

LET'S OVERCOME DISABILITIES  
TOGETHER AGAINST DISASTERS

AFETLERE KARŞI ENGELLERİ  
BİRLİKTE AŞALIM



# Disaster PREPAREDNESS





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## INTRODUCTION

Humankind has been exposed to various disasters beyond its control or caused by itself. Disasters are extraordinary circumstances due to nature, technology or people which significantly influence lives and social and economical activities of people and cause significant loss of life as well as injury and physical damage.

In the world, earthquakes, floods and fires are the major disasters, while landslides, erosion, rockslides, avalanches and draught are considered among main disasters and emergencies. In addition to these, today, not only natural hazards but also technological and man-made hazards also cause extensive damages on socio-economical structure, lives of people and properties. In order to prevent losses and damages caused by disasters, the precautions required for detecting hazards and risks beforehand and dodging a potential disaster with the least loss and damage should be taken, immediately.

The most encountered concepts in disaster preparedness are hazard and risk. Hazard is an incident with potential to cause loss of life and property. It is a physical condition which happens in any time and place and creates negative impacts on the people, environment and society. Risk indicates the extent of damages when a hazard causing incident arises. In other words, risk is the potential of a hazard to become a risk and its negative consequences and losses based on physical, economical, cultural and political reasons. Hazards must cause significant loss and damage on lives, natural environment, properties and business continuity for becoming disasters. Therefore, according to the definition of the United Nations, disasters are the cases where local means are insufficient to manage the negative impacts of any hazard on lives, properties, environment, economy and cultural assets.

**“Safe life is trying to live by avoiding damages to be created by all kinds of hazards”**





Having disaster awareness is to live by avoiding damages caused by any hazard. It is known that almost 15 percent of world population lives with at least one kind of disability. According to the Population and Housing Study of the Turkish Statistical Institute, the number of people with disability in Turkey is 4 millions and 882 thousands. In other words, about 6.6% of its population has at least a disability. Considering them with their families, almost 25 millions of people are influenced from the case of disability. Therefore, people with disability, their families, friends and inner circles should have knowledge on preparedness for disasters and live prepared. It is extremely important for a safe life that people have disaster awareness and become prepared before disasters by taking necessary measures.

It may not be possible to prevent formation of disasters and disasters may cause loss of life and property; while the damages and losses which might be caused by disasters can be reduced by the following methods:

- Learning risks and hazards,
- Knowing how to take precautions against disasters,
- Implementing precautions taken.

Usually, everyone is by oneself in the first minutes of disasters and only our preparedness and knowledge will protect us. It is impossible anywhere for units such as healthcare personnel, fire fighters, search and rescue teams reach everyone instantly. It is necessary for everyone to be ready for the first 72 hours after a disaster called as “golden hours”.

Although, it is impossible to prevent disasters, we should learn how to live with them and take measures to minimize their damages. People can protect them and their kith and kin against the damages caused by disasters through the precautions to be taken before them. For a safe life, having disaster awareness and being prepared against disasters should be the lifestyle of people. Therefore, the whole world agrees that disaster preparedness should be society-based and begin from individuals and households.



## BASIC INFORMATION and CONCEPTS

### **Hazard:**

Hazards are physical events and cases which threaten life and have potential to damage properties and environment. In other words, it means all incidents based on natural, technological or human reasons which might cause physical, economical and social losses. Hazards cause injuries, destabilization of socio-economic balance and loss of life and property if no precaution is taken against them. Hazards can be experienced as earthquakes, floods, fires, storms, landslides and explosions. It is not always possible to prevent hazards causing natural disasters. For example, we cannot change the fact that our country is on a seismic belt, while we can reduce damages of an earthquake.

Hazards causing disasters and emergencies vary based on conditions of a country while they are subjected to some generally accepted classifications. Geological phenomenon such as earthquakes, landslides and rockslides and meteorological phenomenon such as floods, avalanches and storms can be classified as natural hazards, while fires, nuclear and biological accidents, traffic accidents and collapsed mines can be classified as technology and human-based hazards.

