



**3<sup>rd</sup> Roundtable Meeting on Disaster Management**  
19 November 2014; JCSE HQ Auditorium



# **EMERGENCY MANAGEMENT AGAINST THE NATURAL DISASTERS OF TURKEY: MITIGATION, RESPONSE AND RECOVERY ISSUES**



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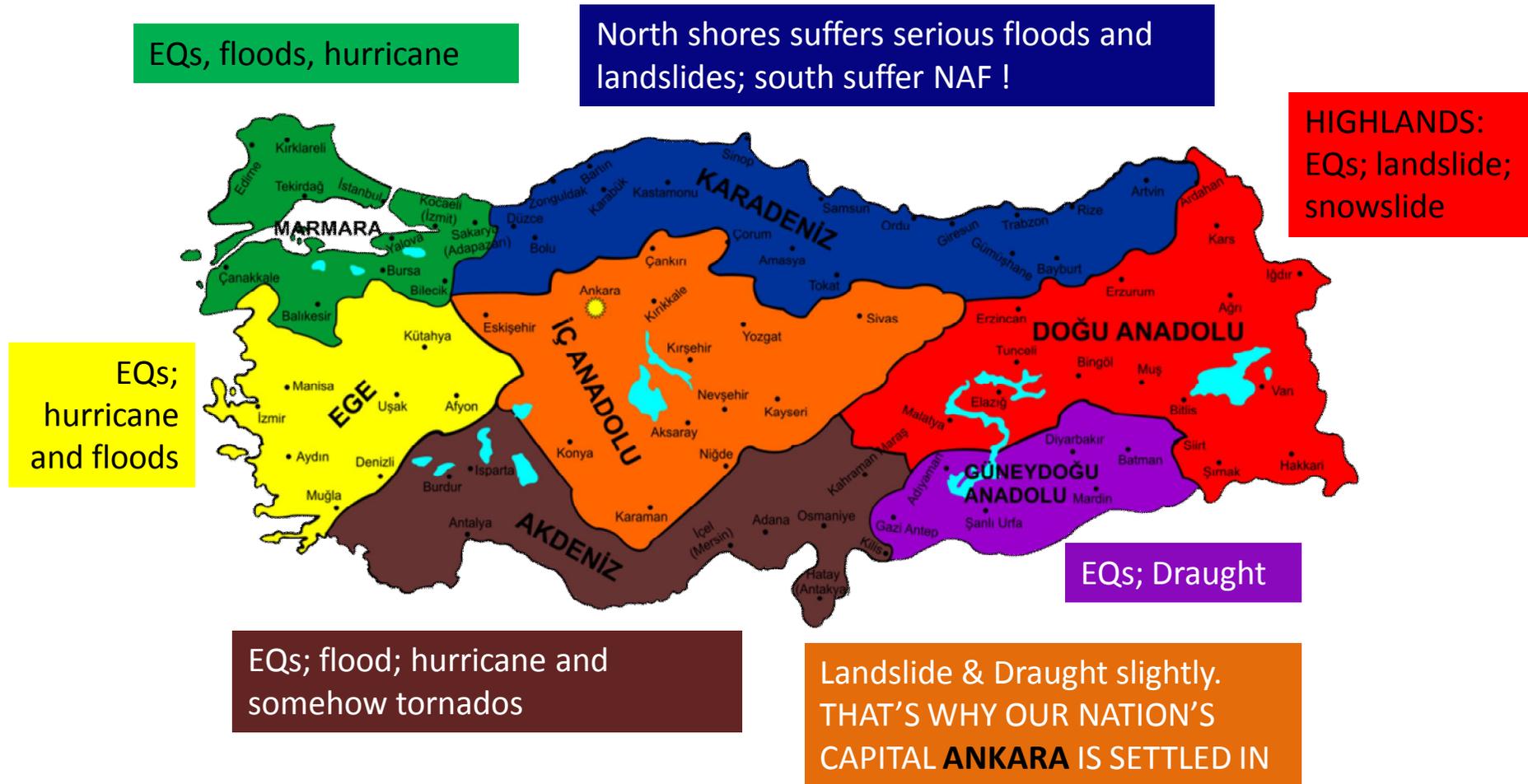


# TURKEY and NATURAL DISASTERS



- Geographically, Turkey has **7 regions**. This is due to climate, topography and neighborhood; however not to official governmental administration.
- We have **81 provinces**, each having independent governorships and metropolitan municipalities. Each province has various numbers of districts with smaller municipalities and governorship offices.
- Please NOTE THAT: Mayors are elected by central voting of the public, while governors are appointed by the republic !

