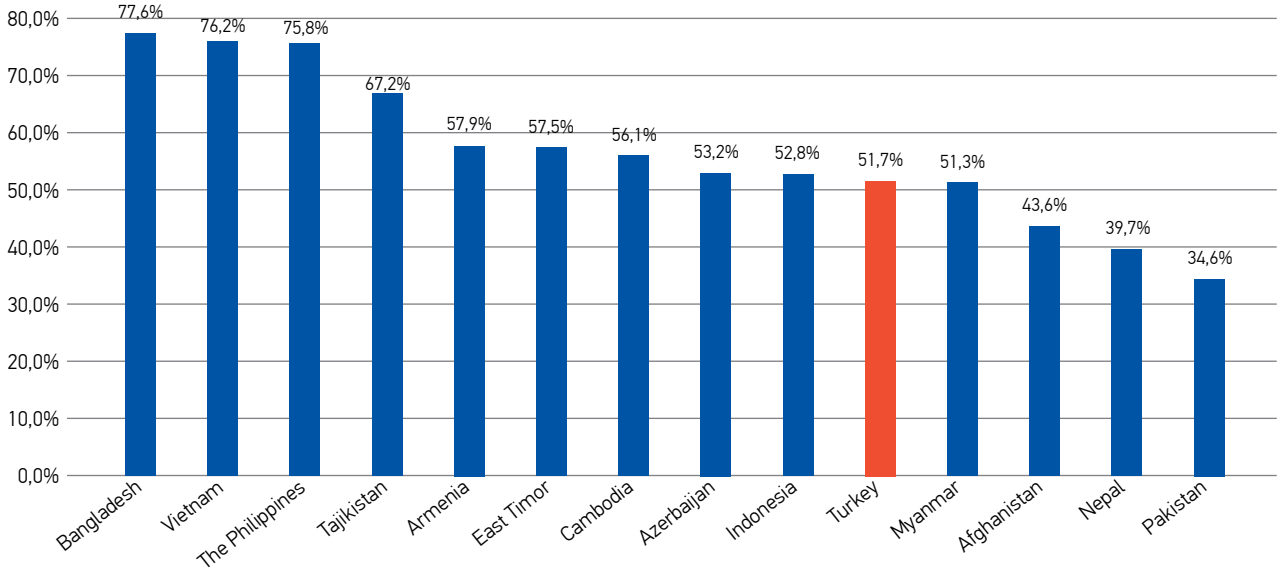


Figure 8. Ratio of the population living in areas with high disaster hazard (Source: UNESCAP, Asia-Pacific Disaster Report 2019)

Avalanche Exercise, Kahramanmaraş

AFAD

2019 Overview for Disaster Management and Natural Disaster Statistics

2.

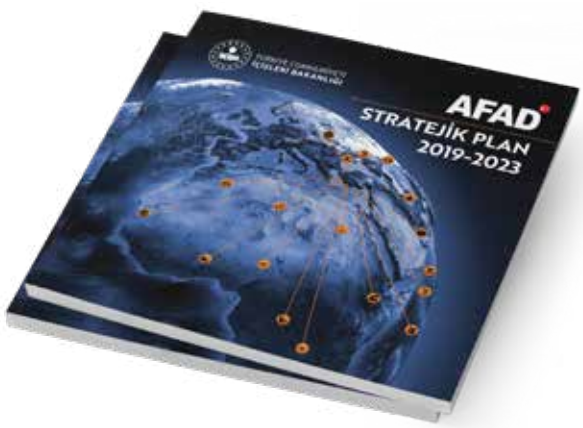
PROMINENT TOPICS IN DISASTER AND EMERGENCY MANAGEMENT IN 2019

2. PROMINENT TOPICS IN DISASTER AND EMERGENCY MANAGEMENT IN 2019

2.1. Strategic Management and Planning

When evaluated from the strategic management perspective, it can be said that the most significant development in 2019 was the publication of the AFAD 2019–2023 Strategic Plan. Although this is basically a plan that puts forth the activities to be carried out by AFAD in the coming period, it also shapes Turkey's policy, mission and vision related to disasters and emergency incidents.

Arriving at the heart of disaster management in Turkey with the establishment of AFAD, the **"risk management and risk reduction"** concepts were included in the second strategic plan in such a manner that they were better perceived and supported with concrete projects.



In the strategic plan, the **mission** of AFAD is stated as follows:

"to engage in the efforts required for the effective management of processes related to disasters and emergencies; to ensure coordination among the relevant institutions and agencies; and to formulate policies in this field"

Although AFAD was established in 2009 as a coordination agency in its field, it has successfully carried out its executive functions owing to both the need in the field, its past experience for this need, and its approach in the field of capacity development. The new strategic plan has been based on AFAD's executive, coordinating and policy-making roles related to disasters and emergency incidents. Based on this mission, the **vision** of AFAD is specified as follows:

"to build a disaster-resilient community"

In fact, this vision is a summary of AFAD's basic activity approach. Aimed at mitigating possible damages, this approach includes managing the risk in advance of an incident, and to develop the ability to provide rapid response and effective recovery once an incident occurs. In summary, it would be appropriate to define it as a proactive approach, with steps put in place before an incident occurs, and as a reactive approach when an incident occurs.

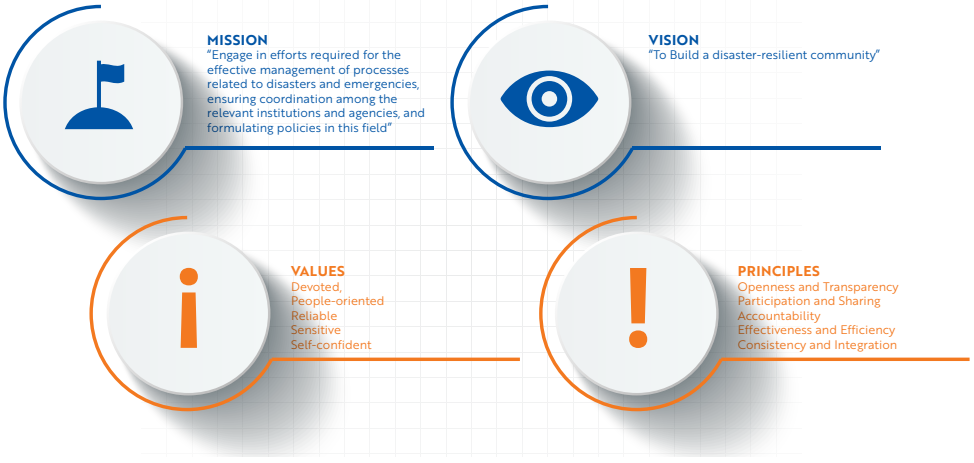


Figure 9. 2019–2023 Strategic Plan at a glance

For the creation of the AFAD 2019–2023 Strategic Plan, an internal stakeholder analysis; an external stakeholder analysis; an external environment analysis; a strengths, weaknesses, opportunities and threats (SWOT) analysis; and an analysis of developments in expectations, institutions, practices, science and technology (ADEIPST) were conducted.

The Sendai Framework, as the successor of the Hyogo Framework for Action, seeks to reduce losses resulting from disasters, to prevent new risks, to mitigating existing risks and to enhance resilience to disasters, covering the 2015–2030 period. Defining the basic building blocks of disaster management until 2030, the Sendai Framework for Disaster Risk Reduction is one of the main reference sources for national development plans and programs.

Similarly, the "Sustainable Development Goals" were adopted by the United Nations in 2015 to steer sustainable development. In this process, that also serves as a document that is interactive with the Sendai Framework, and that will be followed up until 2030, AFAD will take on important roles in disaster preparedness and risk reduction activities, especially for disasters caused by climate change. AFAD created the 2019–2023 Strategic Plan as a five-year road map taking these top policy documents as a basis, and set goals and targets with an awareness of the importance of such issues in the creation of a society that is resilient to disasters, raising awareness at all levels, raising awareness of disaster risk reduction and integrating it into life. To this end, six goals were established to be achieved in six strategic areas. *(Figure 10)*

Figure 10. Strategic areas and goals

2.2. Planning, Risk Reduction and Preparedness

2.2.1. Volunteer Studies

The AFAD Volunteer Project is one of the key elements of the disaster management efforts launched in 2019. The project activities started on January 1, 2019 and were announced to the public on July 10, 2019 at an event attended by Süleyman SOYLU, Minister of Interior.

To involve people who are prepared to engage in any stage of disaster management on a voluntary basis, it is aimed through the AFAD Volunteer Project to identify the duty areas of these people, to support their capacities through training courses, and to monitor their performance within the volunteer system.

AFAD Volunteers will be trained in such fields as health, nutrition, psychosocial support, sheltering, search and rescue, etc. that are needed before, during and after disasters, to ensure that they work effectively in every phase of the disaster, thus contributing to making society more resistant to disasters and emergency incidents. The targets of this project are:

- To gain and keep in the system volunteers who can react and take initiative, who have a high response rate and who can work in an organized manner with AFAD teams in the activities carried out related to disasters and emergency incidents,
- To improve the competencies of AFAD Volunteers through training courses, activities and exercises,
- To minimize the material and non-material damage caused by disasters and emergency incidents, and to make society more resistant to disasters and emergency incidents, by motivating AFAD Volunteers,
- To provide a more effective service to the communities affected by disasters and emergency incidents,
- To contribute to the promotion of volunteer awareness in society.

AFAD Gönüllüsü

Who are AFAD Volunteers?

AFAD Volunteers are people who contribute to community service studies before, during and after disasters with their physical strength, time, knowledge, ability and experience, and with their own free will; who maintain a sense of solidarity and willingness to help others; who set aside their individual interests or any material expectations; and who engage only with the desire to bring benefit to the community.

Who can be an AFAD volunteer?

- Anyone who is willing to be a volunteer and who has an e-Devlet (e-government) password can become a volunteer.
- Volunteer candidates should be able devote their time so as not to hinder training and work programs.
- The health status of those volunteering for training and tasks should be appropriate for fieldwork and travel.

Applications to the AFAD Volunteer System can be made via e-Devlet, and applicants are directed to the portal (https://gonullu.afad.gov.tr) via SMS messages and e-mails. Volunteer candidates can follow the training, activities and duties under the volunteer system through the volunteer portal.

Figure 11. Volunteer levels of AFAD Volunteers

The AFAD Volunteer Training Program consists of online training, face-to-face training, and field training and is provided at three levels: the Basic AFAD Volunteer Training Program; the Supportive AFAD Volunteer Training Program; and the Expert AFAD Volunteer Training Program. Through this program, it is aimed to raise awareness of disasters and to support the resistance of the community to disasters and emergency incidents by training AFAD Volunteers at the abovementioned levels.

The first module (Basic AFAD Volunteer Training Program) will ensure AFAD Volunteers understand what is required of AFAD Volunteers and why AFAD Volunteers are needed; will provide information of disaster-related concepts as well as appropriate activities before, during and after a disaster; and will raise awareness as a priority on fire evacuation and first aid. The training courses for the first module are given online, with volunteers completing their training by watching videos on the portal.

The second module (Supportive AFAD Volunteer Training Program) will ensure AFAD Volunteers to have sufficient knowledge and skills to provide support to professional teams during disasters. This module includes the following training courses: light search and rescue, first aid, fire, awareness and minimum standards in humanitarian aid. The training courses in the second module consist of face-to-face and field trainings, of which the face-to-face trainings will be delivered at the AFAD Provincial Directorates.

The third module (Expert AFAD Volunteer Training Program) will ensure AFAD Volunteers are able to work in coordination with AFAD teams and have the necessary skills to carrying out response activities in the event of disasters and emergency incidents. This module includes such training courses as urban search and rescue, search and rescue in nature, and search and rescue in streams and floods. The training courses of the third module are carried out in the field.

Özgür Ege ŞİRE, a 19-year-old boy became doused in oil while trying to rescue his cat from a well filled with fuel oil in the Ünye district of Ordu, became an "AFAD Volunteer".

Within the scope of online training activities, apart from providing basic information and describing the concepts related to disasters; explaining correct behaviors before and after the disaster; and divulging the fire and evacuation approaches to be applied in the event of disasters and emergency incidents, efforts are continuing to add further training programs, such as office practices, occupational health and safety, first aid, information security, communication and presentation skills, leadership, etc. to the portal so as to increase the level of knowledge of the volunteers in the areas in which they are interested.

Voluntary promotion activities include not only trainings courses, but also activities/tasks that involve social activities, such as visiting nursing homes, donating blood, establishing libraries in schools and planting saplings. The AFAD volunteers who participate in trainings, exercises, social activities and tasks will be scored through the volunteer portal by the staff assigned as Provincial Volunteer Coordinators to the AFAD Provincial Directorates. Based on these scores, volunteers can order gifts through the volunteer system, which are sent to the addresses they register in the system.

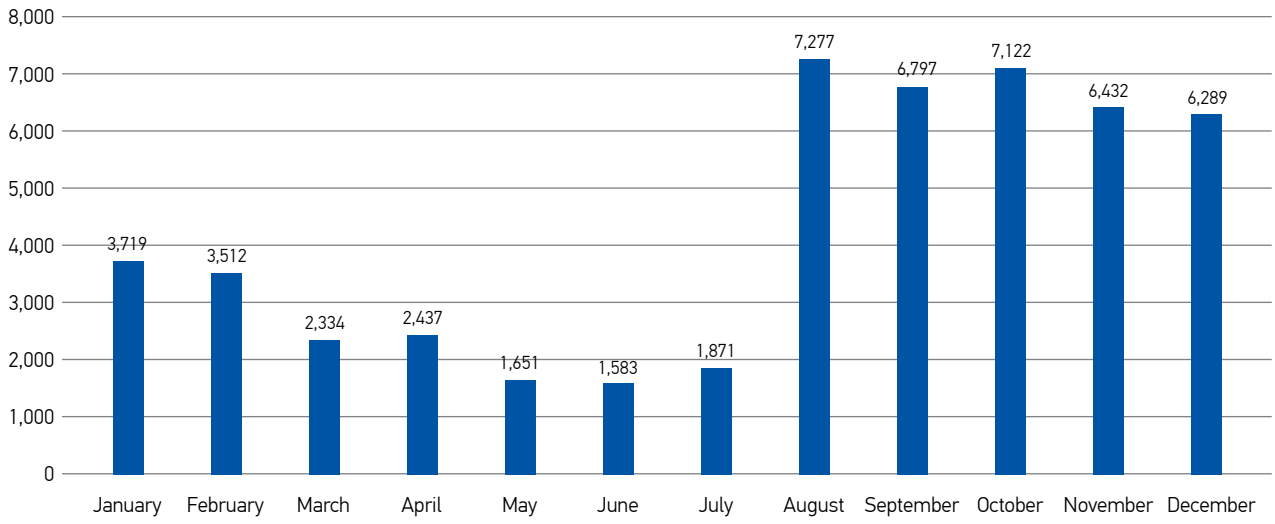


Figure 12. Breakdown of volunteer applications in 2019 by months

In 2019, a total of 51,044 volunteer applications were received through e-Devlet. When considered on monthly basis, it is seen that August was the most intense month for applications, with 7,277 received.

Applications made up until the end of July were made by applicants who visited e-Devlet under their own initiative, but with the publicity campaign launched that month, the project was better explained to the public, and subsequently a significant increase was seen in applications.

2.2.2. Disaster Preparedness Year

The material and non-material losses caused directly or indirectly by disasters prove just how important disaster management is in today's world. The most significant component of disaster management is the recognition and reduction of disaster risk, and ensuring preparation for disasters.

Based on this perspective and the vision of **"building a disaster-resilient community"**, AFAD announced the launch of "Disaster Preparedness Year" – a consciousness and awareness raising program – on July 10, 2019 in order to inform the general public about the risk of disasters.

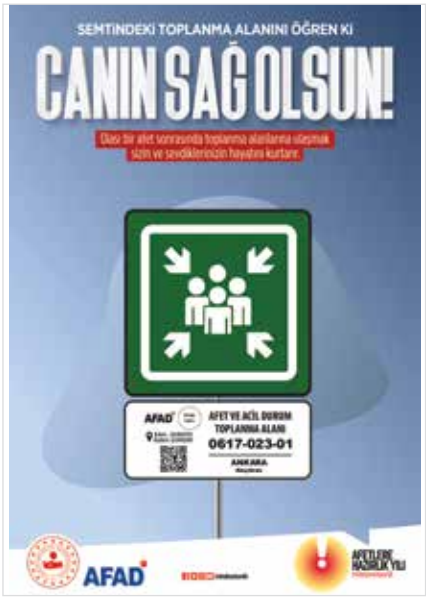
Through Disaster Preparedness Year, it is aimed to make a connection with the general public to develop an understanding of the need to take precautions before disasters occur, for which many activities are planned to be carried out over the following 12 months. These activities can be followed at www.hazirol.gov.tr.

Each month of Disaster Preparedness Year, from July 2019 to June 2020, will have a different theme through which it is aimed to encourage the public to develop a precautionary culture.

The activities to be carried out in this context are determined by AFAD every month and notified to the Provincial Disaster and Emergency Management Directorates. In this way, it is expected all segments of society can be reached, and to ensure Disaster Preparedness Year activities are fully adopted at local and regional levels.

- July 2019: Launch of Huzur Mahallesi (Peace Neighborhood)
- August 2019: Understanding Disaster Risks
- September 2019: Disaster Bag
- October 2019: Muster Points
- November 2019: Natural Disaster Insurance
- December 2019: Building Security
- January 2020: First Aid
- February 2020: Become a Volunteer
- March 2020: Fire
- April 2020: Disaster Moments (Exercise)
- May 2020: Disaster-Prepared Turkey
- June 2020: Award Program

Disaster Preparedness Year includes works that should be carried out and given priority by not only AFAD, but also every individual, university, and public, private and non-governmental organization.



2.2.3. Disaster-Prepared Turkey Awareness Project

Disaster-Prepared Turkey Project is an awareness and consciousness raising project that was planned in 2012 and launched in 2013. For disaster management, aside from the activities carried out by responsible institutions and organizations, a conscious society is one of the most significant components of resilience. In addition to the structural measures taken, a society whose consciousness of what to do before, during and after a disaster has been raised can make a considerable contribution to disaster management in terms of both risk reduction and response. Accordingly, through a project launched to mobilize society that includes activities aimed at all segments of society, starting with each individual, it was aimed to:

- raise awareness of disasters and emergency incidents within society;
- ingrain a disaster preparedness culture, and especially for the first 72 hours following a disaster;
- inform society about the basic measures they can take in their homes/workplaces;
- ensure individuals learn the appropriate behavioral patterns to be implemented after a disaster;
- inform the society about making their own disaster and emergency plans;
- expand the places in which the society can receive training on what to do in the event of disasters and emergencies, and to establish training infrastructures to allow easy public access;
- standardize disaster awareness training delivered through various channels throughout the country;
- benefit from the works carried out by international organizations;
- create accredited training tools using manpower with sufficient knowledge and experience.

The Disaster Prepared Turkey Project has four key components: the Disaster-Prepared Family, for the smallest unit of society; Disaster-Prepared Schools, meaning educational institutions of all levels; Disaster-Prepared Workplaces, especially for critical sectors that are open to industrial accidents; and Disaster-Prepared Young Volunteers, for the young people of our country.

Figure 13. Launch dates of components of the Disaster-Prepared Turkey

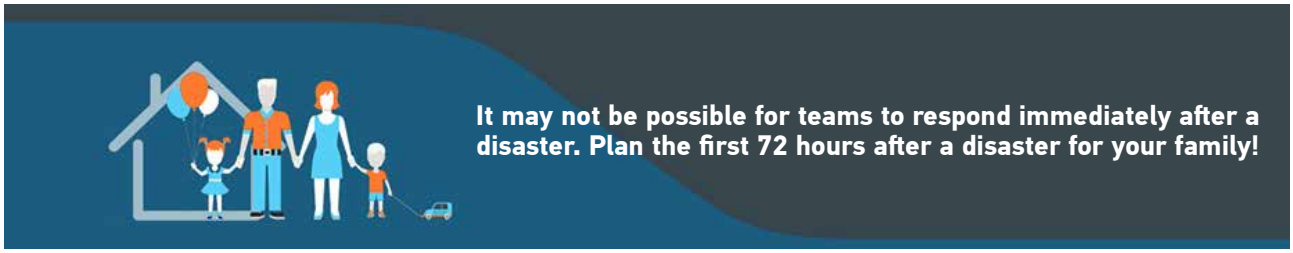
Trainings can be delivered either in the AFAD Provincial Directorates, in schools/workplaces that make a request, or in the AFAD Mobile Earthquake Simulation Centers. The AFAD Mobile Earthquake Simulation Centers provide basic disaster awareness training, while also contributing to ingraining appropriate behaviors during disasters through live experiences. The centers teach individuals about how they should react the moment a disaster strikes. By offering a virtual earthquake experience that is close to reality, they also contribute to the formation of a preparedness sensitivity among members of the public.

The mobile centers carry out 'disaster awareness training tours' to cover all of Turkey. During their visits to cities and even the most distant districts, members of the public have the opportunity to gain earthquake experience and applied training. The centers, in which even an earthquake with a magnitude of 7.2 (Mw) can be simulated, have three parts:

- Earthquake simulation;
- Fire simulation; and
- Three dimensional flood simulation.

In 2019, some 126,000 people received training only through these mobile simulation centers. The centers traveled more than 35,000 kilometers in 2019 and visited 50 provinces. Aside from Turkey, they also provided training in the TRNC and Kosovo.

Disaster-Prepared Family



Disaster-Prepared School

Disaster-Prepared Workplace

Disaster-Prepared Young Volunteers

A total of 12.8 million people have been reached by the project from its launch up until early 2020. More than 1.9 million people have benefited from these trainings in 2019 alone.

Within the scope of the Disaster Ready School, as the carrier of the project, 1,479,000 people were reached in 2019, 50,000 of which were teachers.