### **Risk:**

Risk is the emergence and damage possibility of any hazard or disaster in a specific place and time. Risk is also the possibility of nature or human based hazards such as loss of life, injury and loss of property, destabilization of social and economic balances and environmental damages resulting with losses and damages based on vulnerability conditions. Hazards cannot be eliminated while risks can be reduced.

### **Risks Based on Structural Elements:**

These are the risks which can be caused by elements (foundations, columns, beams, curtain walls and etc.) of a building/structure due to earthquakes.



## **Risks Based on Non-Structural Elements:**

These are the risks which can be caused by non-structural elements (furniture, white appliances, electronic devices, kitchen appliances and etc.) which do not belong to any building/structure due to earthquakes.

## **State of Emergency:**

This states the temporary term where extraordinary precautions should be taken during an emergency.

Emergencies are the adverse effects on life, property and environment created by little hazards which can be managed locally. For example, an apartment fire which can be extinguished by local fire station is considered as a state of emergency.

## **Disaster:**

These are the extraordinary natural or man-made circumstances which cause loss of life and physical, economical or environmental losses where people cannot make use of its own resources.

Sometimes, disasters can be classified as natural disasters or man-made ones. For example, the disasters arising due to floods, draughts, wave/tidal actions and earthquakes are called as natural disasters. The disasters arising due to chemical and industrial accidents, traffic accidents and political conflicts are called as man-made disasters as they are directly related with people.

## **Vulnerability:**

Vulnerability is unavailable sources and capacity of individuals, societies, institutions or countries for exposing and managing a hazard and reducing its impacts.



**Describing earthquakes, fires and floods in the frame of hazard, vulnerability, disaster and risk aspects:**

<b>Hazard</b>	Earthquake
<b>Vulnerability</b>	Collapse of buildings and people stuck between debris
<b>Disaster</b>	Loss of life and property due to an earthquake
<b>Risk</b>	Predicting that a building is indurable and can collapse at any earthquake.



<b>Hazard</b>	Flood
<b>Vulnerability</b>	Submerge of basements, ground floors and first floors of buildings, collapse of buildings
<b>Disaster</b>	Loss of life and property due to a flood
<b>Risk</b>	Predicting that stream beds opened zoning and construction will cause floods upon excessive precipitation and buildings will be damaged



<b>Hazard</b>	Fire
<b>Vulnerability</b>	Not detecting and putting out a fire due to unavailability of a smoke detector and fire
<b>Disaster</b>	Experiencing loss of life and property due to flames and intensive smoke
<b>Risk</b>	Predicting that close inflammable materials might cause a fire.







## EARTHQUAKES, FIRES and FLOODS

### What We Should Know About Disasters

Turkey is one of the first countries of the world with regards to disaster risks. In our country, where various natural disasters have been experienced, there has been heavy losses of life and property. The most important fact we have learned through these unpleasant experiences is that we must know what to do and how to act before, during and after a disaster.

23% of Turkey's population has been directly exposed to a disaster. According to "the Disaster Awareness and Preparedness Survey" conducted by the Prime Ministry Disaster and Emergency Management Presidency, only 33.5% participants of the survey have indicated that they have sufficient disaster awareness while 22% have indicated that they could not get sufficient awareness due to lack of education/ignorance. It has been concluded that a huge portion as 70% of survey participants are unprepared against disasters.

According to the Disaster Awareness Research within the scope of the project, it became evident that 21% of the disabled participants have been exposed to a disaster and %54 of them did not feel themselves prepared against the disasters. Only 38% of the disabled people participating the research had training on disasters.

The losses experienced in disasters in our country and conducted surveys indicate that people do not have sufficient knowledge on things to be done before, during and after a disaster. The most important step in disaster management is to be aware and well-informed on how to prepare for disasters. The losses of life and property in disasters can only be minimized by raising awareness of all sections of society on disasters.





