



# BUILDING RESILIENT INFRASTRUCTURE IN TÜRKİYE

2022 Sustainable Development Transformation Forum



# DISASTERS IN TURKEY - 2021

According to the 2022 World Risk Index Türkiye is 30. among 192 countries.

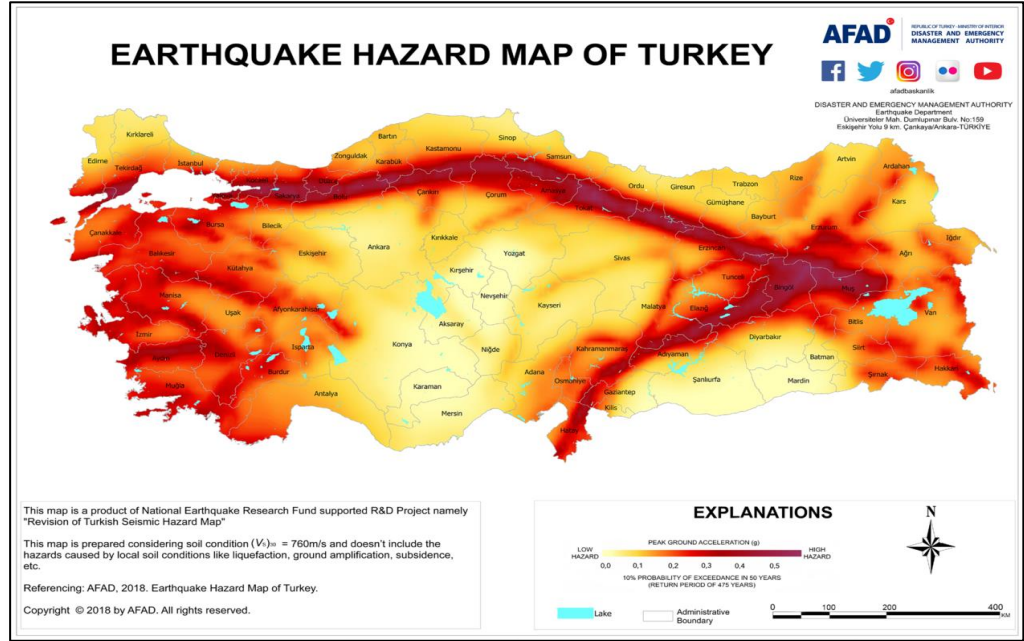
Earthquakes, landslide and flood events take the first three places in terms of losses caused by natural disasters.

Only in 2021,

- 107 floods,
- 66 wild fires - 200,000 hectares of forest was burned,
- 16 heavy snow/snowstorms,
- 39 landslides and
- 26 earthquakes between the magnitude of 5.0 and 6.0 and 3 earthquakes greater than the magnitude of 6.
- 30-meter-thick Mucilage blooms in the Sea of Marmara disrupted fishing and tourism and harmed marine life.

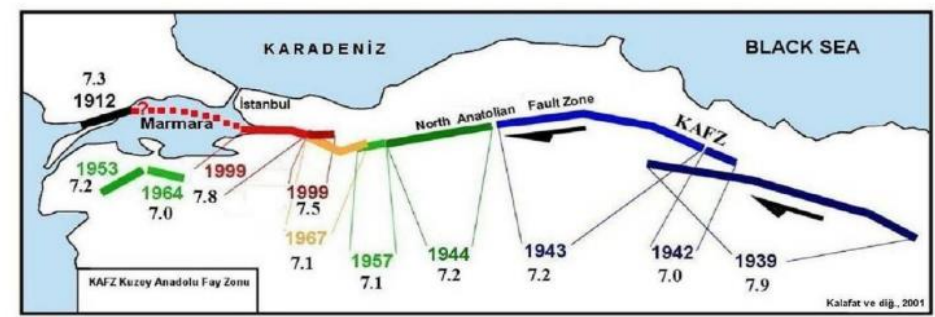
# EARTHQUAKES

- Earthquakes, as Türkiye’s most frequent and devastating natural disasters, have great impact in terms of loss of life and property.
- Approximately 60 percent of the deaths caused by disasters occur due to earthquakes.
- 1999 Marmara Earthquake damaged 66.441 buildings resulted in an economic loss of about \$20 billion.
- According to World Bank’s «Building Resilience in Turkey Report» 95 % of the territory, 70 % of the population, and 76 % of the industrial facilities are located in the 1<sup>st</sup> and 2<sup>nd</sup> degree earthquake zones.
- An earthquake with a magnitude of 7 or higher is expected to occur in İstanbul again. Therefore, we have to get well prepared.