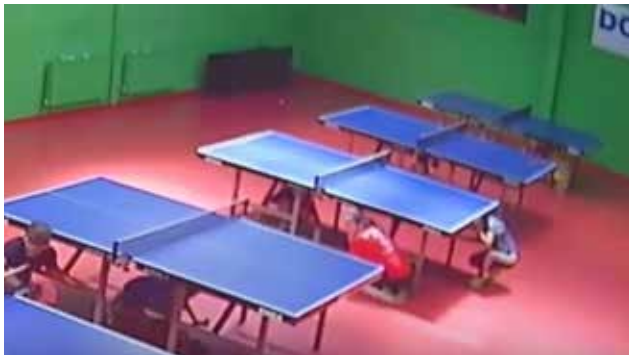
The series of four pictures below show what to do in the event of a disaster, highlighting the importance of a basic disaster consciousness and awareness. Students who were playing table tennis in a gym just before the earthquake that struck the Bozkurt district of Denizli with a magnitude recorded as 6.0 on August 8, 2019 calmly made the drop-cover-hold movement the moment they perceived the earthquake.

After waiting in such position for the earthquake to end, the students safely evacuated the building. The security camera in the gym recorded the event.

The students were playing table tennis when the earthquake hit.

They felt the earthquake.

They immediately made the drop-cover-hold movement, without panicking.



They waited in the drop-cover-hold position until the earthquake had subsided.

The distribution of the training courses delivered under Disaster-Prepared Turkey in 2019 by provinces are shown on the map. In all, 150,000 people were reached in İstanbul, as well as 130,000 people in Bursa and 82,000 in Ankara.

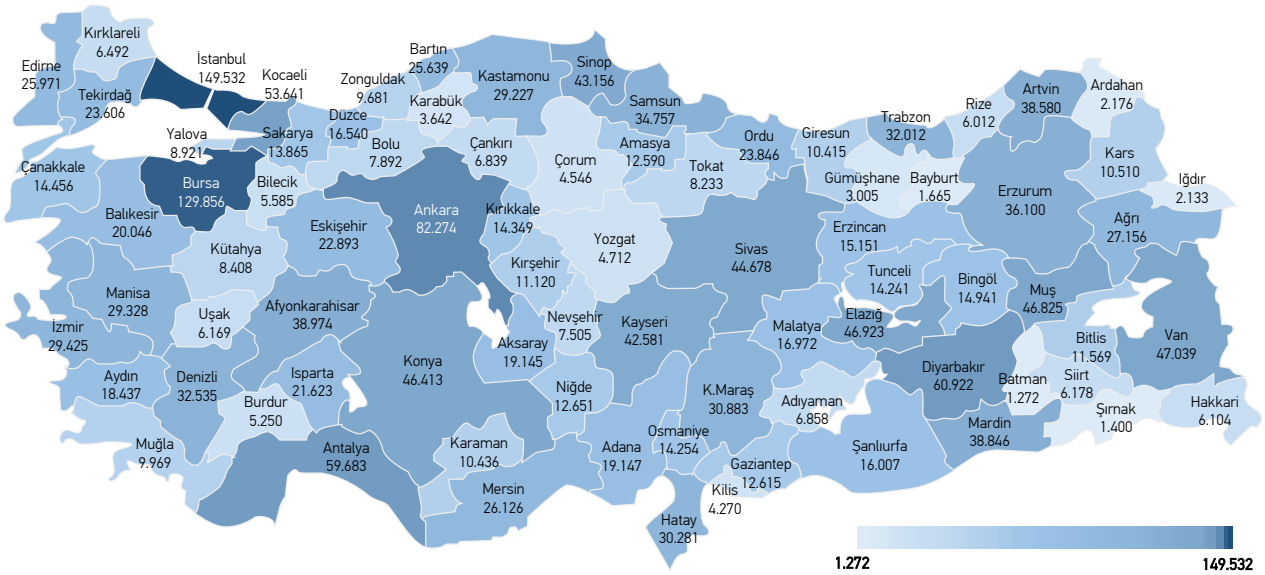


Figure 14. Distribution of training courses delivered under Disaster-Prepared Turkey in 2019 by provinces

2.2.4. Field Survey on Disaster Awareness and Disaster Preparedness

One of the main activities within the scope of the studies for Disaster Preparedness Year is the Turkey Disaster Awareness and Disaster Preparedness Survey, which examines attitudes toward disaster awareness and disaster preparedness. Some of the results of the study are presented in this report in brief.

The mentioned field survey was carried out before the announcement of Disaster Preparedness Year. The same study will be repeated with a similar sample after the end of the activities at the year end. In this way, aside from the impact of the activities carried out within the scope of Disaster Preparedness Year, it will be understood in which behaviors and in what direction changes have occurred.

The sampling of the study was performed in 26 regions in NUTS 2, and in 26 provinces within these regions. The survey involved interviews of 3,339 people at a 95% confidence interval and +-5% margin of error calculation.

Attention was paid to ensure that the provinces selected for the sampling of the study were those more prone to the relative representability at the NUTS regions level.

In the quantitative study, a “systematic sampling” method was used together with a “cluster sampling” method. As “cluster sampling” is preferred when it is not possible to reach the Turkey general sampling frame list, or when the universe of the research is very large. For the component of the research carried out in the field, a systematic approach to cluster sampling was applied and the number of elements in the cluster was systematically used within their respective clusters.

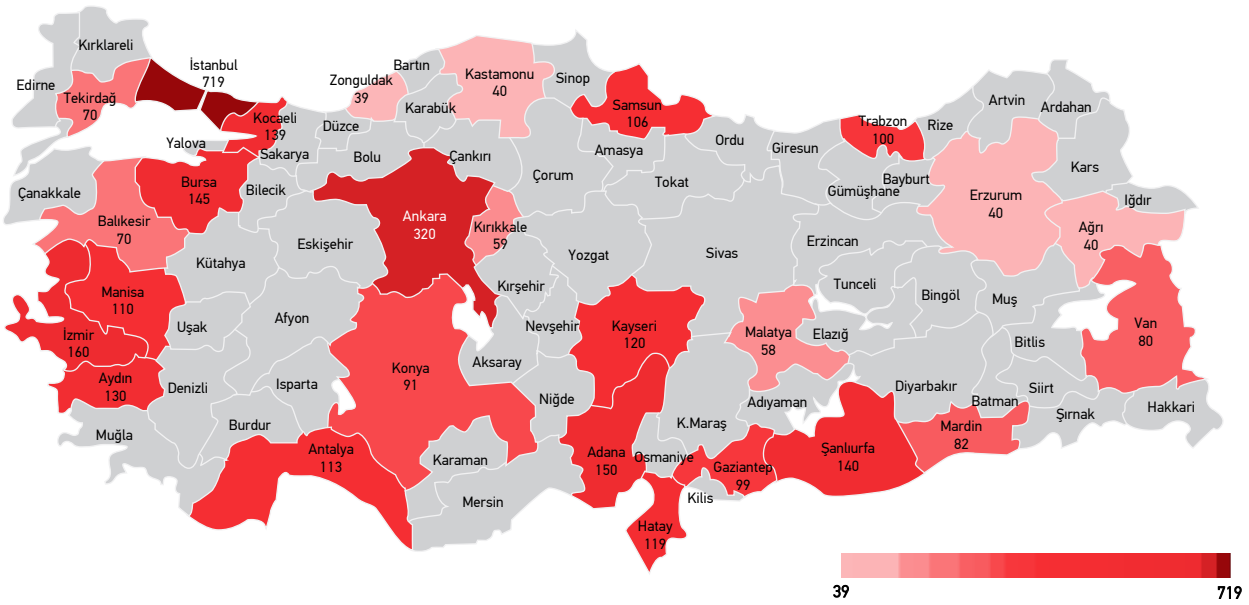
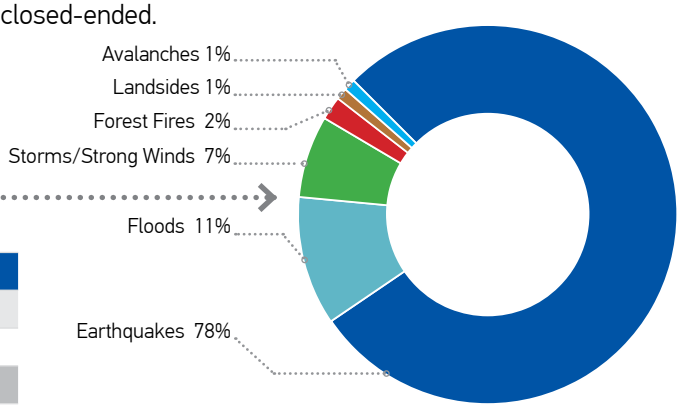


Figure 15. Distribution of the sampling by provinces

The research data was collected through a questionnaire form developed to measure the status of the respondents in regards to how much familiar they are with AFAD and how they follow AFAD, as well as their awareness of and preparedness for disasters and emergency incidents. The questionnaire form comprises three sections and 54 questions, 12 of which are open-ended and 42 of which are closed-ended.



Gender	Yes	No	Total
Male	40.7%	59.3%	100.0%
Female	41.0%	59.0%	100.0%
General	**40.8%**	**59.2%**	**100.0%**

Figure 16. Status of respondents as regards to exposure to disaster, and the types of disasters to which they are exposed

The respondents were asked whether they had been affected by a disaster, either directly or indirectly. The proportion of respondents who had been directly or indirectly exposed to a disaster was around 41 percent.

When asked about the types of disasters to which they had been exposed, earthquakes ranked first with 78 percent. This was followed by floods with 11 percent, storms/strong winds with 7 percent, forest fires with 2 percent, and landslides and avalanches with 1 percent each.

Table 4. Familiarity with the three-digit emergency first aid telephone number

Number	Male	Female	General
112	76.2%	75.4%	75.9%
110	6.8%	8.9%	7.6%
155	4.4%	4.5%	4.4%
122	4.8%	3.3%	4.2%
115	0.4%	0.3%	0.4%
153	0.4%	0.3%	0.4%
Other	1.9%	2.0%	1.9%
I have no idea	5.2%	5.3%	5.2%
Total	**100.0%**	**100.0%**	**100.0%**

The respondents were requested to name the three digit emergency first aid numbers. The most popular answer was "112" with 76%, followed by "110" with 8%, "155" and "122" with 4%, and "115" and "153" with 0.4%. Numbers other than these accounted for 2 percent, whereas those who answered "I don't know", "I don't remember", "I have no idea" or who did not answer was around 5 percent.

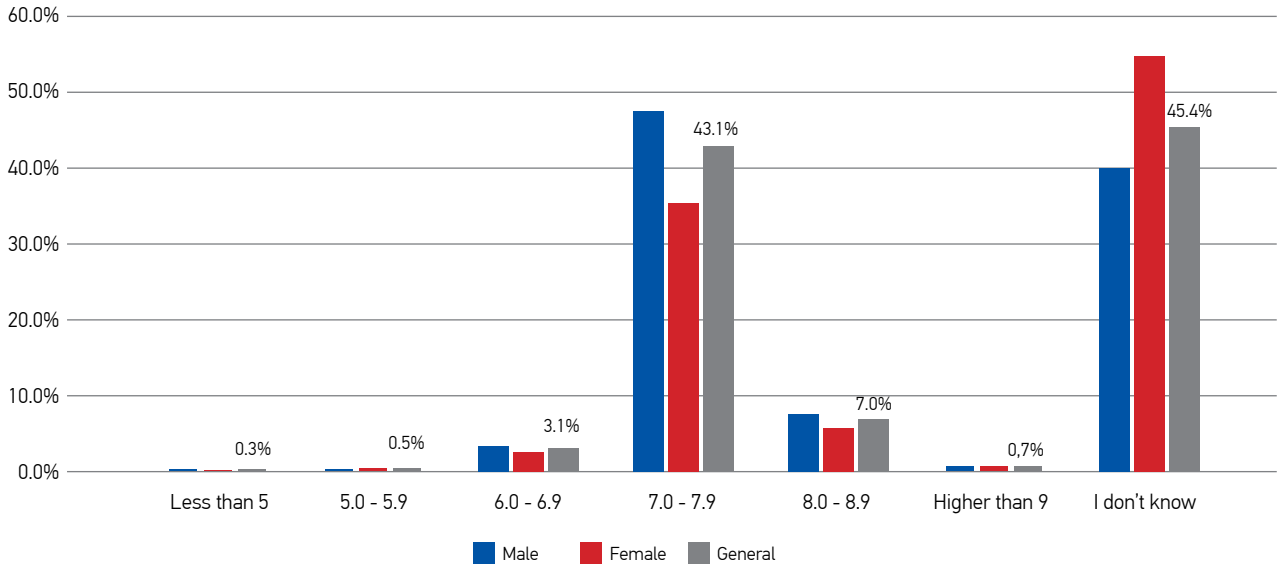


Figure 17. Opinions on the magnitude of the 1999 Marmara Earthquake

Another question within the scope of the field research was whether the respondents had heard of the major earthquake that occurred in recent years, known alternatively as the Marmara/Gölcük/Körfez/İzmit/Kocaeli earthquake. While 88 percent of the respondents stated that they had heard about this earthquake, 70 percent of them knew the year, 54 percent of them knew the year and month, and 45 percent of them knew the year, month and day. (August 17, 1999)

For the question asked about the magnitude of this earthquake, which was measured at 7.4, 45 percent of the respondents stated that they did not know the magnitude of the earthquake. The rate of those who stated that the magnitude of the earthquake was less than 5 was 0.3%, whereas the rate of those who stated between 5 and 5.9 was 0.5%, the rate of those who stated between 6 and 6.9 was 3%, and the rate of those who stated between 7 and 7.9 was 43%. The average and median answers were 7.2. The most common (20%) answer was 7.0.

Alongside the questions about awareness, the respondents were also asked about direct behaviors and preparation during the field research. Some noteworthy points:

- 16% of the respondents stated that there was a disaster and emergency plan in place in their homes or workplaces.
- 36% of the respondents stated that they had securely fixed any tall cabinets, items of furniture or large objects hanging on the wall (mirrors, paintings etc.) in their homes/workplaces.
- 21% of the respondents had bought disaster insurance other than DASK for their homes or workplaces
- 20% of the respondents stated that they had designated someone to check in on them in the event of a disaster.
- 88% of the respondents stated that they knew the location of, and how to close the water valve, whereas 86% knew the location of, and how to close the natural gas valve, and 89% knew the location of, and how to turn off the electric circuit breakers.
- 52% of the respondents stated they knew how to use a fire extinguisher, whereas 26% stated that they had a fire extinguisher in their home. The rate of those who stated that there were fire extinguishers in their apartment blocks was 36%.
- The rate of those who stated that they had made a post-disaster communication plan was 17%, whereas the rate of those who stated that they had determined a muster point for their household members was 18%.
- 30% of the respondents stated that they knew the muster point closest to their homes/workplaces, whereas 80% stated that they knew the location of the closest health institutions to their place of residence.
- 24% of the respondents stated that they had a disaster and emergency bag prepared for use in the event of a disasters or emergency.
- In an analysis of the level of preparedness for a disaster or emergency among the respondents with different demographics, and whether they had been exposed to a disaster before, it was observed that the following groups were more prepared for disasters and emergencies:
  - Men;
  - Young people;
  - Those with a college education and above;
  - Those with a high level of income;
  - Working people and students;
  - Those who stated that they had previously been directly or indirectly exposed to a disaster.

2.2.5. Exemplary Good Practice in Risk Reduction – Ordu Aybastı Landside

The landslide that hit the Sağlık neighborhood of the Aybastı district of the Ordu province on February 15, 2019, and that continued for 3 months, affected an area of approximately 22 hectares, being 300 meters wide and 700 meters long. As a result of the systematic works in preparation for a landslide that had been launched in April 2015, none of our citizens were harmed during the incident.

The first study of the landslide in the Sağlık neighborhood was carried out on April 28, 2015. In the field study, various cracks on the structures were identified in five of the seven residences focused on in the region.

As a result of this study, it was decided to include the field in a control survey program and to monitor it.

A second field examination was carried out on March 14, 2018. It was determined that the cracks had not developed any further in the damaged houses that were identified in the previous study, and it was decided to continue the monitoring under the control surveys program. It was reported that the region should also be examined by the Ordu Water and Sewerage Administration (OSKİ), as a stakeholder organization.

Ordu, Aybastı (Source: Anadolu Agency)

In the third field study on February 15, 2019, it was determined that a landslide had started in the region. It was deemed appropriate to move 29 houses and six barns that had already been affected, or that were likely to be affected, by the continuing landslide. A geological survey report that was prepared identified the borders of the region exposed to the disaster. On March 8, 2019, approval was granted for the Formal Decision for the Buildings in the Region Affecting the Life of the General Public, numbered 37655, and the Judgment of a Disaster-Prone Area, numbered 1232, and dated June 26, 2019, was made by the Presidency for an area with the borders denoted on the map attached to the geological survey report. As a result of the survey conducted in the region on May 15, 2019, risky buildings were identified at the lower level of the region that had been exposed to the previous disaster. The buildings were immediately evacuated. Nobody was injured during to the landslide that occurred after the evacuation. According to the measurements, the landslide affected an area approximately 300 meters wide and 700 meters long, and the mirror height was approximately 50 meters. It was determined that the incident affected an area of around 22 hectares.

Ordu, Aybastı (Source: Anadolu Agency)

Regarding the recent incident, a geological survey report was prepared, dated May 27, 2019, and it was reported that 51 residences, 14 barns, two mosques and one mosque lodging should be moved, and that two ongoing constructions should be stopped, according to a Formal Decision for the Region Affecting the Life of the General Public, numbered 37665. The Judgment of a Disaster-Prone Area was given by the Presidency covering the territory exposed to the disaster.

Consequently, it was decided to move 80 houses (61 buildings) and 20 barns in Yağcılı locality of Sağlık neighborhood. 22 buildings were demolished or severely damaged due to the landslide. In addition, one mosque and one barn were severely damaged.

Regarding the residences to be moved, 80 families were considered to be the right owner. Studies into the determination of a new settlement area where there is no landside risk in the region are continuing.

Although this landslide that hit Ordu was tragic in terms of the financial losses incurred, the fact that there was no harm to human life due to the timely measures taken was a positive outcome. The Ordu case represents a whole range of practices that can inspire similar risk reduction activities.

2.2.6. Expanding Logistic Warehouses

Since Turkey is a country with a high-risk of disasters, especially earthquakes, it is important to deliver the most basic needs in terms of shelter and living materials to those in need as soon as possible, and to satisfy the temporary housing needs that will arise in the aftermath of a disaster. Accordingly, AFAD regional logistics centers were established in 25 provinces in 2014, considering such factors as the local population and disaster risks across Turkey.

AFAD regional logistics centers maintain stocks of the basic sheltering materials in shipping containers, ready to be shipped in a very short time with the help of a ceiling crane, to meet temporary shelter needs as soon as possible after a disaster.

Aside from these, it was decided to establish logistics support warehouses containing 10 or 20 shipping containers in the provinces where there is no AFAD logistics center, taking into account such criteria as the disaster risk status and population of the province. Logistics support warehouses were thus established in 30 provinces in 2018.

Stocks of tents, beds, blankets, bed linen and kitchen sets are kept in the AFAD regional logistics centers and logistics support warehouses. The materials are produced from raw materials that are suitable for storage, hygiene conditions and human health.

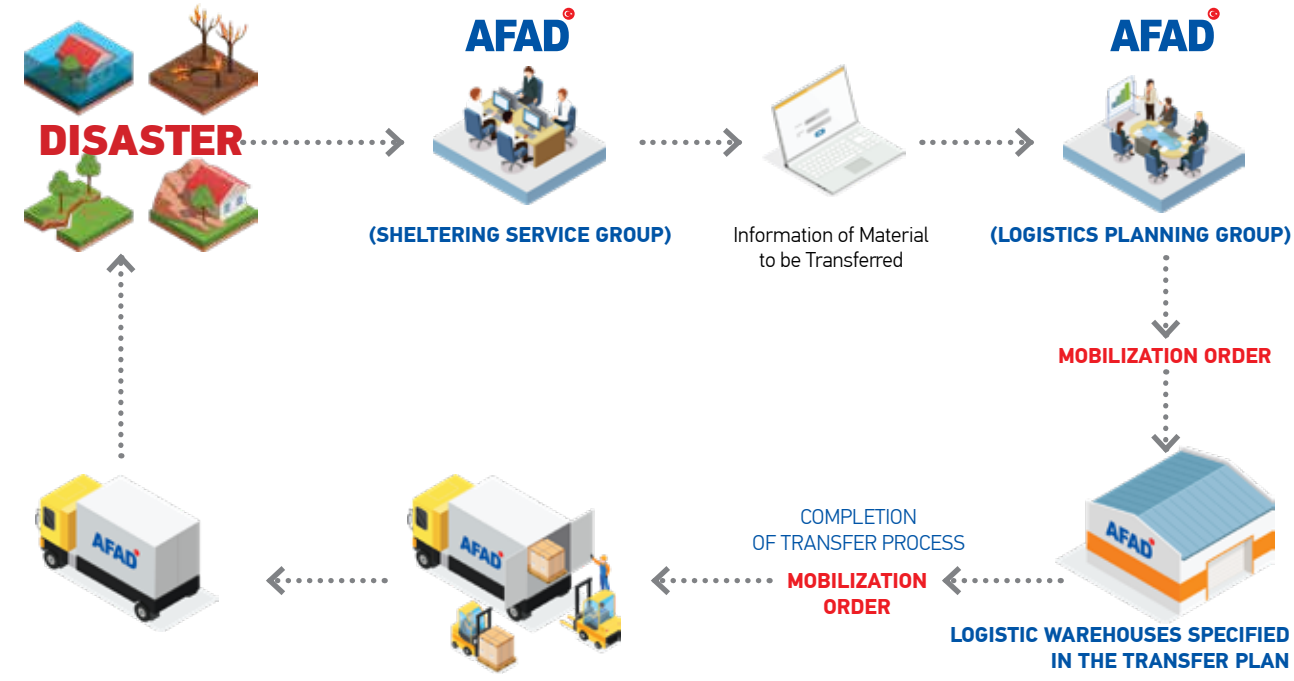


Figure 18. Transfer operations at logistics warehouses

In 2019, an AFAD regional logistics center was established in the Rize province, increasing the number of regional logistics warehouse centers in Turkey to 26. In addition, the construction of a new regional logistics center in İstanbul started in 2019. The İstanbul Regional Logistics Center is planned to enter into operation in the first half of 2020. Once the Istanbul Regional Logistics Center is entered into operation, the number of AFAD regional logistics centers in Turkey will be 27.