## What is an Earthquake?

The incidents caused by vibrations suddenly arising due to fractures inside the earth crust shocking the surface by dispersing as waves are called “earthquakes”. Earthquakes can be destructive to demolish aboveground structures and cause loss of life and property.

Earthquakes are also called as earth tremors, quakes or seismic activities. Earthquakes happen in a short while and can be sensed in a wide area; their exact time and place cannot be known.

Earthquakes are usually sensed as light tremors. You can notice that the lamps hanging down ceilings, plants and objects on shelves are moving. Sometimes, you can hear a light roar or sense a massive quake. Earthquakes come through a quake continuing a very short time coming from underground and rising by a roar. There might be small quakes after an massive earthquake. These are called “aftershocks”. Aftershocks may continue about two-three months even a year after the main quake. However, they become sparse day by day and their magnitude and impacts decrease. The buildings which have been damaged but not collapsed in the main shock can collapse by aftershocks.

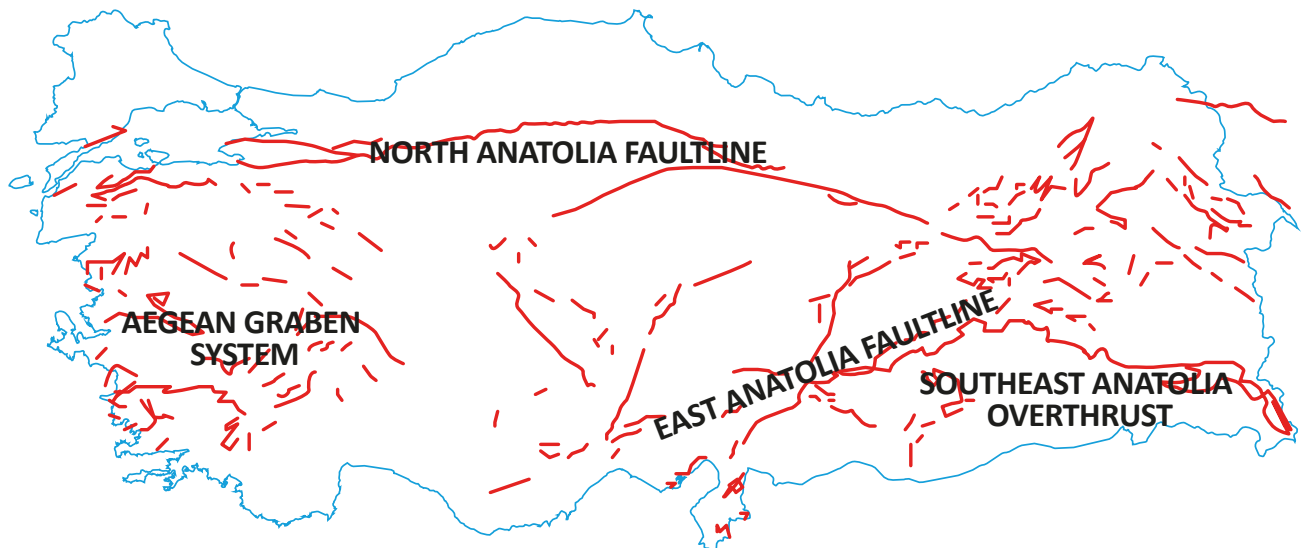


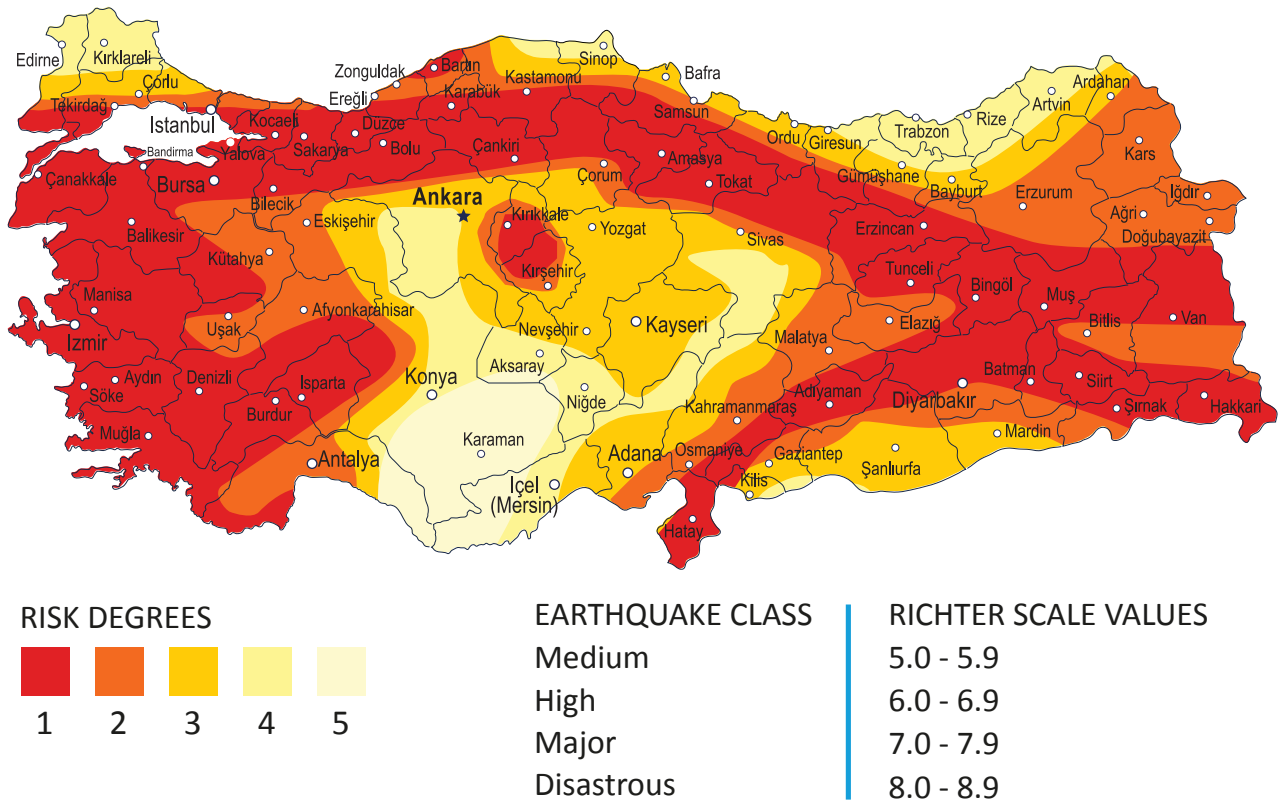
Figure 1: Main Active Fault Map in Turkey



Our country is the third country with highest loss of life in earthquakes while the eight country with regards to the number of people affected by earthquakes. At least an earthquake with a magnitude around 5 and 6, is experienced in our country every year.

Our country is under earthquake risk as 95% of it is located on important faultlines. Earthquakes happen in almost everywhere of our country while the earthquakes causing damages become intense mainly in three regions (North-Northeast, West Anatolia Regions and East-Southeast Anatolia). The North Anatolia Fault Zone located at north of our country is one of the most active and fractured zones of the world. The length of the North Anatolia Faultline is almost 1200 km and its width varies around 100 m and 10 km.

This strike-slip faultline acting as an active slab border almost for 5 millions of years causes medium depth (10-20 km) earthquakes. Aegean Fault System in West Anatolia consisting of normal faults usually creates low-magnitude shallow earthquakes.



10 Figure 2: Seismicity Map of Turkey



In order to detect activities of earthquakes, earthquake zones (area, region) based on locations of active faults and potential hazard risk have been determined. Earthquake zones have been determined by considering the acceleration values which can be caused by earthquakes which might happen in these zones. For example, it is predicted that an earthquake acceleration exceeding 40% of gravitational acceleration can happen in the red zone. The regions are enumerated based on their risk level. The region with the highest earthquake risk is called as “1st degree earthquake zone”. Risk decreases as degree increases.