Source: AFAD

Date	Place	Magnitude	Number of Deaths
17.08.1999	İzmit	7.6	17,480
12.11.1999	Duzce	7.2	845
9.11.2011	Van	6,7	604
04.01.2020	Elazığ	6,5	41
30.10.2020	İzmir	6,9	117



The westward migration earthquakes since 1939 along the North Anatolian Fault

Source: [http://www.tdmd.org.tr/TR/Genel/11.Oturum/1.TDMSK\\_006.pdf](http://www.tdmd.org.tr/TR/Genel/11.Oturum/1.TDMSK_006.pdf)

# Floods

- In the last 3 years 102 person lost their lives because of floods in Türkiye.
- In 2021, floods in the Kastamonu, Sinop, and Bartın caused death of 82 persons and loss of 16 persons, multiple injuries, and substantial damage to critical infrastructure and to the environment.
- Climate Change will result in rising numbers of floods.
- Flood Risk Management Plans are being prepared for 25 river basins.
- Flood risks assessments are made, flood hazard maps and risk maps are developed.
- Early warning systems for flood risks are being developed in pilot areas.
- Institutional capacity has improved considerably.



Source: AFAD, [https://www.afad.gov.tr/kurumlar/afad.gov.tr/e\\_Kutuphane/Kurumsal-Raporlar/Afet\\_Istatistikleri\\_2020\\_web.pdf](https://www.afad.gov.tr/kurumlar/afad.gov.tr/e_Kutuphane/Kurumsal-Raporlar/Afet_Istatistikleri_2020_web.pdf)

## Remarkable steps taken towards increasing resilience

- The Building Earthquake Code was amended in 2007 and 2019 with improved standards.
- Urban regeneration policies and mechanisms have been developed to rehabilitate the wear-down in urban areas with changing functions and non-compliant building stocks.
- DASK - Compulsory Earthquake Insurance was introduced for all residential buildings.
- Studies are carried out to identify critical infrastructure and prioritizing investments.
- Building inspection system has improved.
- AFAD prepares critical infrastructure roadmaps and sector-specific guidelines to assess the resilience of critical infrastructures for 10 sectors.
- The inventory of public buildings has been completed and a methodology has been developed to assess their level of resilience to disasters.
- Hazards maps were prepared for different types of natural disasters and risk analysis are underway.
- After the ratification of Paris Agreement in 2021 awareness and efforts on climate change adaptation have increased.
- The private sector and financial sector is more engaged in sustainability and resilience activities.

## **We have to invest in resilient infrastructure to**

- save lives
- prevent damage and lower economic costs
- Reduce the risks of climate change related disasters.
- Create new jobs
- Reduce disaster response and recovery costs
- To modernise and increase efficiency

## **However we need;**

- to ensure cross sectoral approaches
- A considerable amount of financing
- well assessed prioritization
- time



# Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP) Project (2006-2025)

- Implemented by the Governorship of İstanbul
- Budget 2.4 billion Euro
- Financed by IFI's (World Bank, EIB, CEDB, ISDB, KfW, AIIB, Ecobank)
- Number of school buildings retrofitted: 895 reconstructed: 339
- Number of hospital buildings retrofitted: 48 reconstructed: 5
- Total number of public buildings retrofitted: 1089 reconstructed: 373



## Seismic Resilience and Energy Efficiency in Public Buildings Project (2022-2027)

- Financed by the World Bank credit and GFDRR grant
- Total Project Cost: USD 265.75 million
- Around 90 public buildings will be retrofitted while their energy efficiency performance will increase.
- Better environmental and social standards.
- Policy and regulatory analysis and practical recommendations for regulatory improvements, related to seismic resilience and energy efficiency will be made.





## Improved transport infrastructure

- Large investments have been made to improve the transportation infrastructure and public access to services.
- Works for enhancing the railway network are underway, particularly large subway investments are ongoing in metropolitan cities.
- Increase in high-speed train passenger transportation is expected to accelerate after completion of ongoing constructions.
- National transport master plan includes actions for a more sustainable, resilient, environment friendly, accessible and technologically innovative transportation infrastructure.
- Critical transportation infrastructure is tested regularly against earthquakes other disasters.
- Studies are underway to develop an early warning system for high-speed train lines.



0,6 %

5,9 %



1,3 %

4,9 %



89.8 %

89.2 %



8,3 %

passenger transport

fright transport

in 2019

# WATER AND SEWER INFRASTRUCTURE PROJECT

Financing from the central budget to the municipalities with a population of 25,000 or less for drinking water and sanitation services.

Improvement of the quality of drinking water, which directly affects human health in the municipalities and commissioning of new water resources.

Effective, efficient, and environmentally sensitive city infrastructure facilities are established by addressing the need for sewer infrastructure and wastewater treatment plants.

To date, 1 506 works have been initiated with a total project amount of 15.6 billion TL (at current prices) (833 million USD).

# SUKAP

**%50** + **%50**  
GRANT + Credit



# Key Policy Documents for Further Action

- 12<sup>th</sup> Development Plan
- The Climate Change Strategy
- Provincial Disaster Risk Reduction Plans
- National Climate Change Adaptation Strategy and Action Plan
- Green Deal Action Plan
- Local climate action plans
- National Transport Master Plan
- National Disaster Risk Reduction Plans



# Recommended Actions

- Assess climate and disaster risks and make this information available to everyone
- Increasing public and private investment in R&D to increase resilience
- Having a government-wide strategy to increase the resilience of infrastructure systems and public assets
- Ensuring effective maintenance of public infrastructure
- Engaging all stakeholders in more resilient construction
- Ensuring availability of information needed for planning
- Making more use of nature based solutions.



Thank you very much