In addition to the logistics support warehouses established in 2018, logistics warehouses were established in 25 other provinces where there were no AFAD logistics warehouses in 2019, bringing the number of logistics support warehouses to 55.

Furthermore, 10,000 family kitchen sets, 60,000 bed-linen sets, 60,000 beds and 60,000 blankets were procured and distributed to the logistics warehouses in 2019 as part of a drive to procure the materials that are generally disaster by the victims of disasters. The stock status of the logistics warehouses as of the end of 2019 is shown below:

Table 5. Materials stored in logistic warehouses

Tents	Beds	Blankets	Bed Linen	Kitchen Sets
78,018	101,370	172,904	64,071	19,840

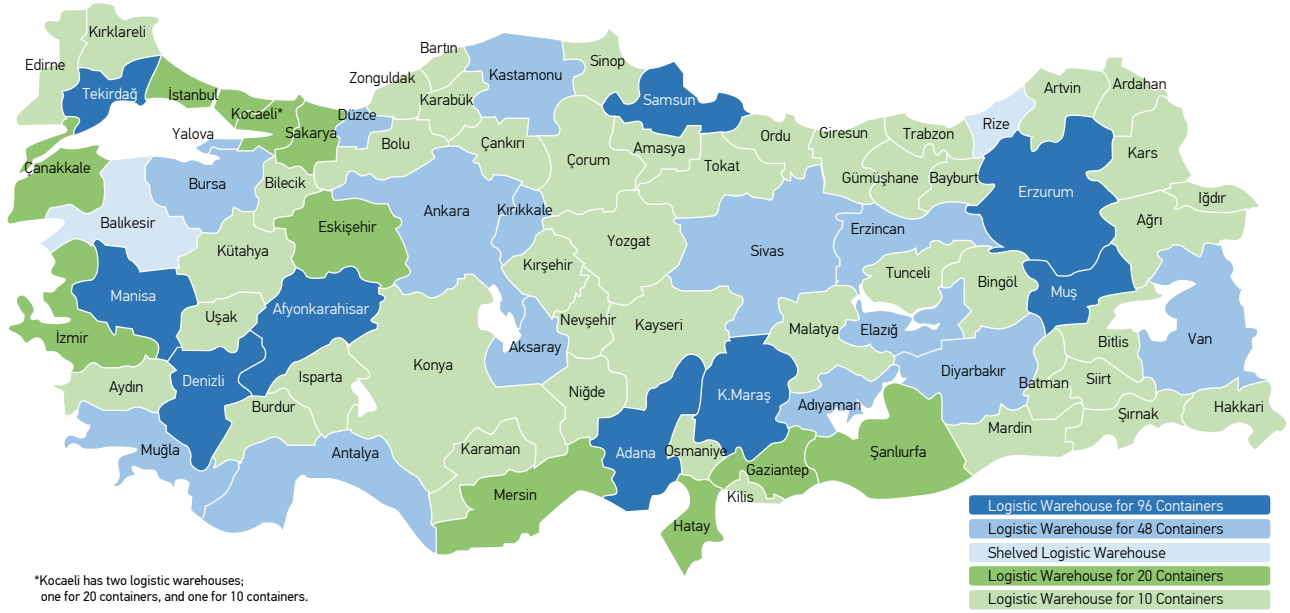


Figure 19. Distribution of logistics warehouses by province

2.2.7. 2019: A year of Exercises

An exercise is a set of activities aimed at testing the suitability, adequacy and up-to-dateness of the activities planned for disaster/emergency response under as realistic conditions as possible, while adhering to a scenario.

Exercises are carried out to test the applicability of the prepared disaster and emergency plans in realistic environments, to observe the capacity and capabilities of the teams, and to measure the success of those involved in the management and decision-making processes, in line with the projected hazard scenarios, with the aim being to prevent or minimize loss of life and property in the event of a disaster or emergency. These objectives can be classified under the topics of flexibility, sufficiency, coordination, applicability and learning:

- **Ensuring flexibility:** The ability of all actors involved in disasters and emergencies to alter their behaviors and to develop new result-oriented approaches and methods under changing conditions

- **Measuring self-sufficiency:** All of the actors involved are to be self-sufficient during the task process, do not need to use resources in the disaster affected area, and do not create an additional burden

- **Coordination and cooperation:** To determine the principles of the teams of different structures that may have different working languages, to ensure they work in harmony, and to see the suitability of such principles in place

- **Applicability of plans and procedures:** To see the applicability of the disaster and emergency plans prepared in line with the projected hazard scenarios, to ensure the control of the people in charge, to increase their knowledge and experience

- **Learning and updating:** Bu exercises, to identify the positive aspects, deficiencies or mistakes in the plans and programs that can be actually implemented, to determine those that are very good or faulty based on actual applications by the actors in the field, and to make the necessary updates and adjustments accordingly

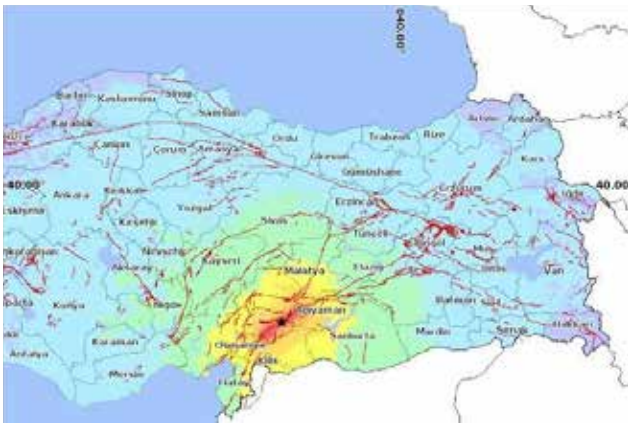
In the imagined scenario created within the AFAD-RED program developed by the AFAD Earthquake Department, an earthquake with a magnitude of 7.5 (Mw) occurred on the Kahramanmaraş Türkoğlu–Adıyaman Gölbaşı fault line, affecting nine provinces (Kahramanmaraş, Adıyaman, Gaziantep, Malatya, Kilis, Osmaniye, Şanlıurfa, Hatay and Adana), with Kahramanmaraş, Adıyaman, Malatya and Gaziantep being most severely affected.

For the first time, the exercise was carried out concurrently and in real-time, not only in the city, as the epicenter of the earthquake, but in all provinces affected according to the scenario. The Adana and Hatay provinces, which were among those affected under the scenario earthquake, participated in the exercise not as affected provinces but rather as supporting provinces, since they were only slightly affected by the earthquake, and they provide support to almost all of the other affected seven provinces.

The scenario prepared for the exercise, the exercise directives, the table of affected and supporting provinces, and the participant and evaluator forms and exercise workflows were shared with national level working groups, the provinces affected by the earthquake, and the first and second group supporting provinces of the affected provinces, along with other provinces that will be deployed to the provinces affected under national support.

The exercise was launched with as earthquake message sent on October 9, 2019, at 13:22, and the first 24 hours of the earthquake were simulated in real-time until the end of the exercise on October 10, 2019, at 13:22. At 13:22 on October 10, 2019, the clock of the exercise was set forward 48 hours for the working groups that are not involved in the first three days of the disaster, and the exercise continued from the 73rd hour (4th day), and ended at 18:25 after playing out the fourth and fifth days.

Upon the sounding of the earthquake alarm, the exercise was carried out both in the field and from desks with the participation of the affected provinces, the first group supporting provinces, the second group supporting provinces, and the working groups at local and national levels.



The exercise started with the earthquake message received, after which both the national working groups and the local working groups took their places in the Disaster and Emergency Management Centers (DEMCs) without waiting for a call. After the earthquake was declared as 3rd level by the Presidency, the supporting provinces started to be deployed to the relevant provinces. DEMCs were kept running in all provinces that participated in the exercise, whether as affected or deployed provinces, with 26 working groups in the DEMC in each province.


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Table 6. Primary and secondary supporting provinces

Affected Province	K.Maraş	Adana	Adıyaman	Gaziantep	Hatay	Malatya	Şanlıurfa	Kilis	Osmaniye
I[st] Group Supporting Provinces	Mersin	Mersin	Erzincan	Mersin	Mersin	Erzincan	Diyarbakır	Mersin	Mersin
	Adana	Osmaniye	Tunceli	Adana	Adana	Tunceli	Mardin	Adana	Adana
	Osmaniye	K. Maraş	Bingöl	Osmaniye	Osmaniye	Bingöl	Siirt	Osmaniye	K. Maraş
	Gaziantep	Gaziantep	Malatya	K. Maraş	K. Maraş	Elazığ	Şırnak	K. Maraş	Gaziantep
	Kilis	Kilis	Elazığ	Kilis	Gaziantep	Adıyaman	Batman	Gaziantep	Kilis
	Hatay	Hatay	K. Maraş	Hatay	Kilis	Diyarbakır	Gaziantep	Hatay	Hatay
	Adıyaman	Niğde	Gaziantep	Adıyaman		K. Maraş	Adıyaman		
	Sivas		Şanlıurfa	Şanlıurfa		Sivas			
			Diyarbakır						
2[nd] Group Supporting Provinces	Şanlıurfa	Kayseri	Elazığ	Kayseri	Mersin	Gaziantep	Elazığ	Adana	Kayseri
	Niğde	Konya	Kilis	Malatya	Şanlıurfa	Erzincan	K. Maraş	Şanlıurfa	Adana
		Malatya	Kayseri	Adana	Kayseri	Kayseri	Malatya	Malatya	Adıyaman

Figure 20. Provinces affected according to the scenario, and the levels of impact

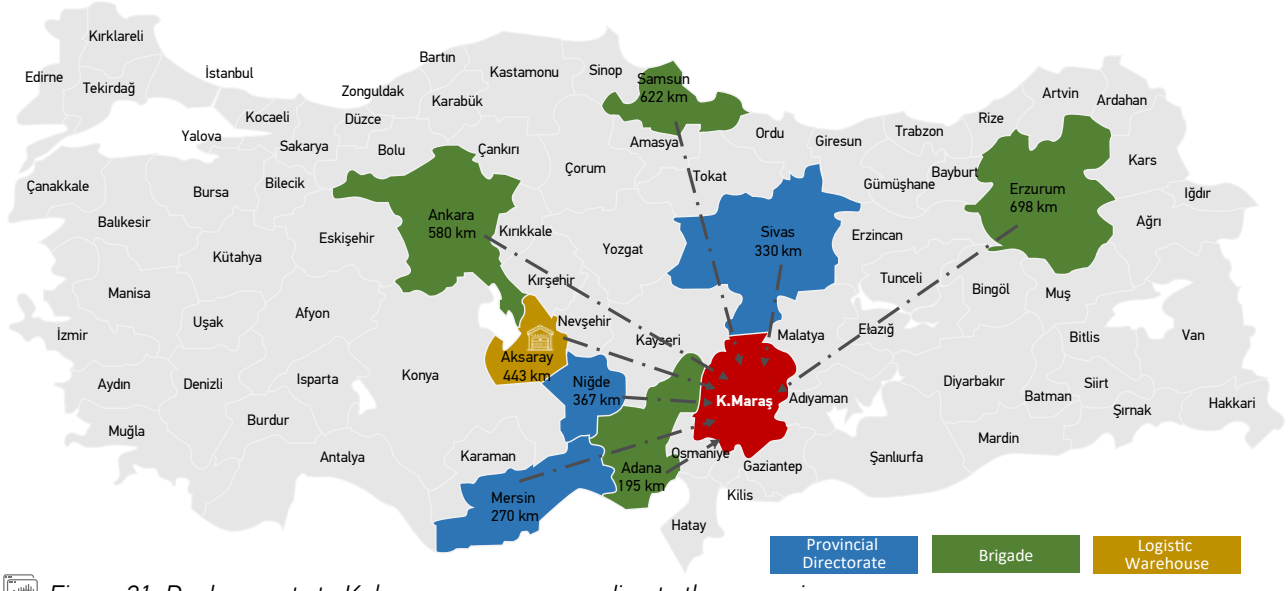


Figure 21. Deployments to Kahramanmaraş according to the scenario

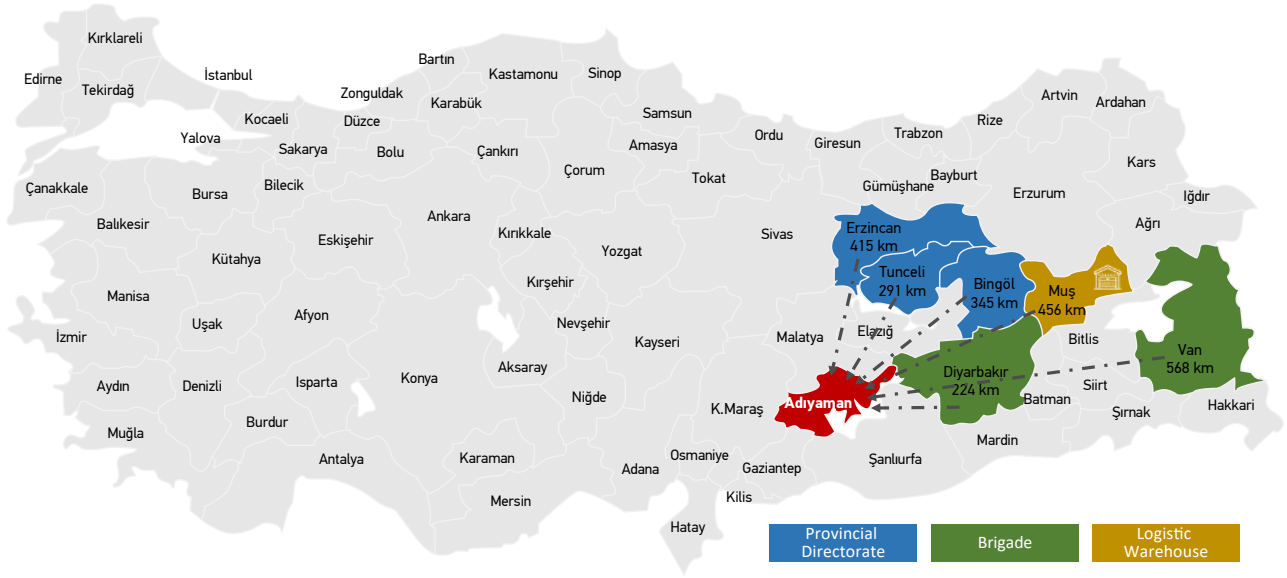


Figure 22. Deployments to Adıyaman according to the scenario


JANDARMA
JANDARMA

During Turkey's most comprehensive earthquake exercise, which was launched upon the instruction of Süleyman SOYLU, Minister of Interior, and which was followed concurrently by the AFAD Disaster and Emergency Management Centre, schools were evacuated, muster points and shelter areas were utilized, and wounded people and bodies were pulled from real debris after an earthquake with a magnitude of 7.5 in an urban area, in accordance with the defined scenario.

Managing the exercise personally, Minister SOYLU received detailed information on the impact of the earthquake and studies carried out in the region from Vahdettin Özkan, Governor of Kahramanmaraş, with whom he communicated via the JEMUS radio system of the General Command of Gendarmerie. He asked all working groups involved in the exercise to share the initial data they gathered related to the earthquake.

All of the information collected on the Disaster Management and Decision Support System (AYDES) was followed from screens at the AFAD Presidency Disaster and Emergency Center. Aerial images related to the status of the region obtained via helicopters and manned reconnaissance aircraft were also transferred to the center.

Within the scope of the exercise, GSM operators were asked to send a warning message to members of the public stating that calls made through land lines should not last more than 10–15 seconds, and that the Internet and text messages should be preferred when there is a need to communicate with others.

Involving the participation of 4,500 people from 26 provinces, the exercise lasted 3 days and ended with comprehensive evaluation meetings.

Aside from this national exercise, 2019 saw many exercises held at both local and regional levels. Although the initial intention was to hold 74 local, 13 regional and one national exercise, a total of 88 local, 15 regional and one national exercise were successfully carried out. In addition, 14 unannounced exercises were also launched. As such, in 2019 a total of 118 exercises were carried out, making it a very busy year in this regard.

Table 7. Distribution of exercises carried out in 2019 and their realization percentages

	Planned	Realized	Realization
Local Exercises	74	88	119%
Regional Exercises	13	15	115%
National Exercises	1	1	100%
Unannounced Exercises	-	14	

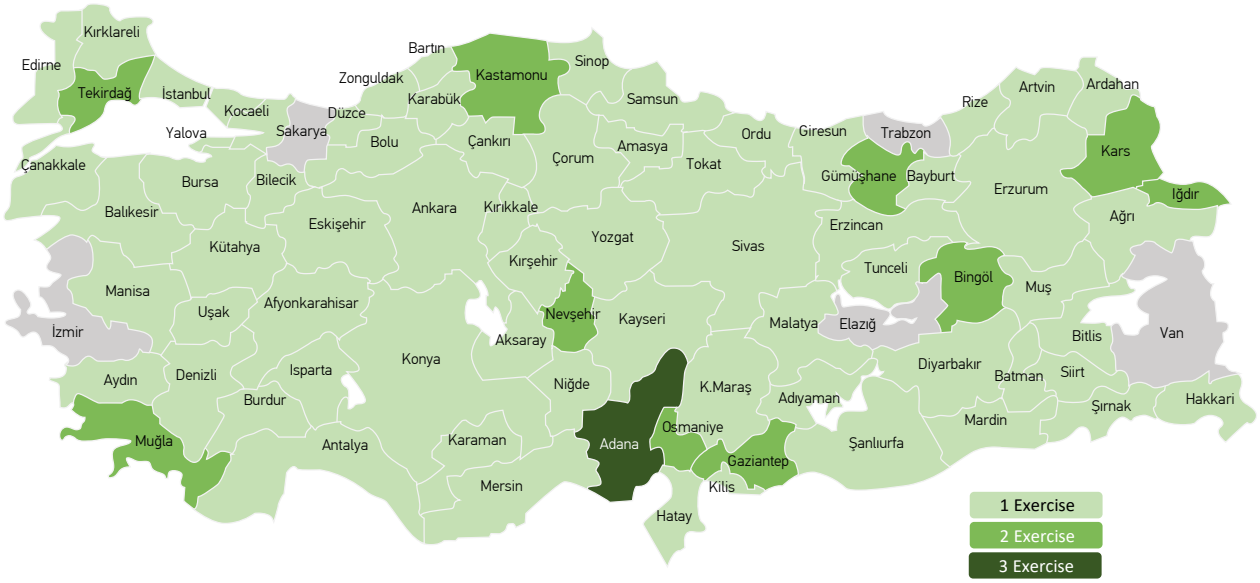


Figure 23. Local (provincial) exercises carried out in 2019

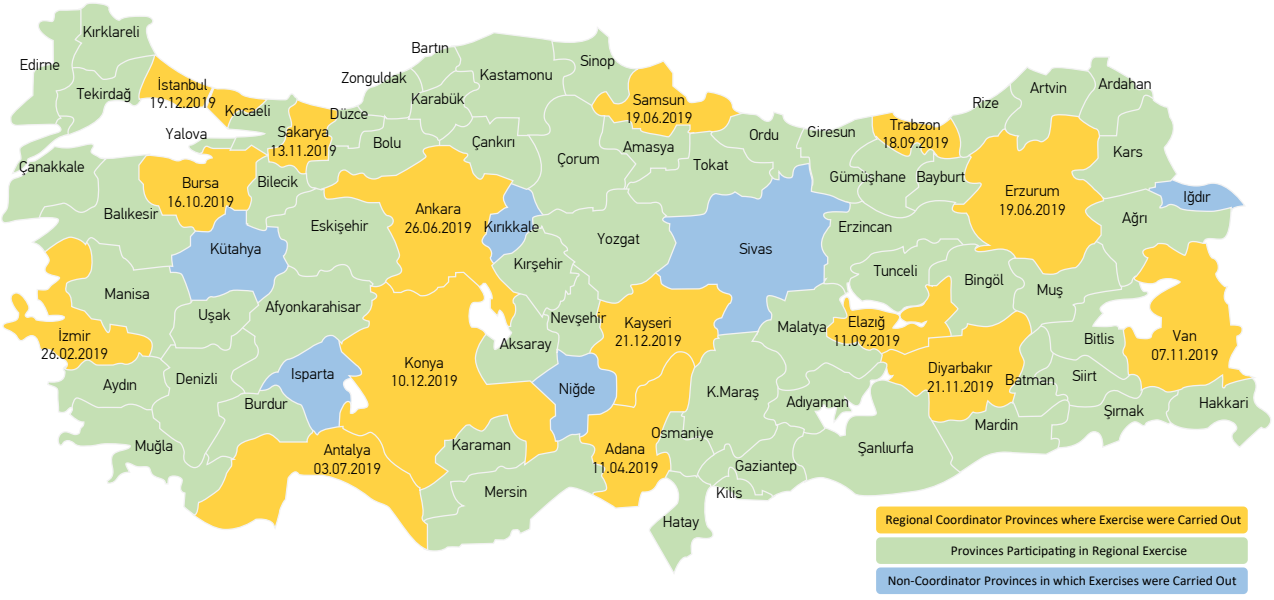


Figure 24. Regional exercises carried out in 2019

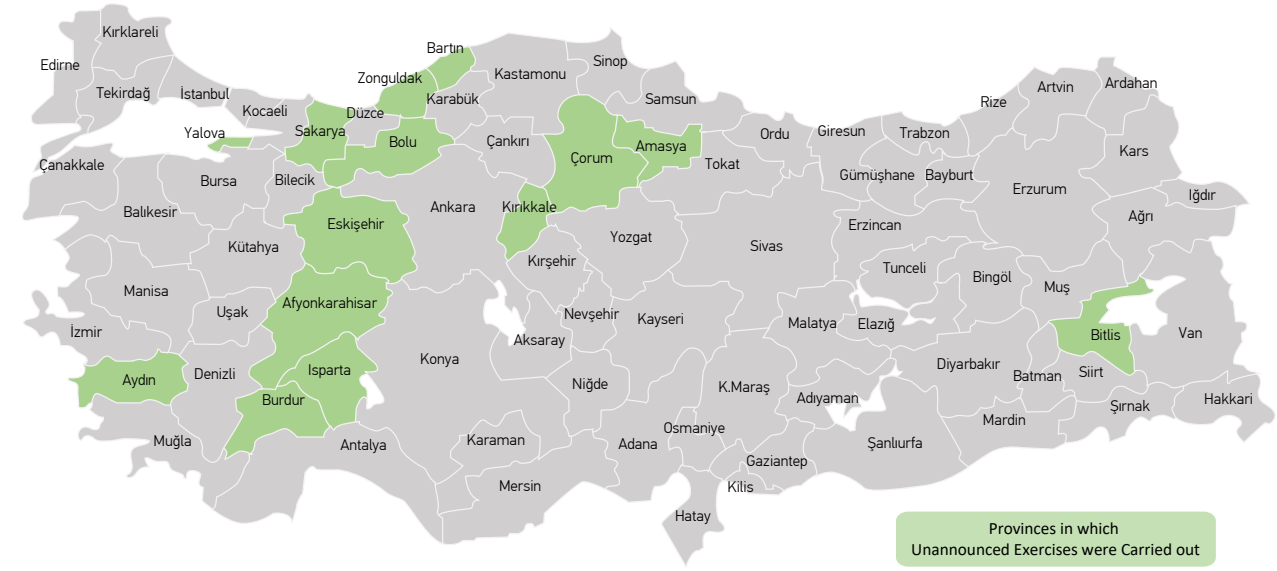


Figure 25. Unannounced exercises carried out in 2019

Aside from the self-organized exercises, AFAD also participated in various exercises organized by its national and international stakeholders.