**Earthquakes cannot be prevented while, transformation of earthquakes into disasters can be prevented!**

Magnitude (Richter)	Impact of the Earthquake
3.5 or lower	Usually not sensed
3.5-5.4	Sensed but do not create much damage.
5.5-6.0	Causes little damage on strong structures; may have destructive impact on weak structures.
6.1-6.9	Has destructive impact on 100 km radius.
7.0-7.9	Major earthquake. Has destructive impact on a large area.
8.0 and over	Great earthquake. Has destructive impact on a large area of hundreds of km radius.

**Table 1:** Affects of Earthquake According to the Seismicity Map of Turkey





Magnitude is measurement of the energy arising in the source of an earthquake and expressed by Richter Scale. Intensity of an earthquake is measured based on its impacts on people, structures, environment and earth surface.

Also, earthquakes may sometimes cause fires, chemical dispersions, landslides and rockslides. Therefore, other hazards should be taken into consideration while preparing for an earthquake. People from all parts of society should accept the reality of earthquakes and regulate their lives accordingly. Being aware of the conditions where an earthquake will pose any hazard and taking necessary precautions on time will minimize loss of life and property.

### **Be Prepared for Earthquakes!**

To be prepared for earthquakes, the disabled and their families need to adopt a safer and more cautious lifestyle, which is possible with some small steps. Within this scope, the steps given below are crucial for earthquake preparedness and to provide safety:

- Making a family disaster plan
- Establishing a support group (network)
- Preparing an emergency bag and making it a part of your life
- Identifying and reducing structural and non-structural risks
- Taking necessary precautions against fire risks following an earthquake
- Receiving first-aid training
- Acquiring self-sufficiency skills
- Conducting drills on evacuation and proper behaviour during a possible earthquake.

Even though the damages of earthquakes cannot be prevented, they can be minimized thanks to small precautions. To remain unharmed in the event of an earthquake, first of all, securing your living space against the effects of tremors will prevent both injuries and damage to your property. Such precautions as preparing an emergency bag, securing shelves and boards to walls, fixing the connections of heavy objects, keeping walking sticks close to reach and putting spare batteries of hearing aids in the emergency bag will help you minimize the effects of an earthquake.

Things to do before and during an earthquake are explained thoroughly under the title “**Earthquake Preparedness**”.



## What is an Fire?

Fire is a disaster that causes substantial damages in a short time, and loss of life and property. Starting with a small spark, a fire can quickly destroy homes, workplaces, crops or a forest. What gets a flame out of control and turns it into a fire depends on three factors: heat, oxygen and flammable substances.

Fire is a chemical event resulting from the combination of the substance with heat and oxygen. The substance, heat and oxygen (air) must be together in order to cause fire. Fires can be categorized in four groups as class A (burning flammable substances like wood, fabric, paper, basic products etc.), class B (burning flammable liquids: gasoline, oil etc.), class C (burning flammable gases like liquefied petroleum gas, air gas and hydrogen) and class D (burning flammable light metals and alloys).

Fires result from electric contact, heating systems and inadequate protection of flammable substances. Fires that can be extinguished with a small-scale intervention can turn into fires that cause major damage, especially, due to the failure to install electric power components properly, failure to clean chimneys well, failure to take necessary precautions against flammable and explosive substances and fire, and most importantly, due to the insufficient capacity of intervention during small fires.

### Primary reasons for fires are:

#### Ignorance

- Not knowing the features of materials,
- Having no knowledge on the causes of fire (especially, allowing kids to play with dangerous materials)
- Having insufficient knowledge on precautions against fire (e.g. keeping flammable items on the roof)

#### Carelessness and Negligence

- Not implementing the known measures,
- Unavailable fire cabinets, fire escapes and escape routes,
- Leaving the heat sources plugged-in,

- Failure to take necessary safety measures while welding or cutting,
- Failure to take necessary precautions while working with flammable substances (e.g. leaving food on the stove unattended).

### Unwariness

- Failure of enterprises to take necessary fire safety measures according to regulations,
- Making improper changes in the safety measures in the course of time,
- Failure to comply with the standards in electric wiring and fuses,
- Keeping flammable substances on roofs, and failure in regular chimney cleaning,
- Disruptions in periodical maintenance of electrical appliances and machines (e.g. failure to comply with safety rules and operating instructions).

On the other hand, such factors as home, work and traffic accidents, and natural phenomena (lightning and hurricane etc.) also cause fires.

Despite being small at first, fires grow very fast depending on the properties of the fire components, except for some particular cases (e.g. fuel fires). Especially, if there are flammable substances in the area and if there is wind during an open fire, the fire grows much faster.







A fire that can be put out with a glass of water at its beginning can only be extinguished with a bucket of water in the second minute, and a barrel of water in the third minute. In other words, a fire grows and spreads constantly if there is no obstacle against it.

### **Be Prepared for Fires!**

A fire is at its initial phase only if it is intervened within the first minute. After that, the burning increases ten times every second and becomes a fire. In this case, if the burning is noticed within the first 30 seconds or 1 minute, intervention is allowed. Otherwise, trying only to get away from it will be the right move.

It should not be forgotten that a fire grows very quickly. If possible, it is necessary to extinguish it at the beginning or to move safely away from the area. The most important issue in the event of a fire is to ensure safety. No one should be allowed to put his or her life in danger.

There are simple precautions everyone can take in terms of fire safety:

- Keeping flammable and combustible substances separate,
- Using smoke detectors in homes and offices,
- Keeping fire extinguishing appliances operational at all times in homes, schools or workplaces,
- Not leaving a number of electric devices connected to a single socket,
- Not leaving the devices which may cause fire turned-on, such as gas and water heater,
- Frequent control of fixed installations,
- Knowing the fire exit points and evacuation routes in homes and work places,
- Conducting fire drills.



In a fire risk, disabled individuals should definitely learn how to use a fire extinguisher and how to take action in an indoor area covered with smoke, to the extent that their condition allows them. If the individual's condition allows them to develop these skills and learn this information, it will be appropriate for them to be prepared for a fire risk.

Preparations for fire risks and the precautions to be taken in case of fire are explained thoroughly under the title "Fire Preparedness".