Under Civil-Military Cooperation:

- Cooperative Resolve 2019 Exercise (Ankara-EDOK, February 2019)
- Lightning 2019 Exercise (Ankara-EDOK, March 2019)
- Sea Wolf 2019 Exercise (Ankara-Sakarya-Mersin, May 2019)
- CMX NATO Exercise

Under International Exercises:

- MNE MODEX 2019 EU Module Exercise (Montenegro, May 2019)
- Serbian-Russian Emergency Exercise (May, 2019)

Iğdır CBRN Exercise

2.2.8. Disaster Risk Reduction System (ARAS)

Today, the most essential tool that should be made available to researchers and decision-makers engaged in disaster risk-reduction studies is data on past disasters. Disaster hazards and risks can be identified and mapped through both direct examinations, and the geographical and statistical analysis of this data. Decision-makers, researchers and executives use these analyses and maps when developing policies, strategies and plans, and in the implementation of activities related to risk reduction.

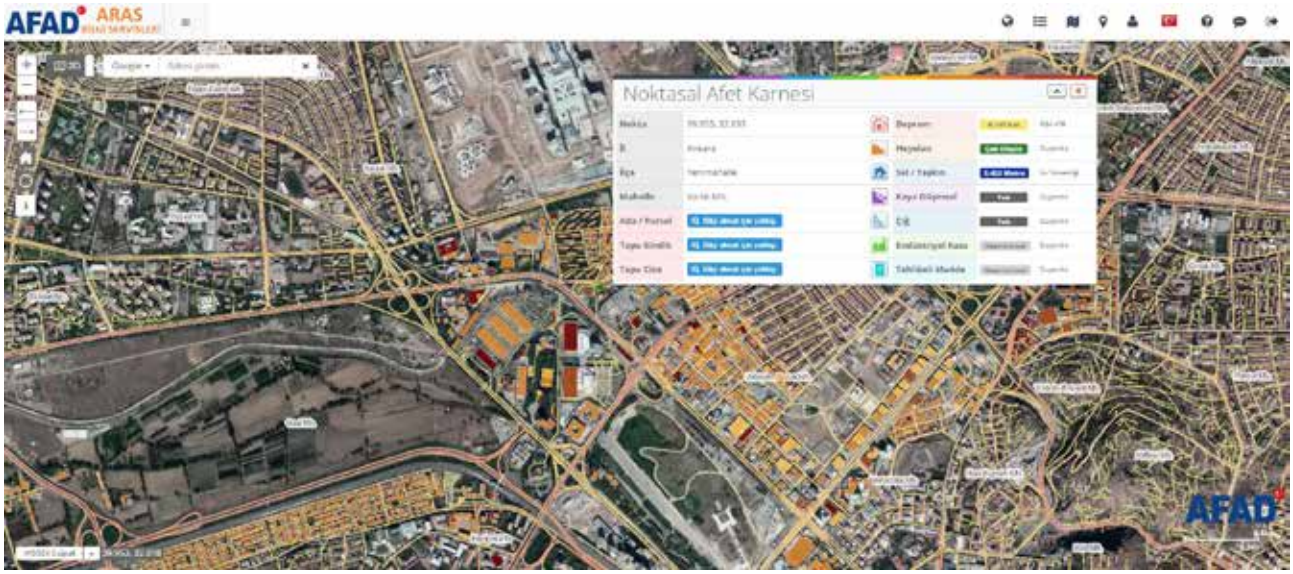
The first step in minimizing the damage caused by disasters is to produce disaster hazard and disaster risk maps at the national, regional and local scales. Maps to be prepared for this purpose are required: to determine the disaster hazards and risks in the provinces; to compile information that may serve as the basis of disaster risk reduction, response and recovery plans; to organize disaster-related information that may be required by planners for the preparation of regional and environmental plans; and to transfer accurate, fast, reliable and up-to-date results to decision-makers and implementing mechanisms, and ensure their practical application. Utilizing such maps will enable both decision-makers and other official bodies, such as local administrations, to draw up healthier plans, while also making significant contributions to the selection of the right place.

Figure 26. Turkey Landside Susceptibility Map

Based on the above-mentioned requirements, AFAD has established a web-based Disaster Risk Mitigation System (ARAS) for the storage of data from previous disasters, that allows for the making and sharing of the results of the analysis of such data, and that can receive data and maps produced by other institutions, facilitating the easy and rapid preparation of accurate disaster hazard maps, and retaining such maps on the same platform for sharing. The system is the basis of studies into the determination of disaster hazards and the production of maps.

"ARAS uses nine different statistical models to produce susceptibility and hazard maps based on data from 33,495 landslides, 4,544 rockfalls and 836 avalanches, collected by 309 technical personnel, and to produce risk maps for the transportation of dangerous goods."

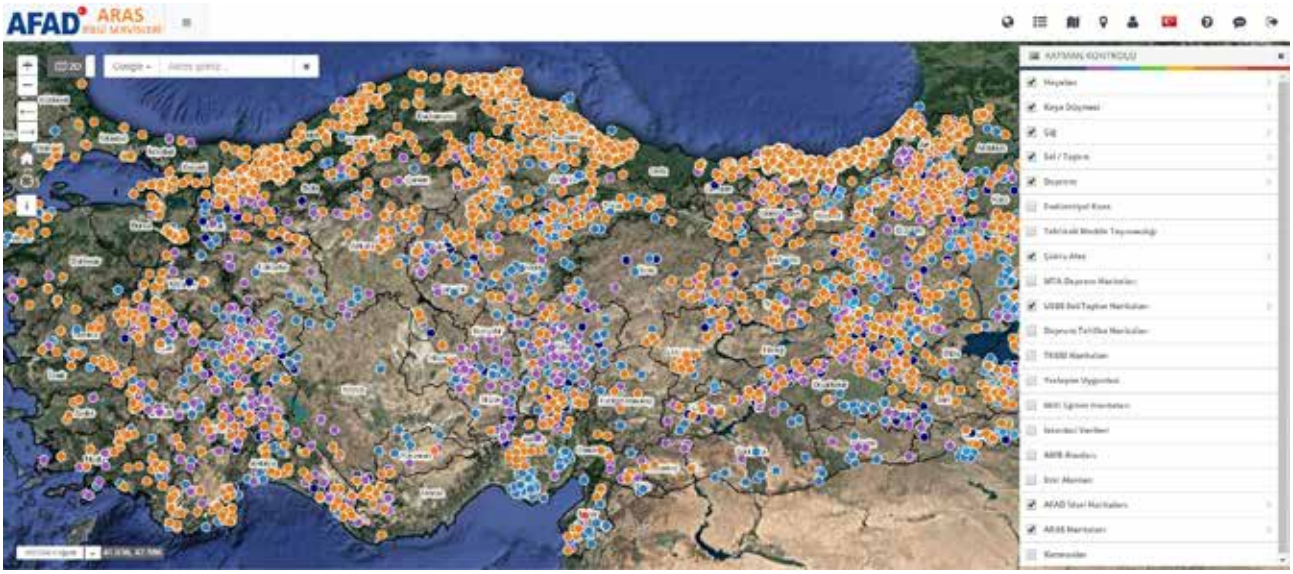
ARAS is a web-based GIS (Geographic Information Systems) portal, where susceptibility and hazard analyses can be performed and susceptibility and hazard maps can be produced for such disasters as landslides, rock falls and avalanches. Many of the geological, topographic, environmental and triggering parameter maps required for the production of such maps are integrated into the system. The boundaries of landslides, rock falls and avalanche incidents that have occurred are digitized, and these boundaries and features of incidents are kept in the system within a disaster inventory. Disaster susceptibility and hazard maps can be produced from analyses of the digital inventory data using scientific models, in accordance with the formation and impact mechanisms associated with the disaster type. Furthermore, disaster hazard maps produced by other institutions, as required by legislation, can be directly integrated into the system. To date, earthquake, landslide, rockfall and avalanche susceptibility maps have been prepared by AFAD, while flood risk maps and flood hazard maps have been prepared by the General Directorate of Water Management, and have been included in the system. The hazard maps and risk maps to be produced by other institutions will be uploaded onto the system as they are produced. Thus, this platform allows susceptibility and hazard maps of many types of disasters to be viewed at the same time.



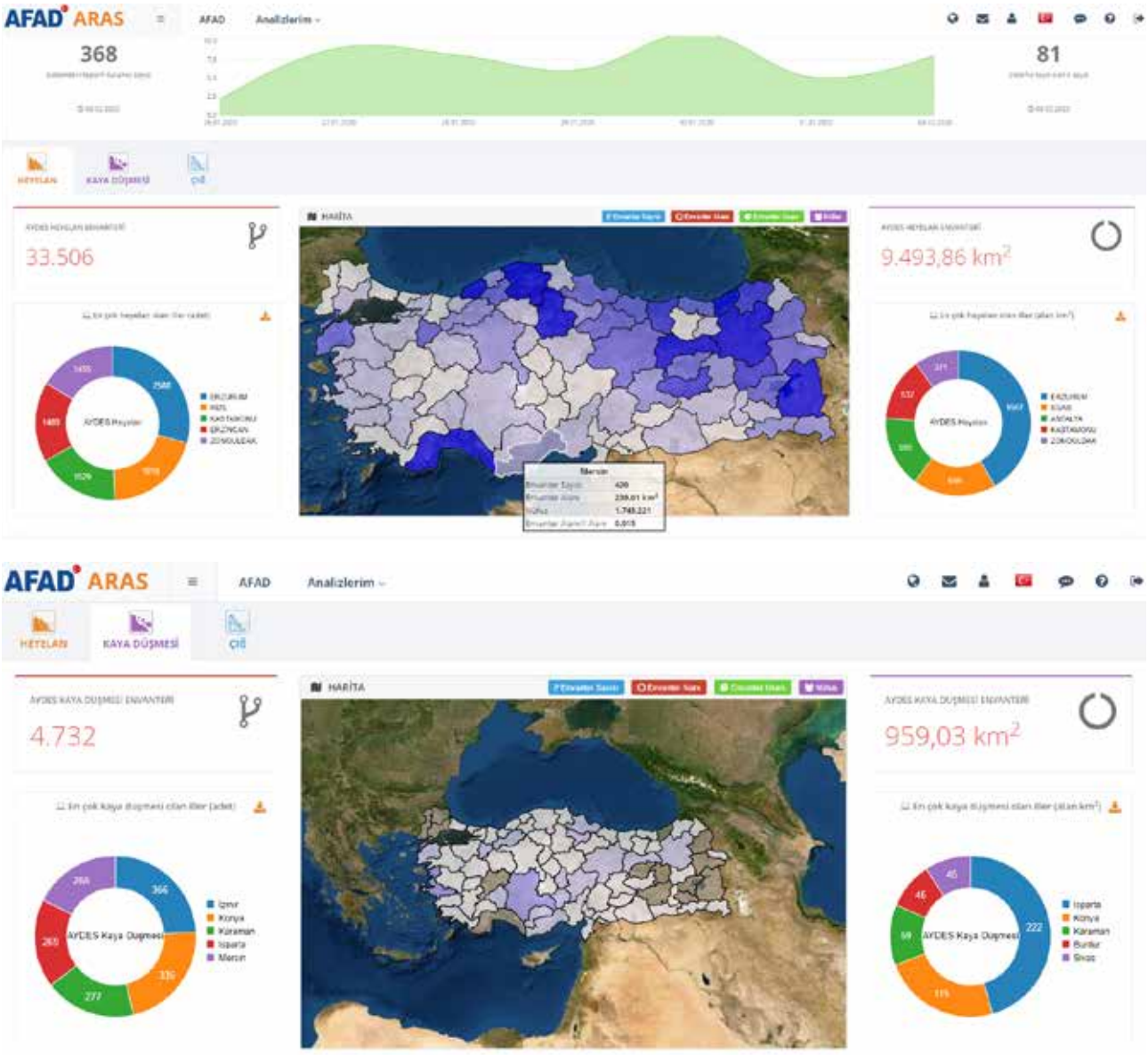
"The system has been designed in such a way that the hazard and risk maps in the local and national plans can be shared with the relevant institutions and organizations. Up-to-date disaster data for the desired location can be obtained through the system."

ARAS is a significant tool for the assessment of the risks in settlements affected by disasters. There have been few risk assessment studies carried out around the world to date, due to both the lack of technical support and the shortage of base data. The present study continues with success, making use of the geological and disaster proneness data and the technical capacity of the AFAD personnel. ARAS will allow the risk potential of the settlements affected by the mentioned disasters to be identified, while also providing decision-makers with the necessary scientific and technical infrastructure for the identification of safe settlements in the future.

To reduce disaster risk, both structural and non-structural measures must be taken on a spatial basis. Structuring in accordance with the law and enacting regulations to steer spatial planning are important in ensuring living spaces are resistant to disasters, while also being safe and livable. The most basic approach is to identify the areas at highest risk of disaster, and to ensure urban development in non-hazardous areas, thus reducing risks to a minimum. At this point, ARAS will allow the identification of disaster-sensitive areas, will produce disaster hazard maps based on susceptibility maps, taking the triggering parameters into account, and will produce risk maps by identifying any vulnerable elements.



As stipulated in the 11th Development Plan, the disaster history, disaster hazards and disaster risks of the city in question will be taken into consideration drawing up urban plans within the scope of urban transformation applications, and when transforming new zoning areas and industrial areas. Zoning planning criteria will be developed to identify any disaster risks at the planning stage, and it will thus be ensured that zoning planning will be made in accordance with disaster hazards and risks. It will be ensured that the Disaster Risk Reduction System prepared by AFAD is used in spatial planning activities. The Disaster Risk Reduction System (ARAS) will be an important instrument for decision-makers for the raising of public awareness of disasters, for the establishment of settlements that are resistant to disasters and safe, and for reducing the loss of life and property related to disasters through risk reduction studies. The first step in pre-disaster risk reduction and preparedness studies is the collection and archiving of accurate data. This need is gradually increased during disaster management. The Turkish Disaster Information Bank (TABB) was established to collect and archive all of the information on the disasters that occur in our country in a data center, and to digitally access secure data that will be an inputted in disaster management studies. The system has been serving its users since 2015, and is expected to pass on our disaster memory to future generations.



"ARAS Information Services" studies have started to develop the TABB in such a way that current needs and international requirements are being met (Sendai Criteria). This service allows information on the disasters occurring in our country (location, time, magnitude, digital boundaries of areas exposed to disasters, etc.) to be displayed and queried in a geographic information system (GIS).

Through the ARAS Information Services, disaster data can be spatially inquired at a national and local level, while for integrated disasters, such information as point earthquake hazard levels, landslide, rockfall and avalanche susceptibility levels, and estimated water depths in flood areas, can be displayed.

Once the system is completed, the project outputs and data will be available to all segments of the community, including decision-makers, researchers and academicians. This system is aimed to ensure future investments, and especially public investments, are made in a more rational and evidence-based manner, thus minimizing the possible impacts of disasters.

2.2.9. 2nd International CBRN Congress

The term "CBRN" is the accepted abbreviation for "chemical, biological, radiological and nuclear". In general, this term is used to refer to harmful and dangerous situations for humans and the environment resulting from the spread of chemical, biological, radiological and nuclear materials, either deliberately or accidentally.

In order to minimize loss of life and property in the event of a CBRN incident, preparation and planning activities are carried out before incidents, response activities are carried out during incidents, and recovery activities are launched after such incidents.

Within the scope of the preparation and planning activities, strategy documents are prepared to identify Turkey's short-, medium- and long-term strategies and actions in the field of CBRN. Besides, the duties and responsibilities of the institutions and organizations working in the CBRN field are determined through regulations and plans, ensuring both the effectiveness of the management of CBRN incidents and the coordination of activities throughout the country. Training and information activities are carried out by various institutions and organizations, aiming to raise awareness among the relevant personnel and the public on CBRN threats and hazards.

Rapid and effective interventions are extremely important when a CBRN incident occurs. The first response activities in CBRN incidents are carried out, to a large extent, by AFAD, the Ministry of Health, the Turkish National Police and firefighting squads. Desk and field exercises are organized to train these squads and test the operability of the plans.

For response to CBRN incidents, trained and experienced personnel are assigned and special and high-cost equipment is used. It is extremely important to select the type of equipment appropriately, to procure them sufficiently and to use them properly. Training and equipment procurement activities are carried out as part of the efforts to increase the capacities of CBRN teams in terms of personnel and equipment.

The most prominent development in the field of civil defense in 2019 was the "2nd International CBRN Congress". The 1st International CBRN Congress, organized by AFAD for the first time in our country in December 2017, brought together many local and foreign scientists, students, and representatives of the public and private sectors, and led to raising the awareness of CBRN threats and hazards.

At the 2nd International CBRN Congress held in the AFAD Presidential Campus and Congress Hall on November 27–29, 2019, it was aimed to share all the recent developments in scientific studies and new technologies in the field of CBRN, aiming to raise social awareness of the reality of CBRN, and to share knowledge and experience. Besides, manufacturing companies operating in the field of CBRN took the opportunity to showcase and introduce to the participants their products on the sidelines of the Congress. On the last day of the Congress, a CBRN incident response demonstration was held by the AFAD first response teams.


INTERNATIONAL CBRN CONGRESS
27 - 29 NOVEMBER 2019 / ANKARA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HOŞ GELDİNİZ


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KBRN KONGRESİ
CBRN

2.3. Response

2.3.1. Response Statistics of 2019

In terms of the number of incidents intervened, 2019 was a more intense year when compared to previous years. The number of incidents intervened by the teams affiliated to AFAD provincial directorates and brigades was 1,465 in 2017 and 1,788 in 2018, whereas the figure for 2019 was 3,724. 3,604 search and rescue vehicles and 12,407 search and rescue personnel were involved in these interventions in the field.

Table 8. Distribution of the number of incidents responded to in 2019, and the vehicles and personnel deployed to these incidents by provinces

Province	# of Incidents Responded	%	# of Vehicles Assigned in Response	# of Personnel Assigned in Response
Adana	79	2.1%	171	685
Adıyaman	15	0.4%	11	27
Afyonkarahisar	64	1.7%	50	92
Ağrı	5	0.1%	-	-
Aksaray	140	3.8%	108	210
Amasya	28	0.8%	27	91
Ankara	99	2.7%	67	263
Antalya	71	1.9%	23	110
Ardahan	36	1.0%	55	137
Artvin	61	1.6%	38	182
Aydın	29	0.8%	10	67
Balıkesir	32	0.9%	25	109
Bartın	43	1.2%	60	200
Batman	18	0.5%	-	20
Bayburt	42	1.1%	43	86
Bilecik	48	1.3%	61	-
Bingöl	20	0.5%	-	-
Bitlis	16	0.4%	2	3
Bolu	29	0.8%	21	70
Burdur	34	0.9%	14	51
Bursa	110	3.0%	251	973
Çanakkale	17	0.5%	63	268
Çankırı	35	0.9%	33	90
Çorum	51	1.4%	56	173
Denizli	63	1.7%	68	246
Diyarbakır	26	0.7%	36	170
Düzce	23	0.6%	26	56
Edirne	31	0.8%	21	65
Elazığ	49	1.3%	46	178
Erzincan	38	1.0%	38	95
Erzurum	19	0.5%	38	63
Eskişehir	39	1.0%	27	156
Gaziantep	21	0.6%	27	91
Giresun	24	0.6%	18	70
Gümüşhane	19	0.5%	17	16
Hakkâri	16	0.4%	3	-
Hatay	59	1.6%	2	8
Iğdır	11	0.3%	11	30
Isparta	62	1.7%	67	183
İstanbul	110	3.0%	178	602
İzmir	91	2.4%	156	738
Kahramanmaraş	93	2.5%	58	190
Karabük	93	2.5%	104	309
Karaman	27	0.7%	4	12
Kars	25	0.7%	28	-
Kastamonu	32	0.9%	-	26
Kayseri	21	0.6%	27	133
Kırıkkale	27	0.7%	25	68
Kırklareli	22	0.6%	20	58
Kırşehir	25	0.7%	23	44
Kilis	14	0.4%	10	21
Kocaeli	125	3.4%	179	408
Konya	31	0.8%	13	90
Kütahya	38	1.0%	27	80
Malatya	20	0.5%	6	26
Manisa	80	2.1%	90	429
Mardin	27	0.7%	1	116
Mersin	53	1.4%	70	277
Muğla	88	2.4%	99	229
Muş	41	1.1%	39	134
Nevşehir	27	0.7%	15	52
Niğde	127	3.4%	128	470
Ordu	24	0.6%	25	87
Osmaniye	44	1.2%	36	103
Rize	20	0.5%	42	122
Sakarya	36	1.0%	72	256
Samsun	43	1.2%	47	129
Siirt	44	1.2%	-	81
Sinop	23	0.6%	28	85
Sivas	54	1.5%	71	217
Şanlıurfa	34	0.9%	40	152
Şırnak	8	0.2%	-	-
Tekirdağ	26	0.7%	6	170
Tokat	37	1.0%	37	142
Trabzon	263	7.1%	31	239
Tunceli	49	1.3%	75	217
Uşak	22	0.6%	25	76
Van	47	1.3%	82	395
Yalova	18	0.5%	25	38
Yozgat	20	0.5%	11	2
Zonguldak	53	1.4%	17	50
Total	**3,724**	**100.0%**	**3,604**	**12,407**

Looking at the distribution of these 3,724 incidents by provinces, Trabzon ranks first in numerical terms with 263 incidents, corresponding to 7 percent of all incidents. This is followed by Aksaray with 140 incidents, Niğde with 127 incidents, Kocaeli with 125 incidents, Bursa and İstanbul with 110 incidents each, and Ankara with 99 incidents. The number of incidents responded to in these seven provinces corresponds to a quarter of the total incidents.

In contrast, the provinces in which the lowest number of incidents were responded to were Ağrı, with five incidents; Şırnak, with eight incidents; Iğdır, with 11 incidents; Kilis, with 14 incidents, and Adıyaman, with 15 incidents. The top five provinces in terms of the number of personnel involved in the response activities were Bursa (973), İzmir (738), Adana (685), İstanbul (602) and Niğde (470), respectively.

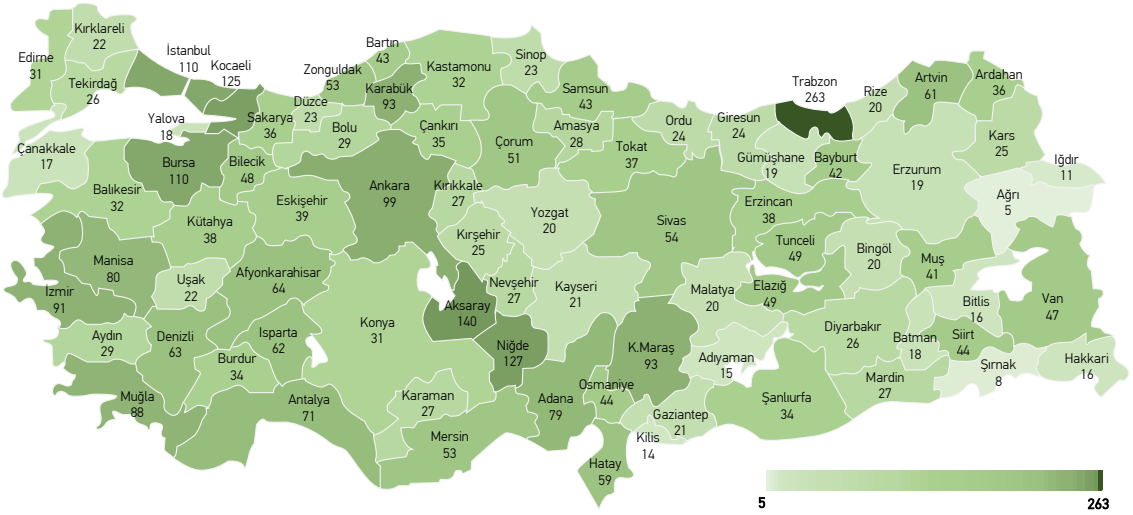


Figure 27. Distribution of incidents responded to in 2019 by provinces

The distribution of the 3,724 incidents responded to in 2019 by type is presented in the graph. The most frequent incident type was recorded as being stranded with 787 incidents corresponding to 21 percent of the total. The numbers of other incident types were as follows: 651 missing persons (18%), 605 transport accidents (16%), 512 CBRN incidents (14%) and 273 floods (7%). The least frequent incident types were avalanches (9 incidents), explosions (14 incidents) and occupational accidents (43 incidents). The left column in the graph shows the number of the relevant incident type entered into AYDES.

In the last year, transport accidents (1,101 incidents) was the most frequent incident type entered into AYDES. As can be understood from the graph, of the incidents entered into AYDES, those reporting CBRN events ranked first in terms of interventions. Of the 549 reported CBRN incidents, 512 of were responded to (93%). Earthquake ranked lowest in this regard, with two percent. Of the 123 reported earthquake incidents, only three were responded to.

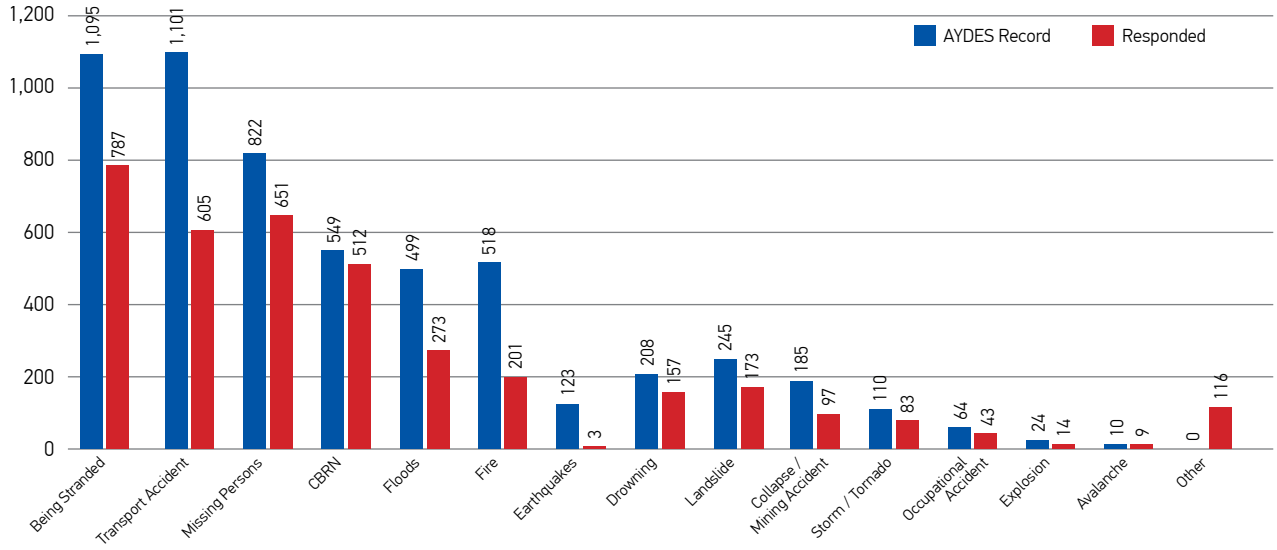


Figure 28. Distribution of incidents responded to in 2019 by type

The distribution of the 3,724 incidents responded to in 2019 by month is presented in the graph. January ranks first, with 495 incidents, whereas December ranks last with 213 incidents. Incidents such as strandings and missing persons occurred more frequently during the winter, whereas transport accidents were the most frequent incident type from June to September.

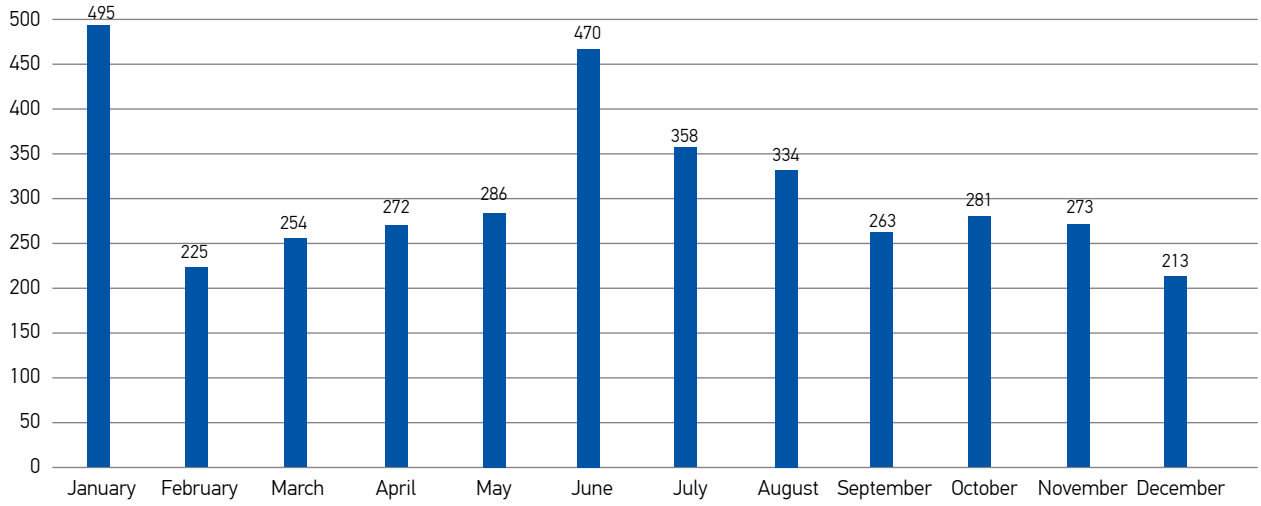


Figure 29. Distribution of incidents responded to in 2019 by months

2.3.2. Remarkable Incidents Responded to in 2019

Antalya, Tornado and Flood

Tornadoes and floods occurred in Antalya amid the heavy precipitation and storms seen on January 24–26, 2019. Search and rescue activities were carried out for three days; two citizens died and 47 others were injured due to the incidents.

Efforts to locate one missing person continued for 99 days, with no result.

(Source: Anadolu Agency)

(Source: Anadolu Agency)

İstanbul, Building Collapse

In the aftermath of the collapse of a Yeşilyurt Apartment Building on February 6, 2019, at 15.59 in the Orhantepe neighborhood of the Kartal district of İstanbul, 14 wounded citizens were from the debris and the bodies of 21 others were recovered after 5 days of activities of our search and rescue teams.A total of 405 personnel, 91 vehicles and 12 search and rescue dogs took part in the search and rescue operations. Aside from the search and rescue efforts, 1,141 personnel were engaged in related activities.

(Source: Anadolu Agency)

Denizli, Earthquake

A 5.5 magnitude earthquake with a depth of 11 kilometers occurred at 09:34 on March 20, 2019 in the Acıpayam district of Denizli. A total of 63 people were directly affected by the earthquake, three of which were treated in hospital. Search and rescue activities were carried out by 22 personnel and 12 vehicles of the Afyonkarahisar and Izmir Provincial AFAD Directorates, as well as 112 squads and one helicopter from the Turkish National Police.

During the damage assessment studies, many destroyed, heavily damaged, moderately damaged and slightly damaged structures were identified in the center and other neighborhoods of the Acıpayam district. Of the tents shipped from the AFAD logistic warehouses, 1,640 were set up, and a total of 3,072 blankets, 1,358 beds and 360 quilt covers were distributed.

(Source: Anadolu Agency)

Mozambique, Hurricane and Flood

To support the search and rescue activities in the aftermath of the floods that occurred due to the Idai Hurricane that struck Mozambique in March, water search and rescue equipment was deployed, along with a total of 50 personnel from the Search and Rescue Teams of the İstanbul and Sakarya AFAD Provincial Directorates and the Ministry of Health UMKE, the Turkish Red Crescent, AKUT and Anadolu Agency, who took part in 9 days of search and rescue operations under the coordination of AFAD.

Within the framework of humanitarian aid activities, 110 tents, 200 food parcels, 825 hygiene kits and 109 boxes of pharmaceuticals and medical supplies were delivered to Beira city by an aircraft assigned by the Turkish General Staff. The humanitarian aid sent by our country was distributed to the needy people by a humanitarian aid team consisting of personnel from AFAD, Turkish Red Crescent and TİKA.

(Source: Anadolu Agency)

Iran, Flood and Inundation

Upon an appeal for assistance from Iran due to the heavy rainfall that occurred in March that affected a significant proportion of the country, humanitarian aid including 120 tents, 120 kitchen sets and 600 blankets were sent by AFAD to Iran on April 17, 2019. The mentioned materials were delivered to Iranian officials by two accompanying personnel. The AFAD personnel returned Turkey on April 19, 2019.

(Source: Anadolu Agency)

Bayburt, Missing Person

Activities to locate Abdulkadir NİŞANCI, a 43-year-old reporter from Anadolu Agency who was taking photos of the highway workers working in the Soğanlı Mountain locality (Bayburt-Trabzon provincial border) in the Aydıntepe district of Bayburt province on May 10, 2019, were launched after it was reported that he had fallen approximately 600 m from a cliff.

The body of the missing reporter was located in the Derebaşı HPP Pond in the Çaykara district on May 23, 2019 after 13 days of searching. A total of 37 staff had been assigned to the search, along with 10 vehicles and a large number of water pumps, which were shipped to aid the search operation.

(Source: Anadolu Agency)

Trabzon, Flood and Deluge

On June 18, 2019, a flood hit the Araklı district of Trabzon after a stream burst its banks following a day of heavy rainfall. Eight members of the public died and two others remain missing. 93 people were saved as a result of the search and rescue mission.

The response activities involved a total of 350 personnel, who were dispatched to the field along with 61 vehicles, two helicopters, one mobile coordination truck, 77 items of construction equipment, one ship and two cadaver dogs, as well as many boats and water rescue equipment.

(Source: Anadolu Agency)

Turkish Republic of North Cyprus, CBRN

Upon an appeal for assistance by the authorities of the Turkish Republic of Northern Cyprus (TRNC) following a possible CBRN release due to a missile that fell in the vicinity of the Taşkent settlement on July 1, 2019, the AFAD Presidency dispatched the Adana AFAD CBRN team to the field. As a result of the measurements carried out by the mentioned team, no hazardous situations were noted.

(Source: Anadolu Agency)

Düzce, Flood and Deluge

Floods, deluges and landslides occurred in the Akçakoca, Gölyaka and Cumayeri districts of Düzce on July 17, 2019. For the response activities, teams from the Provincial AFAD Directorates of Sakarya and Zonguldak, as well as Gendarmerie Search and Rescue teams, were assigned to the field. Furthermore, six helicopters from the Turkish General Staff and the General Command of Gendarmerie, and an unmanned reconnaissance aircraft from the Turkish National Police, were dispatched to the region. Following the notification received on July 18 that seven people stranded in the Esmahanım village of the Akçakoca district, retrieval activities were launched, and the bodies of all seven people had been found by July 29.

A total of 262 citizens in various villages of the Cumayeri and Akçakoca districts were rescued and carried to safe areas. Damage assessment studies found 181 buildings to have been destroyed/heavily damaged. Based on the assessment that the flood disaster experienced throughout Düzce had affected the life of general public, and accordingly a Formal Decision was taken for the area.

(Source: Anadolu Agency)

Denizli, Earthquake

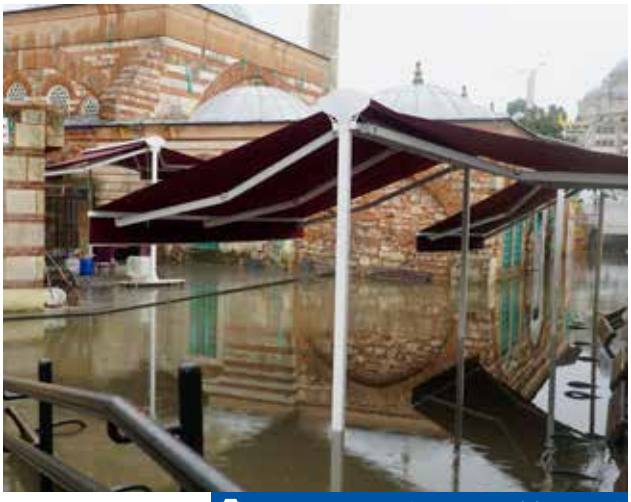
A 6.0 magnitude earthquake at a depth of 6.96 kilometers occurred at 14:25 on August 8, 2019 in the Bozkurt district of Denizli. A total of 92 people who had been directly affected by the earthquake were treated in hospital. Two mobile tent hospital units were established in the yard of Çardak State Hospital. 55 search and rescue personnel were assigned along with 11 vehicles from the Provincial AFAD Directorates of Denizli, Afyonkarahisar, İzmir, Burdur, Sakarya and Isparta. 1 helicopter was deployed by the Turkish National Police to carry out aerial reconnaissance studies.

To meet the nutritional needs of the victims, Turkish Red Crescent deployed 70 personnel, 14 vehicles and two catering vehicles, and sent 3,000 kitchen sets. Breakfast for 2,000 people and meals for 3,000 people were distributed throughout the region. A total of 703 destroyed/heavily damaged structures were identified in the Çardak and Bozkurt districts of Denizli, and in the Dazkırı district of Afyonkarahisar. 671 tents, two containers, 250 blankets and 100 beds were dispatched to satisfy the need for shelter.

(Source: Anadolu Agency)

Nationwide, Heavy Rainfall

Rainfall at various levels throughout the country had considerable effects in the İstanbul, Kocaeli, Sakarya, Bartın, Bilecik and Ankara provinces, and slight effects in the Samsun, Sinop, Kastamonu, Karabük, Zonguldak, Düzce and Bolu provinces. One person died in İstanbul, and 3,134 notifications were intervened with 1,846 vehicles and 3,805 personnel. 28 citizens and seven vehicles were rescued in Kocaeli as part of the responses to 103 notifications. 700 seasonal workers in Sakarya were transferred to a safe area, and their food and sheltering needs were met. In Ankara, food and sheltering materials were dispatched to agricultural workers, and four notifications were responded to. During the response to the flood in Bilecik, the teams located four survivors and retrieved the body of one more. In Bartın, following an accident in heavy rain in which a vehicle fell into a reservoir in heavy rain, the teams went on to rescue one wounded person and the bodies of four citizens.



(Source: Anadolu Agency)

İzmir, Forest Fire

A forest fire in the Tırazlı neighborhood of the Karabağlar district of İzmir at around 13:00 on August 17, 2019 also partially affected the Menderes, Seferihisar and Gaziemir districts. For the responses against the forest fire, carried out in coordination with the Ministry of Agriculture and Forestry, 237 water trucks, 19 helicopters, 19 dozers, approximately 1,000 Ministry personnel, eight vehicles, 69 personnel from the İzmir AFAD Directorate; as well as nine personnel and three ambulances from the Ministry of Health, and 209 personnel from the İzmir Metropolitan and district municipalities were deployed. As a result of the efforts, the fires that encroached on the Seferihisar, Gaziemir and Menderes districts, were completely extinguished. The fire in Karabağlar district was taken under control on August 21, and cooling works were carried out.

(Source: Anadolu Agency)

Samsun, Flood and Deluge

Floods and deluges of varying degrees struck Samsun as a result of the heavy rainfall experienced in the province on August 23, 2019. The Terme and Salıpazarı districts, and the Kırgıl, Dikencik, Köybucağı, Akbucak, Sarayköy, Albak, Esatçiftliği, Tahnal, Konakören, Yeşil and Cevizli neighborhoods were affected by floods resulting from the rainfall in especially the eastern districts of Samsun. The response activities were carried out by teams consisting of a total of 175 personnel and 74 vehicles assigned by the Samsun AFAD Directorate, the Provincial Gendarmerie Command, Coast Guard Command, the Municipality, the Regional Directorate of Highways and the Provincial Health Directorate. As a result of the floods, two citizens died, while 75 citizens were transferred to safe areas. A total of 21 destroyed/heavily damaged structures were identified in the Terme and Salıpazarı districts.

(Source: Anadolu Agency)

Albania, Earthquake

On November 26, 2019, a 6.2 magnitude earthquake at a depth of 6.9 km struck Durres, a city 30 km from Tirana, Albania, killing 51 people, injuring 913 others and damaging many buildings. Following an international appeal for assistance from Albania, Turkey deployed, under the coordination of AFAD, a total of 27 personnel to the region with an aircraft allocated by the Turkish General Staff. On the return flight, 23 Turkish citizens living in Albania were evacuated. Our teams carried out search and rescue activities in the region until November 29, 2019, when the search and rescue activities throughout the country came to an end. In total, 2,100 food packages, 270 tents, 2,900 blankets, 300 beds, 100 hygiene sets and 150 heaters were sent to the region under the coordination of AFAD.