Figure 4: Operational Instructions On Fire Safety



## What is Flood?

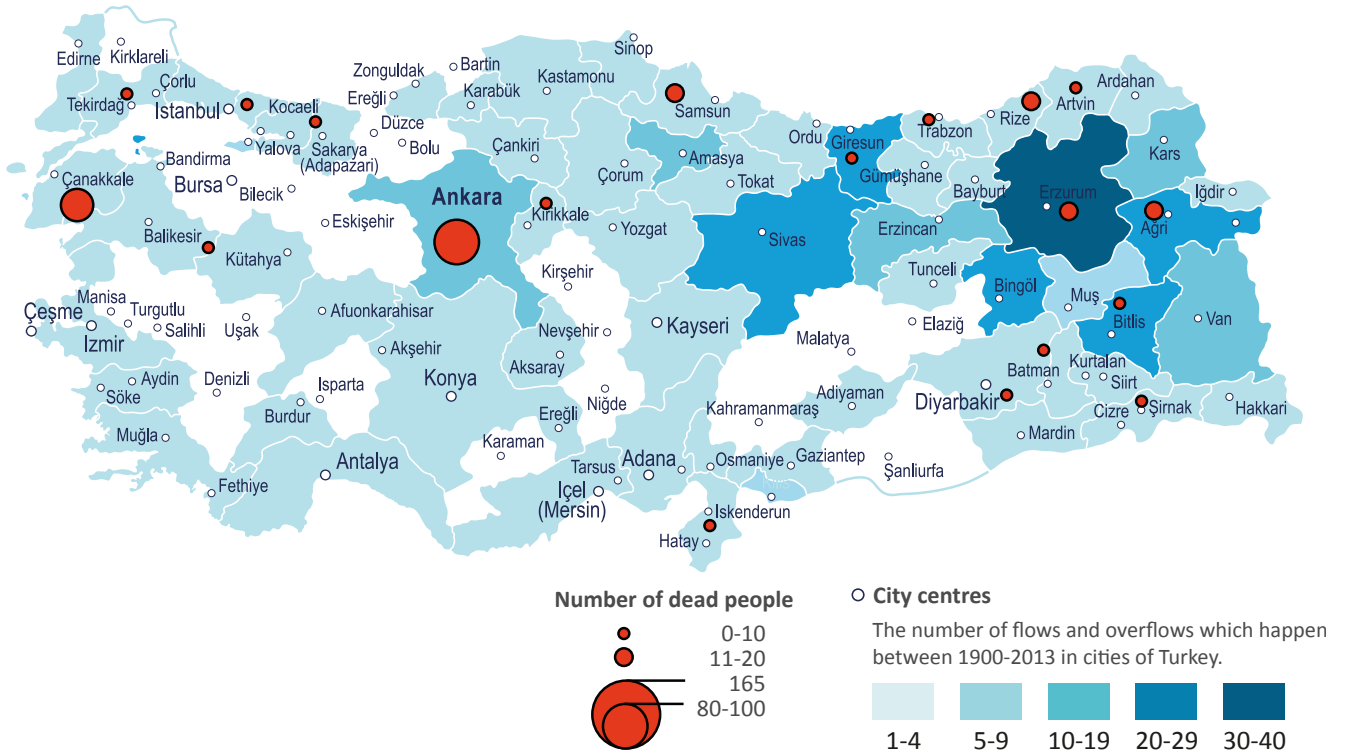
Sudden, large and irregular water currents that completely or partially submerge the land in a region for a certain period are called floods. Flood is a generic name for the phenomenon in which water, either by rising or coming from somewhere else, covers surfaces that are normally dry. It is a temporary submerge of dry lands by the rising surface waters due to precipitation, tidal events or river elevation. A flood occurs mostly as a consequence of overflowing riverbeds. Overflows occur due to sudden and heavy precipitation or snowmelt.

Floods are seen in riverbeds, valley bottoms, irregular and temporary flooding areas along slopes, on coasts and in cities. A large water mass that flows in the upper sections of slopes usually changes its course from surface flow to linear flow by opening a channel at a lower level. These channels are called floodplains. They are the branches of the main flood network and are the largest source of the floods formed by heavy rains. The floodwater is always blurry and mud-coloured because the floodplains can be opened both on slopes and on more flat areas, and because this rapidly flowing water carries large amounts of surface material (soil, plants, rock fragments, etc.).

As in many parts of the world, floods can often occur also in Turkey due to successive and heavy, or long and light rainfalls, resulting in great losses of life and property. When a flood negatively affects normal life and human activities by interrupting or disrupting them, causing physical, economic and social losses, and when it is impossible to cope with local resources, it is called a **flood disaster**.

After a period of continuous rainfall, river waters can rise and turn into floods, and floods can last for a very long time. River floods are generally slow and there may be enough time for people to go to a safe area. With the snowmelt combined with spring rains, river waters suddenly rise and floods occur. Flash floods affect the cities and suburbs with low elevations more intensely. Do not forget that you can still encounter a flood even if it does not rain where you are.





**Figure 5:** Flood Disaster Map of Turkey

During a flood, when water rises by 30 cm, it will cause a 700-kg push on vehicles, while a 60-cm rise will be enough to drag a vehicle. Floodwater can flow very fast, which may prevent you from leaving the area. If you are in a car, do not drive through floodwater or underpasses. The water can be deeper than it looks and your car can quickly fill with water and drift away. Flood disasters in Turkey are among the most frequent natural disasters and they result in high economic losses. In our country, 1209 floods have taken place, thousands of hectares have been damaged and 720 lives have been lost since 1975.