(Source: Anadolu Agency)

Bursa, Missing Person

After Mert ALPASLAN (31) and Efe SARP (37) were reported missing in Uludağ, Bursa on December 1, 2019, search and rescue efforts were initiated by the Governorship of Bursa and continued for 17 days with the participation of public officials, members of civil society and volunteers, all operating under the coordination of Bursa AFAD Directorate. The teams located the bodies of the missing persons on December 18, 2019.

Depending on the weather conditions, the number of personnel involved in the search varied, with 240 personnel involved during the most intense period. Snowbikes, tracked and 8X8 amphibious vehicles, aircraft and metal detectors were used during the search. The search was aided from the air by a manned reconnaissance aircraft and two public order helicopters assigned by the General Command of Gendarmerie.

(Source: Anadolu Agency)

2.4. Recovery

2.4.1. Formal Decisions for Regions in which the Life of the General Public has been Affected

Pursuant to Article 1 of Law No. 7269, amending Law No.1051, the decision of whether disasters that have occurred or that are likely to occur affect the life of the general public is given in accordance with the principles of the "Regulation on Basic Rules regarding the Effectiveness of Disasters to the Life of the General Public".

Our citizens who are victims of disasters, and who meet the necessary conditions, may benefit from loans under certain conditions to replace destroyed or heavily damaged houses, barns or workplaces; or from reinforcement loans, also under certain conditions, to repair moderately damaged houses, barns and workplaces.

In order for beneficiaries to benefit from these supports provided within the scope of Law No. 7269, it is necessary for a Formal Decision for Regions in which the Life of the General Public has been Affected to be taken.

In this context, the number of "Formal Decisions for Regions in which the Life of the General Public has been Affected" taken following various disasters that have occurred in Turkey in 2019 by provinces is as follows.

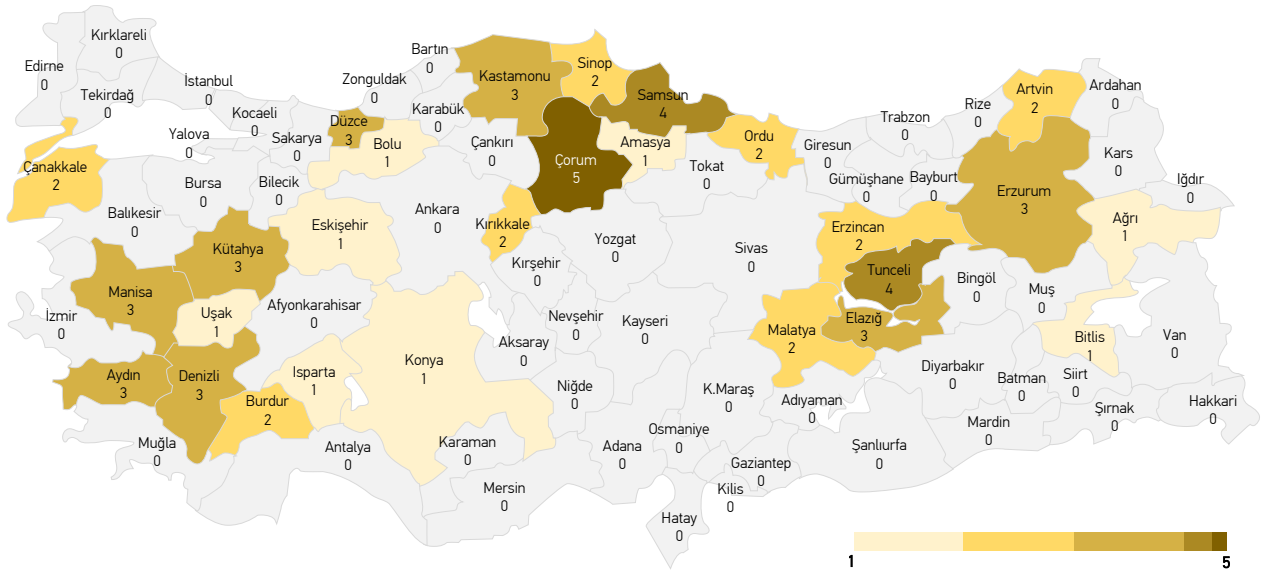


Figure 30. Distribution of the number of General Life Effectiveness Decisions taken in 2019 by provinces

In 2019, 61 Formal Decisions for Regions in which the Life of the General Public has been Affected were taken in 27 provinces. A total of five such decisions were made for Çorum, four each for Samsun and Tunceli, and three each for Aydın, Denizli, Düzce, Elazığ, Erzurum, Kastamonu, Manisa and Kütahya.

2.4.2. Emergency Relief

To meet the urgent basic needs (shelter, nutrition, etc.) of the victims and to repair the damaged infrastructure (drinking water, sewerage, road, retaining walls, culvert, etc.) in such a way as to be functional to a minimum level, emergency relief appropriations are made in the provinces in accordance with the principles stipulated in the legislation. Emergency relief appropriations can be made for structural damages, and also for damage to roofs and houseware in residences, as well as for infrastructural damages. The aim of such appropriations, made under Law No. 4123, is to return damaged infrastructure within the responsibility area of municipalities or special provincial administrations to the pre-disaster state.

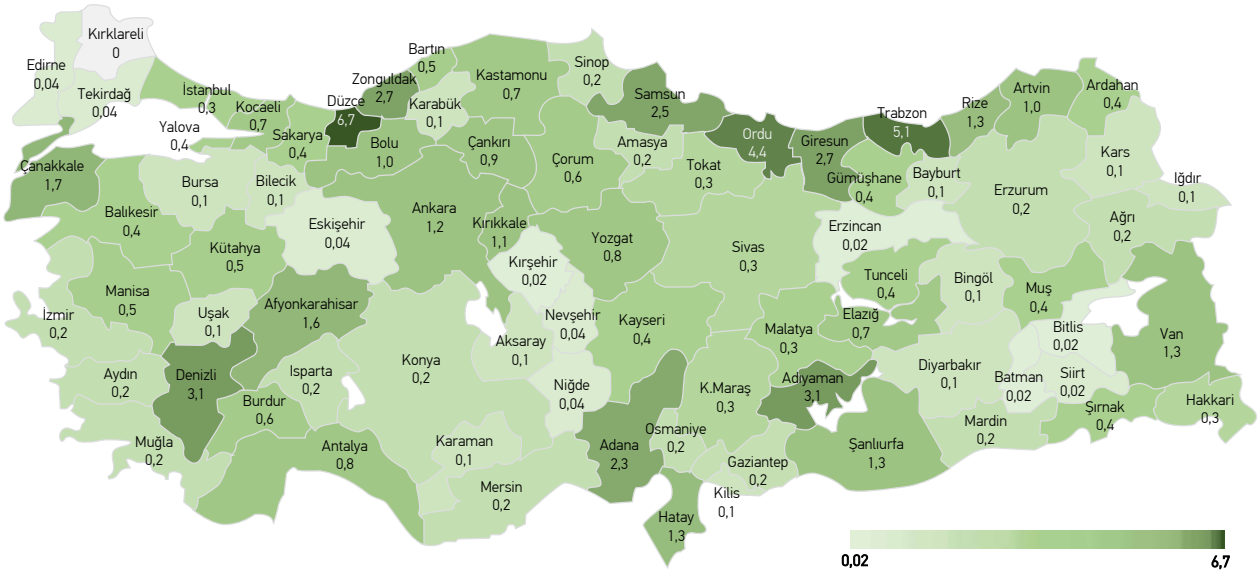


Figure 31. Distribution of emergency relief appropriations made in 2019 by provinces (million TRY)

A total of TRY 61,823,171 emergency relief was appropriated and sent to the affected provinces to meet urgent needs in the wake of the disasters that occurred throughout 2019. Among the recipient provinces, Düzce ranks first with appropriations amounting to 6.7 million TRY, followed by Trabzon with 5.1 million TRY. In 2019, emergency relief appropriations in varying amounts were sent to all provinces, aside from Kırklareli.

In accordance with Law No. 4123, appropriations amounting to a total of TRY 468,649,500 were made throughout 2019 to address the damage to infrastructure that occurred in the provinces. Among the provinces that were recipients of these appropriations, Ordu ranked first, with appropriations amounting to 88.3 million TRY, followed by Düzce with 46.7 million TRY, Batman with 24.4 million TRY and Trabzon with 20 million TRY. Unlike emergency relief appropriation, the number of provinces that were not sent an appropriation under Law No. 4123 in 2019 is 16.

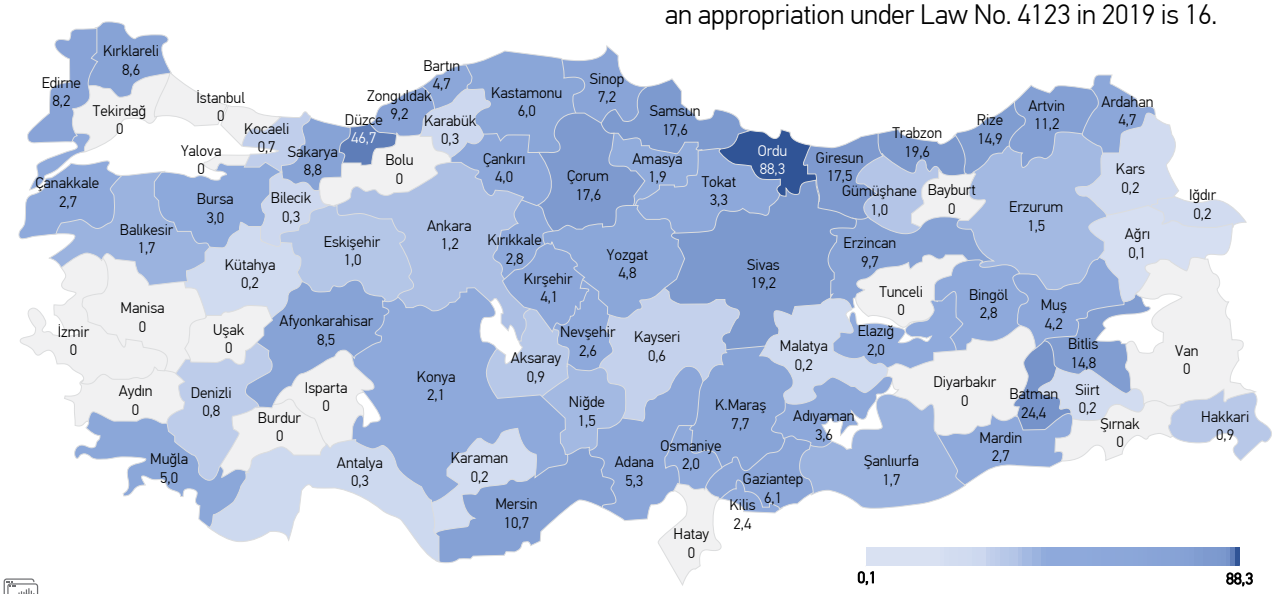


Figure 32. Distribution of appropriations made in 2019 for infrastructure damages under Law No. 4123 by provinces (million TRY)

2.4.3. Disaster Housing

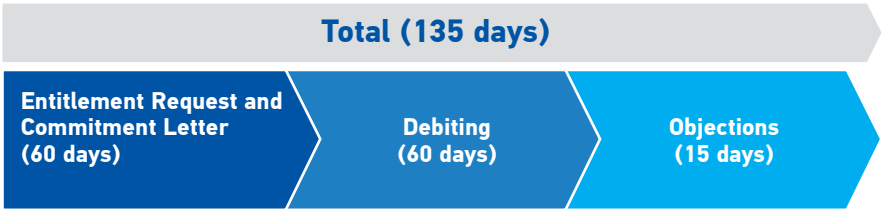
In accordance with the relevant articles of Law No. 7269 on the Measures and Assistance to be Put into Effect Regarding Disasters Affecting the Life of the General Public, AFAD is authorized and responsible for: the way assistance is to be provided for construction and repair to those who have suffered or are likely to suffer from disasters; the amount of assistance; the basis for sorting the beneficiaries; the forms of application and request; and the locations, numbers, types, building conditions, construction styles, dimensions and other related issues of the buildings to be built.

As per the law, victims of disasters who can prove their ownership of buildings that have been destroyed/heavily damaged, or that are vulnerable to potential disasters, and who are qualified to receive a new building or a construction loan, are considered as beneficiaries. Beneficiaries are provided housing by AFAD through practices based on various principles.

- Self-Help Housing (SHH) method,
- Credit provision method for the procurement of ready housing
- Tender method
- Provision of housing via TOKİ

In disaster regions where the construction of mass housing is not considered necessary by AFAD, the SHH method is applied for the constructions of beneficiary disaster victims under the technical supervision and control of AFAD. Credit amounts are transferred to beneficiaries in proportion to percentage shares.

Beneficiaries who meet the application conditions stipulated in the Ready Housing Credit Circular can be provided with credits for the purchase of ready housing. In such a situation, if the number of applicants is high, priority is given to beneficiaries that have become homeless as a result of the disaster.



Should the selection of locations for disaster housing be made collectively, the houses can be constructed on tender basis.

Through this approach, permanent housing projects can be realized by AFAD, or may be realized by the Ministry of Environment and Urbanization and İller Bankası, depending on the number of applications.

Table 9. Payback periods and interest rates for heavily and moderately damaged buildings

Damage Level	Type of Structure	Maturity (Years)	Payment	Interest
Heavily Damaged	Residence/Barn	20	Grace period for the first two years, then equal installments over 18 years	Interest-free
	Workplace	10	Grace period for the first two years, then equal installments over eight years	4%
Moderately Damaged	Residence/Barn	10	Grace period for the first two years, then equal installments over eight years	Interest-free
	Workplace	5	Grace period for the first year, then equal installments over three years	4%

*The debt of beneficiaries who pays off the current debt in full before the maturity date will be subjected to a 20% discount, provided that the remaining maturity period is not less than two years.

Credits for heavily damaged structures are facilitated as follows: grace period for the first two years, then equal installments for 18 years without interest for housing and barns; grace period for the first two years, and then equal installments for 8 years at an interest rate of 4% for workplaces.

Credits for moderately damaged structures are facilitated as follows: grace period for the first two years, then equal installments for 8 years without interest for housing and barns; grace period for the first year, then equal installments for 3 years with an interest rate of 4% for workplaces.

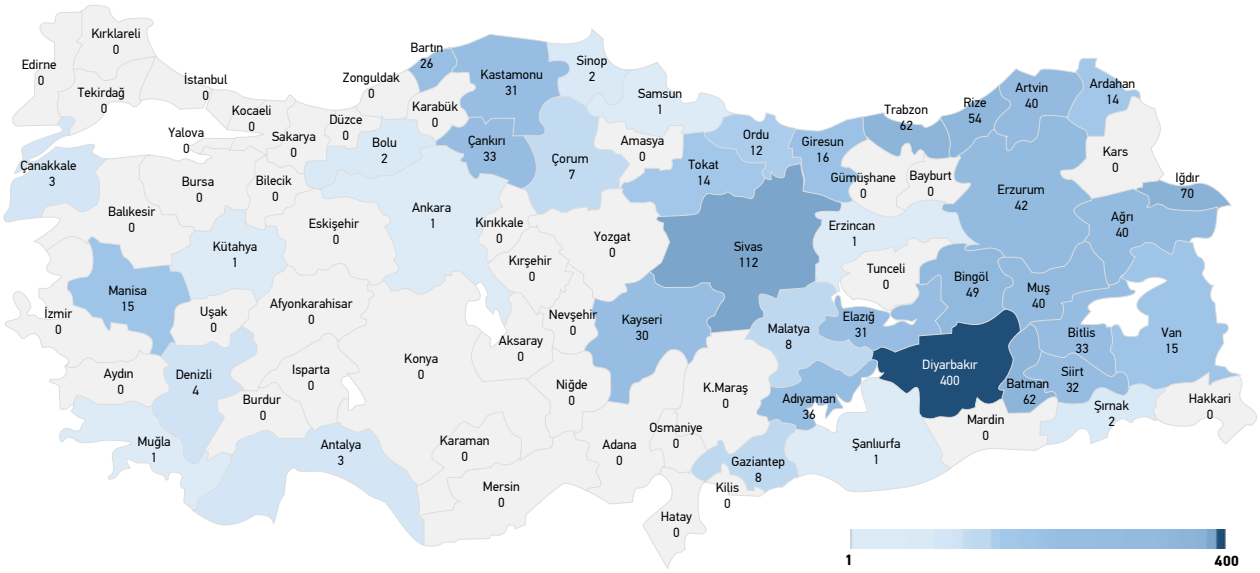


Figure 33. Distribution of disaster housing constructed/purchased in 2019 by provinces

Within the scope of disaster housing, a total of 1,354 dwellings were constructed/purchased in 40 provinces in 2019. The top three provinces in this regard were Diyarbakır with 400 dwellings, Sivas with 112 dwellings and Iğdır with 70 dwellings.

The number of houses constructed through SHH was 1,056, while 180 houses were purchased through a ready housing procurement model and 118 houses were provided by TOKİ.

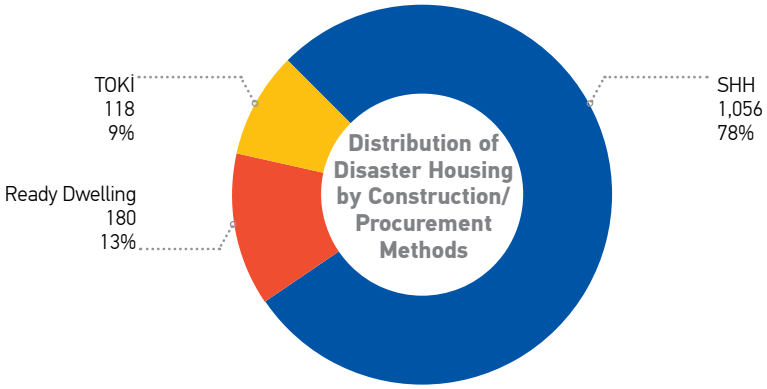


Figure 34. Distribution of disaster housing constructed/procured in 2019 by construction/procurement type

Disaster housing (SHH) constructed in Çankırı

AFAD

2019 Overview for Disaster Management and Natural Disaster Statistics

3.

NATURAL INCIDENT STATISTICS

3. NATURAL INCIDENT STATISTICS

3.1. Earthquakes

In Turkey, earthquakes are the most destructive of all disaster types in terms of losses of both lives and property. Approximately 60 percent of the loss of life related to disasters is due to earthquakes. Turkey is located on the Mediterranean-Alpine-Himalayan belt, which is one of the most active seismic belts in the world. This is an active belt that is responsible for almost 20 percent of the earthquakes occurring around the world, generating a destructive earthquake in Turkey in every five years, on average.

The Earthquake Monitoring and Evaluation Center within the AFAD Earthquake Department continuously monitors and analyzes all seismic movements occurring in Turkey and its vicinity throughout the year. Earthquakes are currently recorded from a total of 1,100 stations, 795 of which are accelerometers and 305 of which are speedometers. Within a period of 10 years from 2009 to 2019, the number of accelerometers in the country has been tripled and the number of speedometers has been doubled. Speedometers measure the parameters (time, magnitude, depth and coordinates) of earthquakes. Accelerometers are used to measure the destructive forces generated by earthquakes.