### Causes of Floods and Overflows

The most important cause of floods and overflows is disturbing the natural balance among soil, water and plants in water collection areas at the upper parts of water basins. Human-induced effects are the most important factors in the deterioration of natural balance. People’s technological, socio-economic and cultural activities have a crucial role in a flood’s transformation



into a disaster. When people choose flood-sensitive areas for various activities, it causes a flood to turn into a disaster.

Settlements in the upper basins, misuse of lands, unplanned and intensive use of pasture lands cause floods and overflows by increasing the amount of the surface flow in the basin. Improper settlement areas, buildings and facilities built on riverbeds increase losses of life and property.

### **Primary causes of floods and overflows are:**

- Interventions on riverbeds,
- Inappropriate transition structures (bridges, culverts, pipes),
- Inappropriate spatial planning (zoning plans),
- Rapid urbanization,
- Misuse of land,
- Destruction of plant cover in basins,
- Increases in precipitation intensity due to climate change (changes in temporal and spatial distribution of precipitation).

### **Be Prepared for Flood Risks!**

In order to be prepared for flood hazards, individuals and their families need to adopt a safer and more cautious lifestyle. It is possible to start with some small steps.

Being planned for flood risks will help you prepare for many emergency situations. In this context, some of the measures mentioned below are small but important steps to be prepared for floods and overflows, and to establish a safe life:

#### **Before a flood risk;**

- Be informed about the topographic structure of your area. Learn the flood warning signs and warning systems in your area.
- Prepare an evacuation and disaster plan for yourself and your family before a flood risk.
- Have sandbags ready to be put on the ground floor doors and basement windows in case of a possible flood.



- Have your home and property insured against floods.
- Prepare your Emergency Bag to meet the needs of your family and yourself after a possible flood disaster.



### During a flood or overflow;

- If it is raining or the water level is rising, monitor the water level and prepare to apply your evacuation plan.
- Put your electrical appliances at high places so as not to be affected by the flood.
- If the authorities tell you that you should leave your home, unplug the devices and switch off the gas supply.
- Turn off electricity only before the flood has started or when the area around the fuse box is completely dry.
- If the water level on your floor rises above your knees, immediately go upstairs or to a safer place. Stay away from the windows.
- Follow the mass media for alerts and emergency news.
- Do not enter flooded houses or workplaces unless you are obliged to. Stay away from floodwater!
- If you are in the car, do not pass through the roads covered with floodwater. Never use a vehicle in areas with floodwater. The vast majority of the casualties caused by flash floods take place in cars.
- If you are out, go up a high place immediately if you can and wait.
- Do not go through the flowing water! If you need to get into the water, check its depth with a stick.

Preparations for flood risks and things to be done during a flood are explained thoroughly under the title **“Flood Preparedness”**.





## BE INFORMED, TAKE PRECAUTIONS, MAKE A PLAN, BE PREPARED!



Hazard  
Earthquake



Hazard  
Flood



Hazard  
Fire

- The most important step in combating disasters is to be informed about how to prepare for disasters and to apply these preparations in accordance with a plan.
- Prepare a Disaster Plan that includes your family members against disasters and emergencies.
- Prepare your Emergency Bag to meet the needs of your family and yourself in case of a disaster or emergency.
- Have insurance against disasters.
- Conduct a Hazard Hunt at home or at work. Secure or change the place of all items that might harm you because any object that may fall or slip during an earthquake is dangerous.
- Be informed about how to behave during a disaster or an emergency situation. Be prepared by practicing how to act properly and conducting evacuation drills at your home and workplace.
- Find out where the valves and resources of electricity, natural gas and water are located and how to switch them off.



- Designate the assembly point and the place to meet with your family members and support network after a disaster or an emergency.
- Perform a risk assessment! Identify the fire risks in your living space that may occur in the event of a disaster or emergency.
- Identify the possible disaster risks in your area. Make sure your building is safe against sources of danger and take necessary structural measures.



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