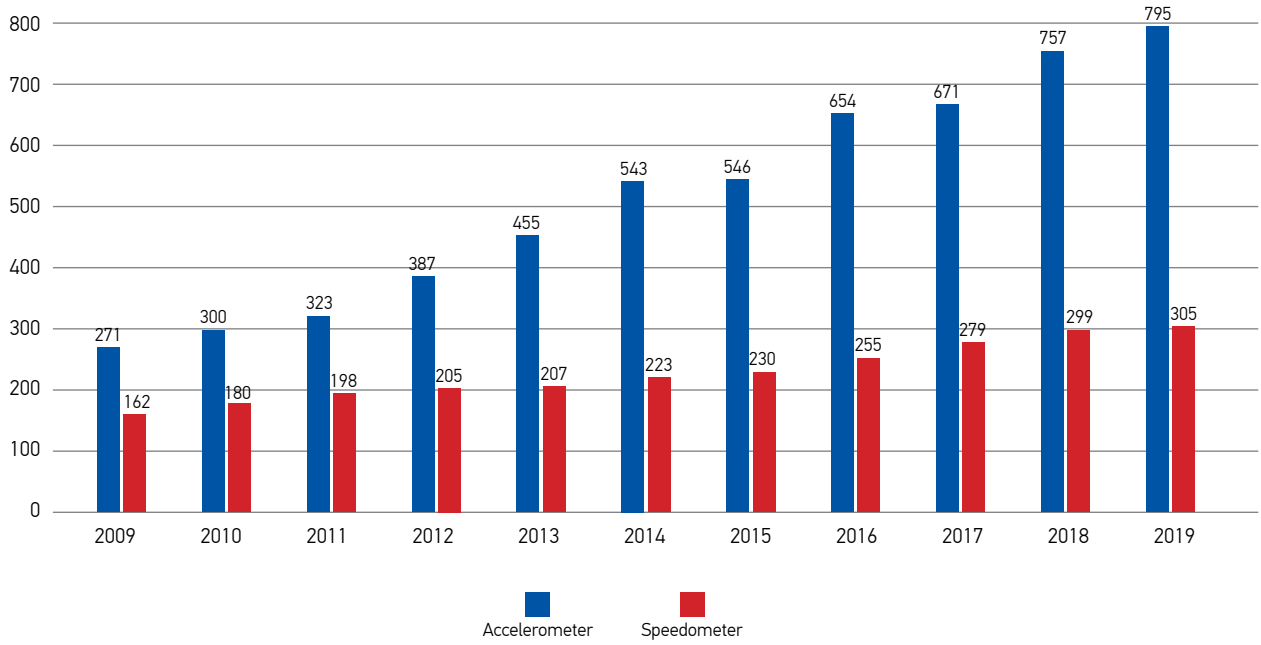


Figure 35. Number of stations measuring acceleration and speed in the 2009–2019 period

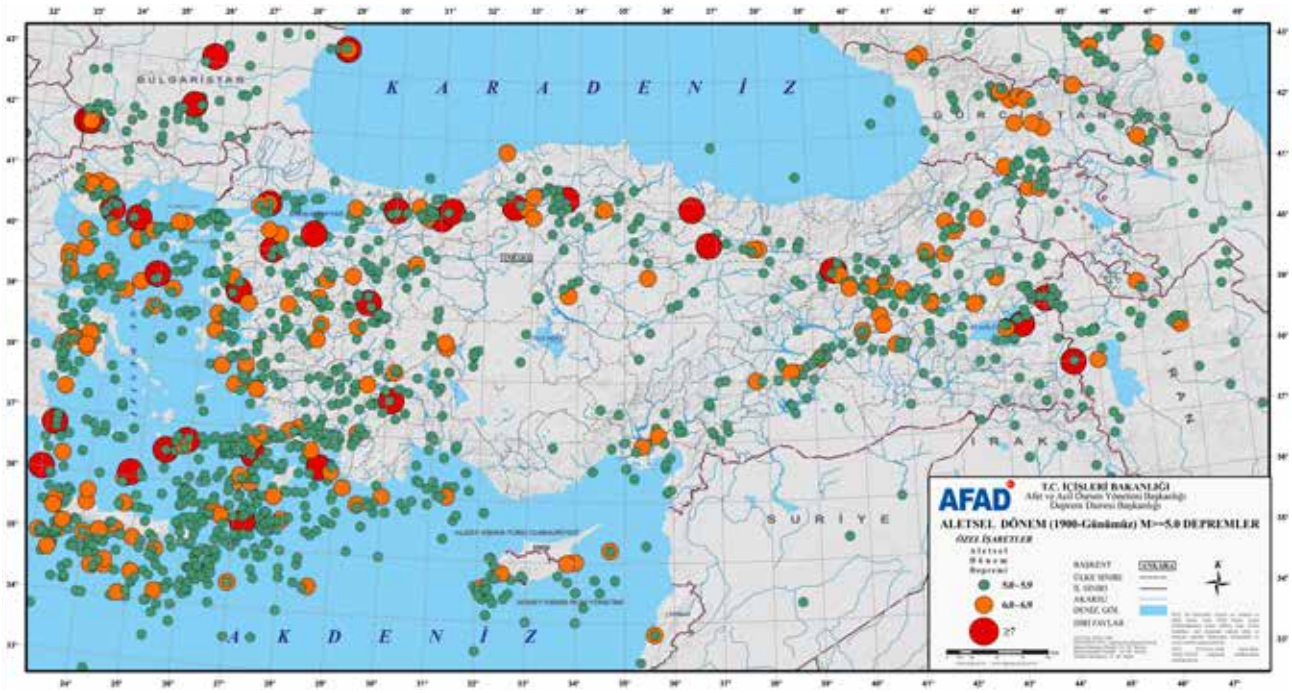


Figure 36. M>5.0 earthquakes occurring in Turkey and its vicinity in the instrumental period

The map shows earthquakes of magnitude 5.0 and more recorded in Turkey and its vicinity from 1900 to the present day, which is referred to as the instrumental period. During this 120-year period, 1,796 earthquakes with a magnitude of at least 5.0 have been recorded. In general, the map resembles the form of the Turkey Earthquake Hazard Map.

Indeed, the earthquake locations pinpointed on the map offer a clear indication of the routes of the North Anatolian Fault Line, the Eastern Anatolian Fault Line and the fragmented structure known as the Aegean Collapse System. Other than these, the seismic intensity in the North Aegean and West Mediterranean regions are also worthy of note.

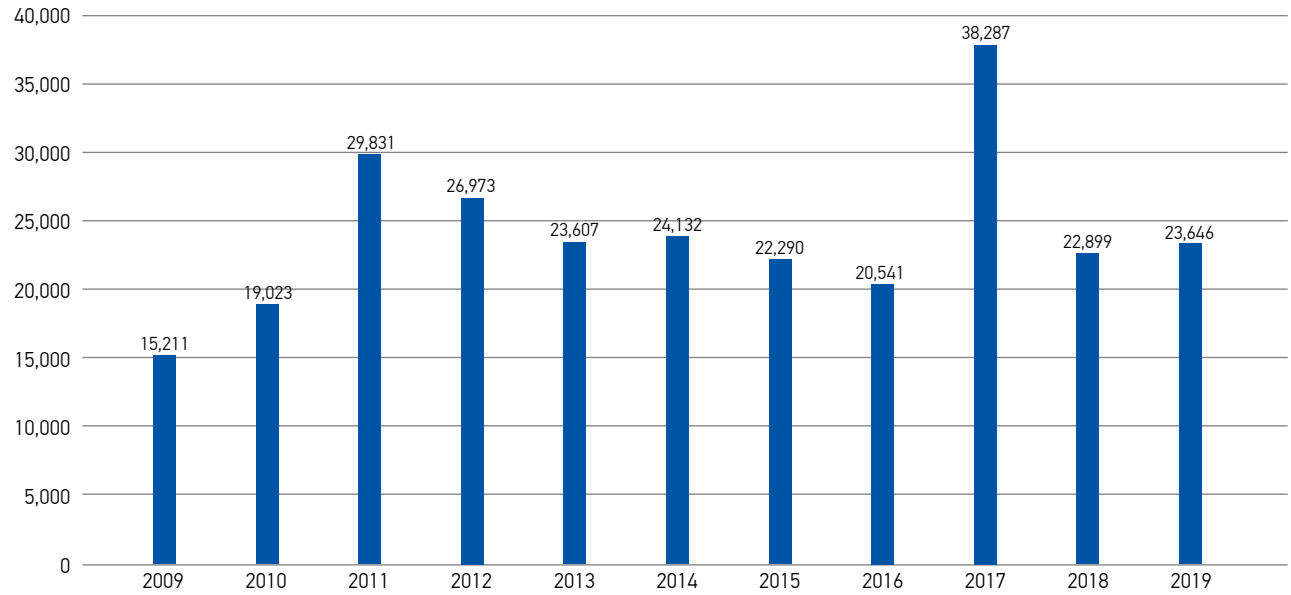


Figure 37. Number of earthquakes recorded by years (2009–2019)

AFAD is the only institution authorized to analyze the data on earthquakes in Turkey, and to release the results of such analyses to the public. The numbers of earthquakes recorded by the AFAD earthquake observation systems since 2009 are presented in the chart. A total of 23,646 earthquakes were recorded in Turkey and its vicinity in 2019. When the distribution of these earthquakes by magnitude is analyzed, it can be seen that most are imperceptible minor earthquakes.

The number of relatively major earthquakes recorded are as follows: 164 earthquakes with magnitudes of 4.0–4.9, 18 earthquakes of 5.0–5.9 magnitude, and 2 earthquakes exceeding 6.0 magnitude. These 184 major earthquakes (of 4.0 and more) in 2019 correspond to approximately 0.8 percent of all earthquakes.

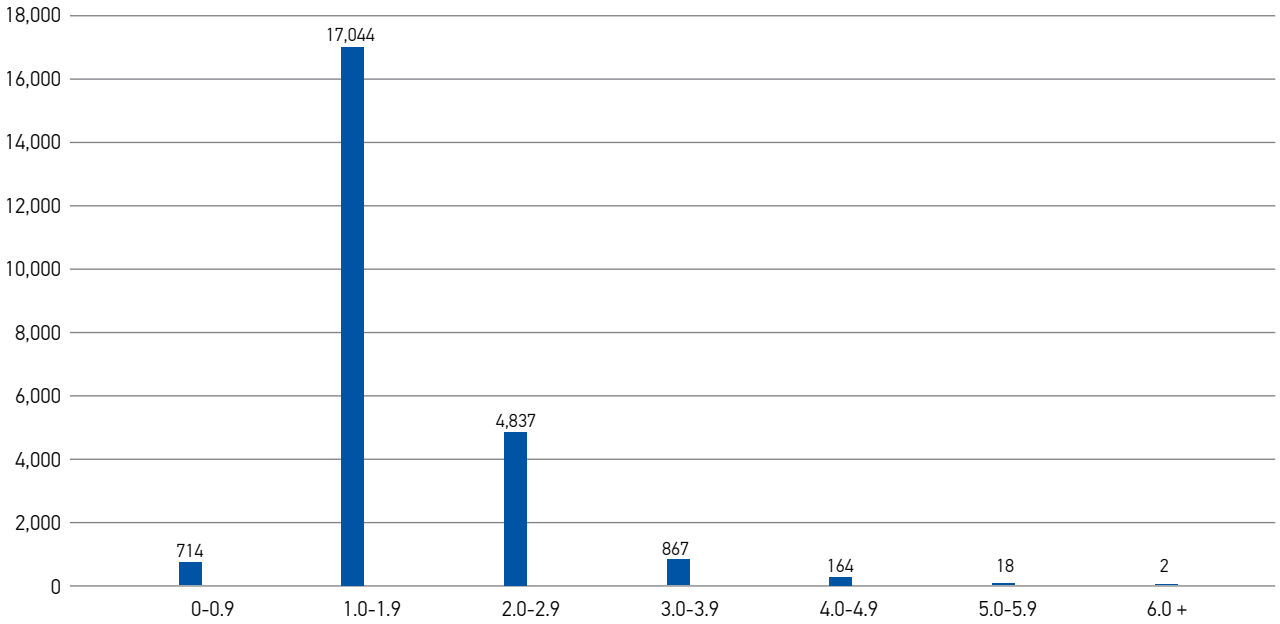


Figure 38. Breakdown of earthquakes occurring in 2019 by magnitude

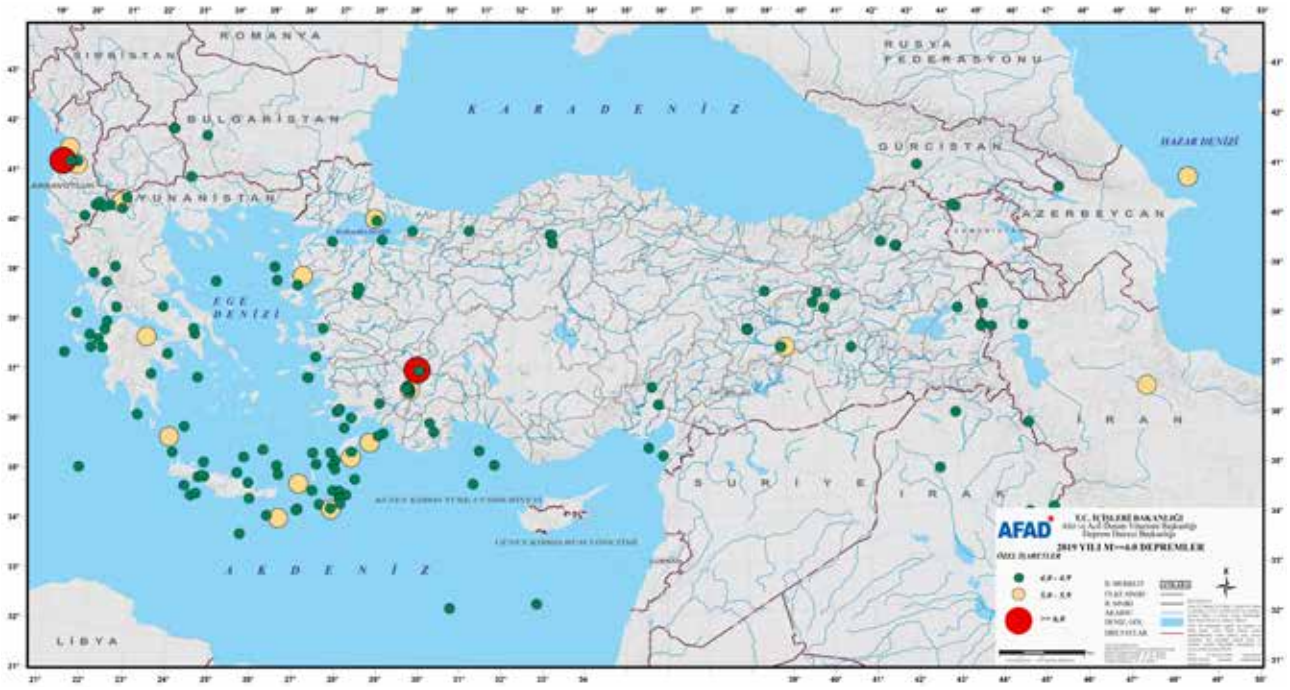


Figure 39. M>4.0 earthquakes occurring in Turkey and its vicinity in 2019

In 2019, there was no earthquake in Turkey that caused significant damage. The earthquake of magnitude 6.0 that struck the Bozkurt district of Denizli on August 8, 2019, was the largest earthquake recorded in Turkey in 2019.

This was followed by the 5.8 magnitude earthquake that hit off the coast of Silivri, İstanbul on September 26, 2019, and the earthquake with a magnitude of 5.5 in the Acıpayam district of Denizli on March 3, 2019.

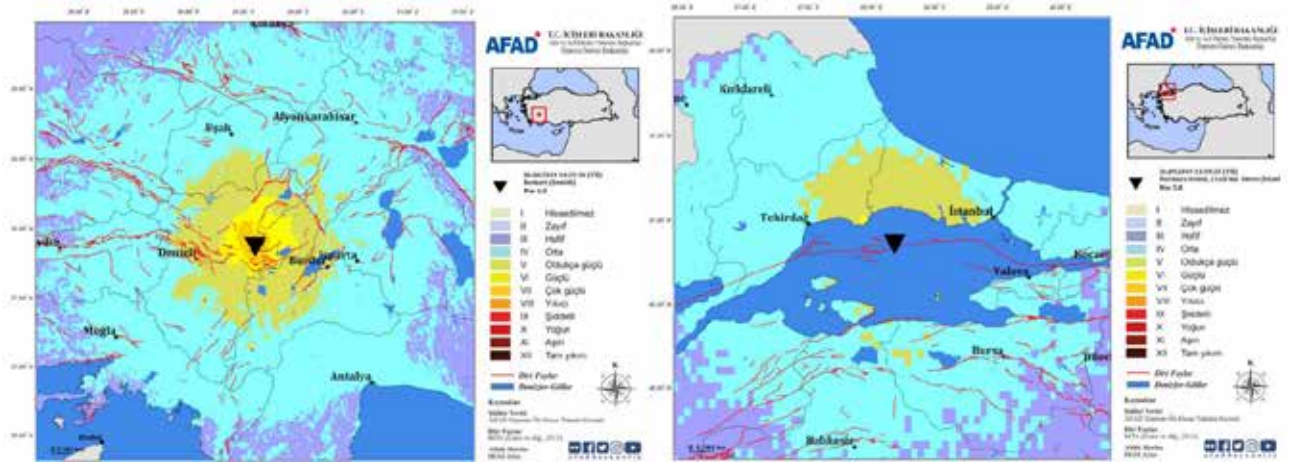


Figure 40. Maps of AFAD-RED damage estimations for Bozkurt and Silivri Earthquakes

3.2. Landslides/Rockfalls

The term "landslide" refers to the downward movement of rocks, debris and earth, or any combination thereof, under the effect of gravity. It should be noted that the definitions and assessments made in this report take into account rockfalls, slides, flows or mass movements when these are observed together, which all occur frequently in Turkey.

An analysis of the landslides that have occurred in Turkey to date indicates that they mostly take the form of rock falls, slides or flows, or of mass movements in which all of these phenomena are observed together. Due to local geological and geomorphological characteristics, landslides are most often observed in the Black Sea region of Turkey, but also in the Eastern and Central Anatolian regions.

Figure 41. Turkey Landside Susceptibility Map

According to the data of the 70-year period from 1950 to 2019, Trabzon suffered the most from landslides, with 1,673 recorded. This equates to an average of 24 landslides per year. Trabzon is followed by Rize, with 1,319 landslides in total; Erzurum, with 939 landslides in total; and Giresun, with 915 landslides in total. These four provinces account for almost 21 percent of the 23,286 landslides reported in Turkey since 1950. In other words, one-fifth of the landslides witnessed in Turkey since 1950 have occurred in the provinces of Trabzon, Rize, Erzurum and Giresun. These provinces are followed by Artvin, with 771; Kastamonu, with 768; Bingöl, with 695; Malatya, with 688; Sivas, with 668; and Erzincan, with 622.

In contrast, many of Turkey's provinces – including Kırklareli, Edirne, Tekirdağ, Kırşehir, Mardin, Şırnak, Kilis, Şanlıurfa, Uşak, Ardahan, Bilecik, Istanbul and Eskişehir – rarely experience landslides. The data gathered over the last 70 years shows that the number of landslides occurring in those provinces every year averages less than one.

An analysis of the available data reveals a relationship between elevation and the number of landslides occurring every year. The number of landslides that have occurred in regions at low elevations, such as Thrace and Southeastern Anatolia, is low, whereas the number is quite high in the Eastern Black Sea and Eastern Anatolia regions.

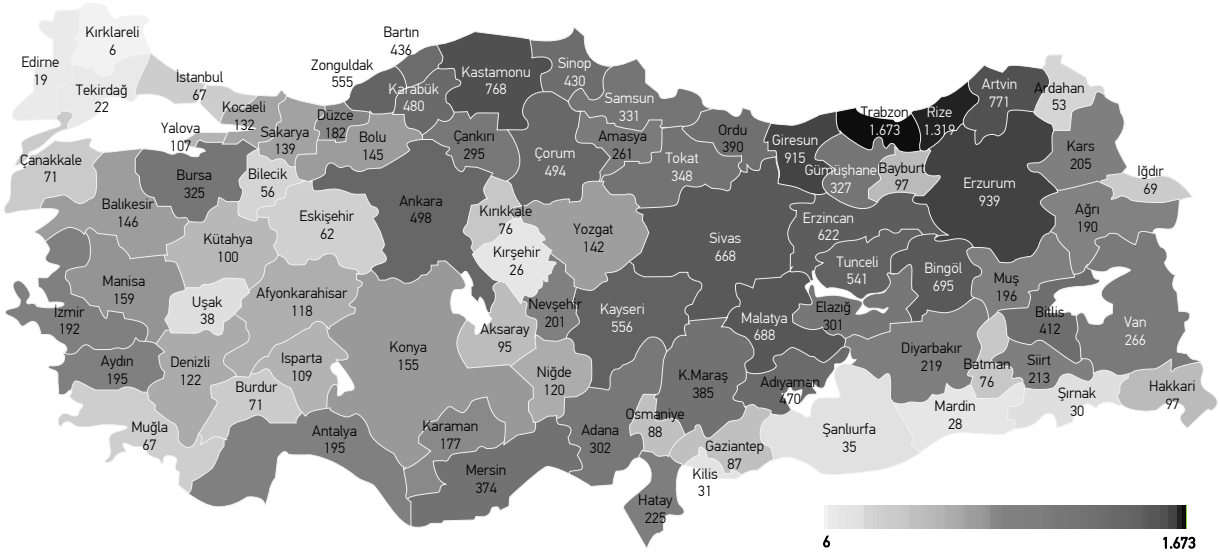


Figure 42. Numbers of landslide/rockfall incidents in Turkey in the 1950–2019 period by provinces

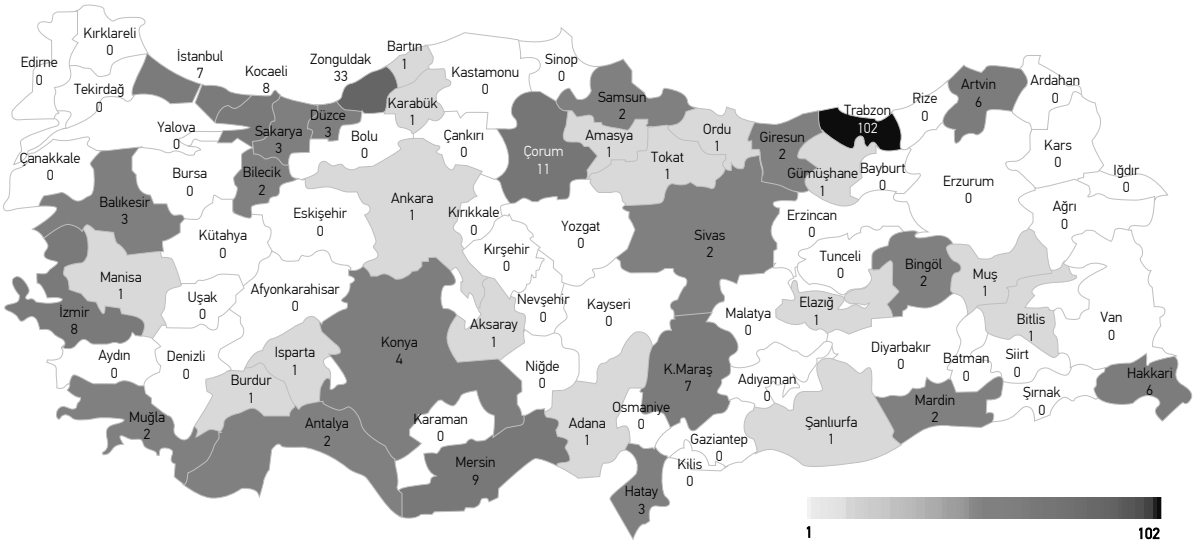


Figure 43. Number of landslide/rockfall incidents in Turkey in 2019 by provinces

The total number of landside/rock fall incidents reported in 2019 was 245. Trabzon ranks highest in numerical terms, with 102 landslides in 2019. It is followed by Zonguldak with 33 incidents, Çorum with 11 incidents, Mersin with nine incidents, and İzmir and Kocaeli with eight incidents each. In contrast, there were no reported landslides/rockfalls in 42 of Turkey's provinces in 2019.

Gümüşhane Trabzon highway

Zonguldak

Zonguldak

Zonguldak

3.3. Floods

Floods/deluge are frequently observed in Turkey. They occur when water levels rise or when water flows from another place, covering generally dry surfaces. There are three classifications of floods, differentiated depending on how fast they occur, being those that develop slowly, those that develop rapidly and flash floods. A flood is referred to as slow if it develops over a week or longer, a rapid flood develops within one or two days, and a flash flood occurs within hours. Floods are referred to as shore floods, city floods, dry stream floods, dam/pond floods and stream (creek and river) floods, depending on the area in which they occur.

The capacity of riverbeds can quickly be exceeded as a result of precipitation in mountainous areas and rapid thaw in hilly areas, leading to flash floods. These kinds of floods increase the risk of landslides in foothill settlements, and so can be quite dangerous.

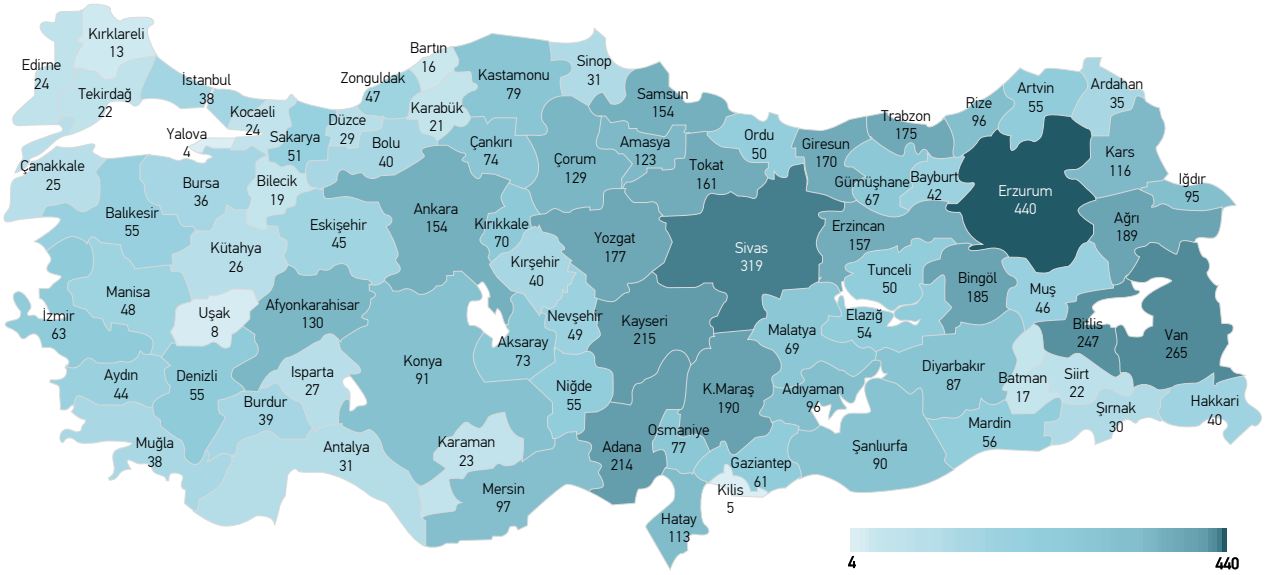


Figure 44. Number of flood incidents in Turkey in the 1950–2019 period by provinces

A breakdown of floods/deluges that have occurred since 1950 indicates that Erzurum ranks as the worst affected province, with 440 reported incidents. This is followed by Sivas with 319, Van with 265, and Bitlis with 247 incidents.

On the other hand, a very low number of floods have been recorded in provinces such as Yalova, Kilis and Uşak. A general assessment of the flood map of Turkey indicates that the risk of flood increases as one moves from west to the east and from the south to north of Turkey.

Sakarya

Düzce Akçakoca

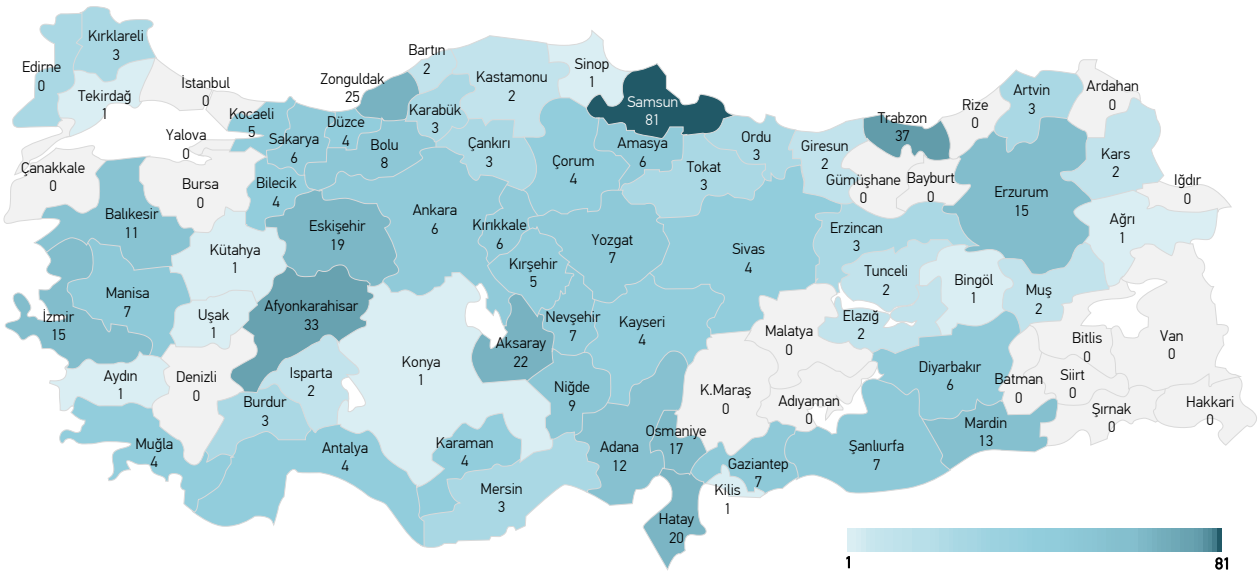
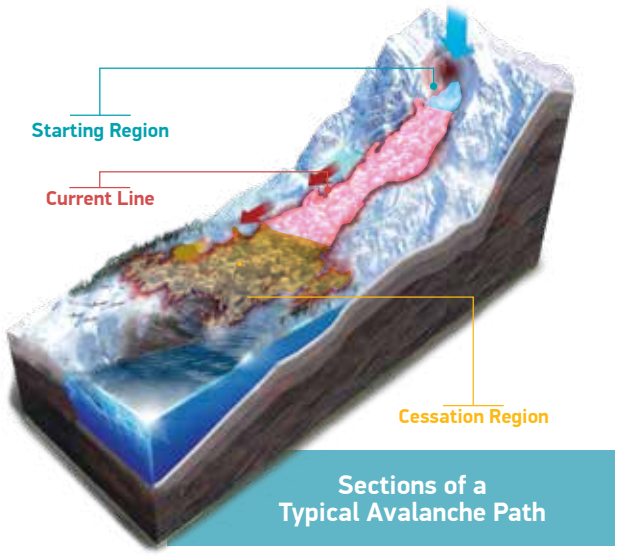


Figure 45. Number of flood incidents in Turkey in 2019 by provinces

The total number of flood incidents reported in 2019 was 499. Samsun ranks highest in numerical terms, with 81 landslides occurring annually, followed by Trabzon with 37 incidents, Afyonkarahisar with 33 incidents, Zonguldak with 25 incidents and Aksaray with 22 incidents. In contrast, there were no reported floods in 19 provinces in 2019.

3.4. Avalanches

An avalanche occurs when a mass of snow is set in motion over a slippery surface, the movement of which cannot be arrested by natural or artificial obstacles. Barriers, whether artificial or natural, such as thick forest, snow fences or diversion walls, may prevent an avalanche from starting, may halt an already moving avalanche, or may reduce its effects.



Sections of a Typical Avalanche Path

Accordingly, avalanches mostly occur on inclined surfaces where there is little or no vegetative cover, which facilitates the movement of the snow. Avalanches mainly form when a weak layer beneath the snow cover is unable to support the snow load above it.

An analysis of the avalanches that have occurred since 1950 in Turkey shows that Bingol ranks first in numerical terms, with 274 incidents. This is followed by Bitlis with 265, Tunceli with 170 and Malatya with 81 avalanches. The avalanches that have occurred in these four provinces represent 49 percent of all avalanches for Turkey. In other words, almost half of all avalanches that have occurred in Turkey since 1950 have occurred in the provinces of Bingöl, Bitlis, Tunceli and Malatya.

A detailed examination of the map indicates that elevation and seasonal effects are the main determining factors behind avalanches. Accordingly, avalanches are most frequently observed in the Eastern Anatolia and Eastern Black Sea regions, while the number of avalanches in other regions is low.

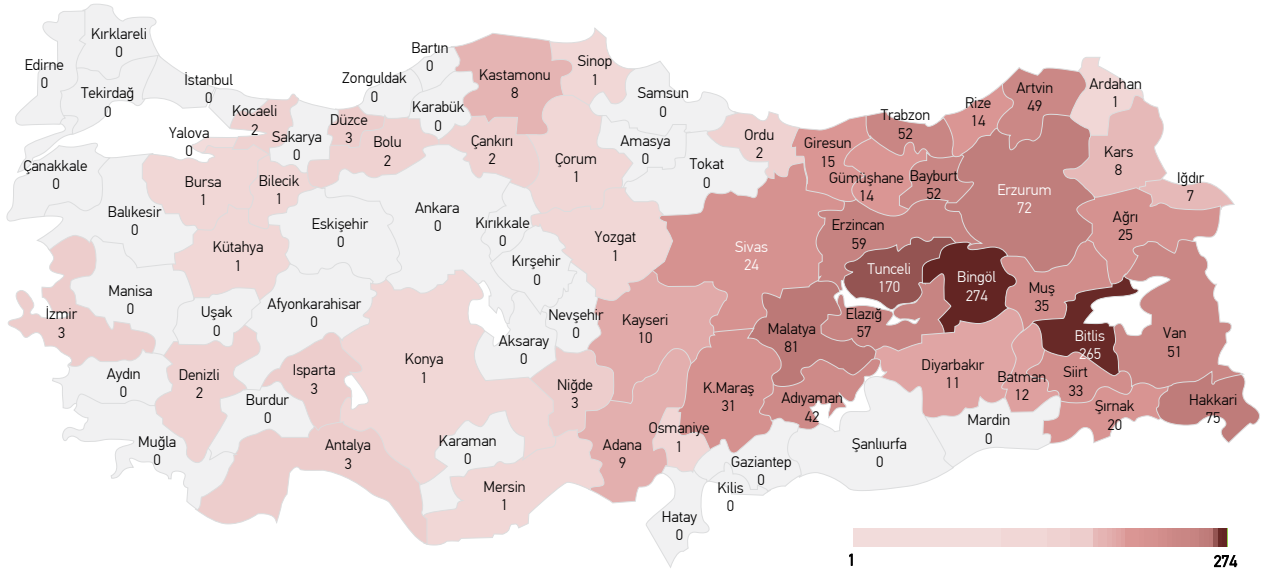


Figure 46. Distribution of the number of avalanche incidents in Turkey in the 1950–2019 period by provinces

Having followed a flat trend until the 1990s, avalanche numbers began to fluctuate in 1992. Some years stand out in terms of the number of avalanches, with 158 in 1992, 104 in 2006, 159 in 2007, 144 in 2008, 110 in 2010 and 155 in 2011 being particularly noteworthy.

There has been a decline in the number of avalanches since 2012 when compared to previous years.

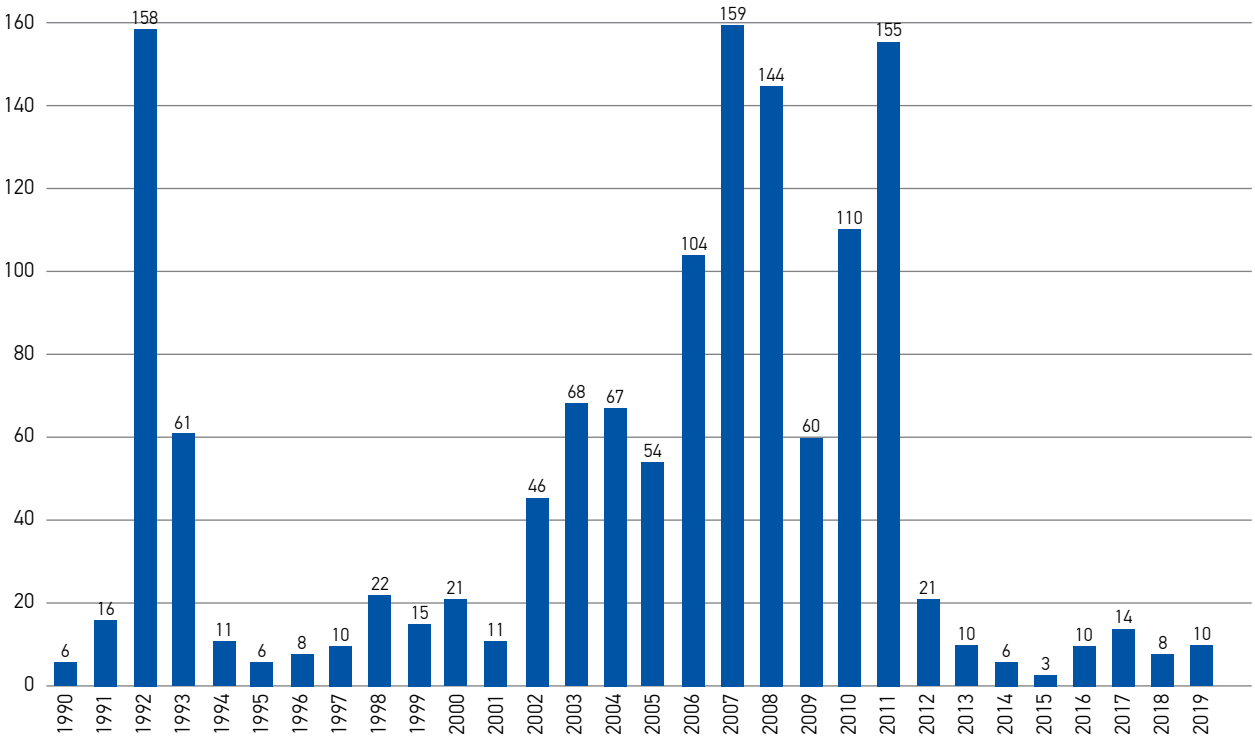


Figure 47. Variation of avalanches in Turkey in the 1950–2019 period by years

Figure 48. Number of avalanche incidents in Turkey in 2019 by provinces

The total number of avalanche incidents reported in 2019 was 10. The breakdown of avalanche incidents by provinces is as follows: four in Kahramanmaraş, two in Tunceli and one each in Artvin, Erzurum, Van and Hakkari.

Van Hakkari highway

Van Hakkari highway

AFAD

2019 Overview for Disaster Management and Natural Disaster Statistics

4.

GLOSSARY

4. GLOSSARY

Some Fundamental Terms Related to Disasters and Emergencies

(Source: AFAD Disaster Management Terms Glossary)

a hazard map is a map drawn up based on specific criteria in order to show the potential scope and severity of hazards arising from nature, human activity and technology.

a risk map is a map showing the potential losses that may be suffered by the infrastructure and superstructure of settlements exposed to risks, as well as threats to population density, continuity of works and services, physical, economic and social losses and losses of natural resources.

beneficiary refers to a disaster victim who can document that he or she is the owner of a building that has been destroyed or that has suffered heavy damage, or that is vulnerable to a potential disaster, and who are entitled to receive a new building or a construction loan.

building inventory refers to all information acquired through a process of identification and recording, carried out to determine the number existing buildings of any form, as well as building materials, building systems and their age.

civil community refers to a group of people engaged in social activities based on the decisions of independent citizens, and that do not form a part of the hierarchy or control mechanisms of central and local governments.

civil protection refers to the protection of the public against any disaster, emergency, civil unrest or war, as well as all kinds of risks and hazards.

climatological disaster refers to any disaster that can be attributed to climatic conditions, such as a heatwave, cold wave, drought, hailstorm, cyclone, lightning, tornado, typhoon, flood, cyclone, avalanche, hurricane, heavy snowfall, acid rain, fog, ice formation, air pollution and forest fires.

collection of information and dissemination system refers to a system established by AFAD for the dissemination across Turkey of reports of enemy attacks and disaster and emergency risks to people living in settlements that face a threat.

damage assessment refers to the determination by technical means of the physical, economic, social and environmental damage and loss caused by a disaster.

damage occurs when the value of a building, tunnel, car, ship or airplane diminishes or can no longer be used, or when its normal functionality is lost.

debris or building wreckage refers to the remnants of buildings and equipment that have collapsed or suffered heavy damage, or which have been destroyed beyond repair, as a result of an accident or disaster.

disaster refers to any natural or technology- or human-induced incident that leads to physical, economic and social losses within a community, or a part thereof, and that stops or interrupts normal life and human activities, and which is beyond the coping capacity of society.

disaster hazard refers to the likelihood of the occurrence of a natural or technology- or human-induced incident that causes loss of life and property, as well as physical, social, economic, political and environmental losses, and damage to a specific place, within a specific timeframe.

disaster logistics refers to the storage and delivery of relief items and other materials, as well as equipment, to regions and people affected by a disaster or an emergency.

disaster risk refers to the likelihood of losses that a specific hazard may inflict on people, human settlements and the natural environment, proportional to their vulnerability to loss or damage if occurring within a specific timeframe in the future.

early damage estimation system refers to a system that aims to support the provision of a rapid and efficient response by making damage and loss assessments shortly after a disaster.

emergency refers to all major situations and states that require urgent action, and that can generally be overcome through the use of local resources.

emergency relief refers to the meeting of urgent needs and taking urgent actions in the event of a disaster or emergency, including search & rescue, medical first aid, medical treatment, burial, prevention of epidemics, supply of food, beverages and clothing, emergency sheltering, heating, lighting, transportation, removal of debris, ensuring that infrastructure can be operated at a minimum level, supply of fuel, and all kinds of actions related to allocations, leasing, purchasing, granting and expropriations, and similar activities.

emergency sheltering refers to meeting the basic needs of individuals affected by a disaster in terms of providing shelter, allowing them to survive the immediate aftermath of the disaster. For example, gymnasiums and student hostels, which can accommodate large numbers of people, tents, etc. that have not been damaged by the disaster.

exposure refers to the threat of potential losses faced by people, buildings and systems located in disaster regions and vulnerable production areas.

Geographical Information System (GIS) is a system that comprises hardware, software and processing components that work in an integrated manner and that provide the necessary tools for the collection, storage, processing, analysis and display of graphical and non-graphical data related to objects that have a specific location and form (geographical objects).

hazard refers to any physical incident or phenomenon arising from nature, technology or human beings that occurs within a specific timeframe or in a specific area; that poses a threat to human life; and that has the potential to disrupt socioeconomic order, the activities of society, the natural environment, and natural, historical and cultural resources.

integrated disaster management refers to a management process that can cope with disasters and that takes into account all risks in order to create a resilient and resistant society, and that can take all necessary actions and measures at different phases of disaster management, including prevention, mitigation, preparation, response and recovery, using all of the capabilities and resources of society.

lifelines refers to all networks, assets, systems and buildings used for transportation, communication, energy, water and finance that, if unable to function, either wholly or in part, would have a negative effect on the sustainability of social order or the provision of public services.

loss refers to all physical, economic and social losses resulting from nature, technology or human activity.

man-made disaster refers to incidents such as wars, internal conflicts, acts of terrorism, major immigration and industrial accidents resulting from political or human factors, and all related consequences.

mitigation refers to all structural or non-structural measures and activities that need to be undertaken before, during and after a disaster in order to prevent hazards originating from natural, technological or human sources, as well as those originating from the deterioration of the environment, from causing disasters, or to reduce the effects of these hazards.

natural disaster is the general term used to describe natural events resulting from geological, meteorological, hydrological, climatological, biological or extra-terrestrial phenomena that cannot be prevented (e.g. earthquake, flood, landslide, drought, storm, hail, cyclone, meteorite, etc.).

resilience refers to the capacity of an individual or a community to estimate, foresee, prevent, reduce and recover from the effects of a dangerous event.

response or intervention refers to efforts aimed at providing services to save lives and property, healthcare, food, accommodation, security, protection of property and the environment, and the provision of social and psychological support in the event of a disaster or emergency.

risk refers to the likelihood of loss of life, property, or economic and environmental assets that may result from an incident under specific conditions and circumstances.

secondary disaster refers to a disaster such as a fire, landslide, dam breach, explosion, epidemic or industrial accident that is triggered by, or results from a disaster.

self-help housing (SHH) refers to the method of construction that enables beneficiary disaster victims to build their own homes under the technical supervision and control of AFAD in disaster regions where the construction of mass housing is not considered necessary by AFAD.

shelter refers to any safe place or building that has been built to provide protection to people from nuclear, biological or chemical threats, and such disasters as storms, cyclones, and typhoons, either individually or collectively.

sustainable disaster management refers to management aimed at contributing to economic, social and environmental development, as well as the main goals in the prevention of existing hazards and risks, through avoidance or the reduction of their effects, and creating safer and better-developed residential areas.

urban regeneration refers to the general definition of the planning and implementation activities that are carried out to raise the quality of urban life, and to form safe, healthy and orderly settlements in zones characterized by socioeconomic decline – which have become a source of risk in cities – by reconsidering such zones from a social, economic and spatial perspective.

vulnerability refers to the physical, social, economic or environmental loss or damage that people and their living environments may suffer as a result of hazards of different types and sizes.

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2019 OVERVIEW OF DISASTER MANAGEMENT AND NATURAL DISASTER STATISTICS

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