# TURKEY and NATURAL DISASTERS

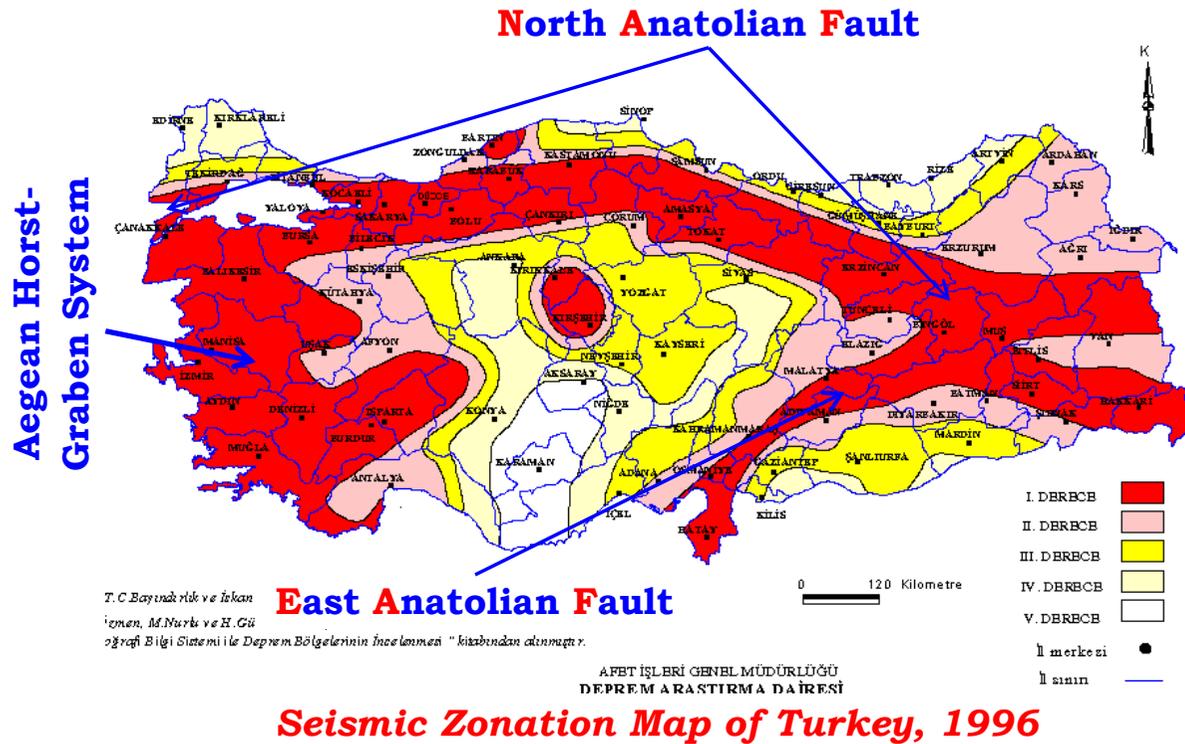


Turkey is very vulnerable to Natural Disasters....

There had been many developments in emergency and disaster prevention and mitigation policies in the last decades.

Some of them are very successful; however some still needs to be reconsidered.

# TURKEY and MAJOR NATURAL DISASTER RISKS: Earthquakes



Since 1900:

$M \geq 6.0 \rightarrow 110$  events

$M \geq 7.0 \rightarrow 19$  events

December 26, 1939  $M7.9$

Great Erzincan Earthquake

Annual rate of  $5.0 \leq M < 6.0$  events between 06.2013~05.2014 = **197**

■  $5.0 \leq M < 6.0 \rightarrow 14$  events

■  $M \geq 6.0 \rightarrow 5$  events

# TURKEY and MAJOR NATURAL DISASTER RISKS: Earthquakes

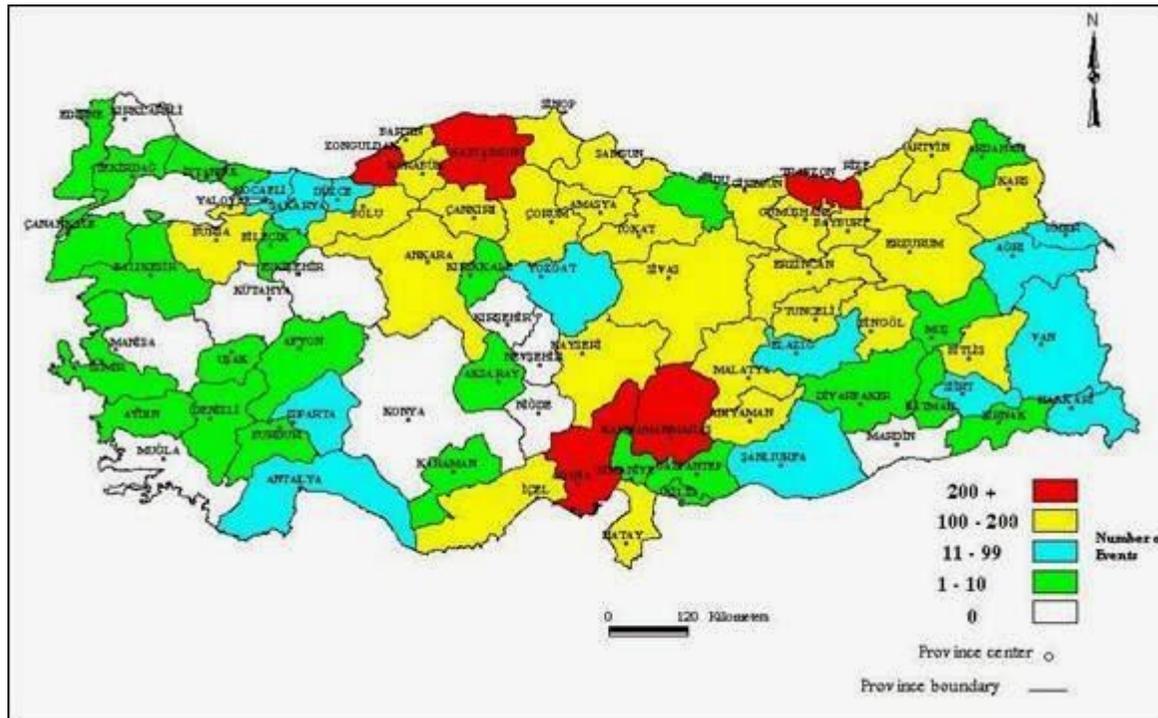
Most recent destructive earthquake:  $M_w 7.2$  / 23.10.2011 Van EQ



## HARD & SOFT APPROACHES AGAINST earthquakes

- 👍 Earthquake Codes are updated in 1975; 1998; 2007 and **a new version** is on the way.
- 👍 In 2000 **Turkish Catastrophe Insurance Pool** (TCIP) is established and Earthquake Insurance became compulsory for private properties by law.
- 👍 **Urban Renewal Law** is enforced in 2012 as another soft approach, which governs the hard approach of demolishing seismically risky buildings and renewing them.
- 👍 Most of the school buildings, hospitals, bridges and viaducts are **retrofitted**.
- 👍 Emergency management regulations are handled excluding bureaucracy by recently established **Presidency of Disaster and Emergency Management** (AFAD), which is directly under Turkish Prime Ministry.
- 👍 **Earthquake drills** are initiated in schools; **research projects** are encouraged via public funds; **emergency sheltering** and **gathering locations** are pointed out; emergency **transportation routes** are established; many **NGO's** are founded for emergency response, search and rescue, public training; research & application of **early warning system** still is a topic that AFAD is working on.
- 👎 Unfortunately, some of the sheltering locations in İstanbul are re-permitted for construction and emergency routes of land transportation are left uncontrolled by public authorities.

## TURKEY and MAJOR NATURAL DISASTER RISKS: **Landslides**



Between 1970-2012:

**988 Landslides**

58 casualties

3828 effected people

Annual rate distribution for landslide events mostly due to heavy rainfall:

■ **> 200** events in **5** provinces;

■ **100~200** events in **28** provinces

Making almost **41%** of total provinces in Turkey, however **70%** of the total land area.

# TURKEY and MAJOR NATURAL DISASTER RISKS: **Landslides**

*Most recent landslide:* **13.05.2011 Giresun**



# HARD & SOFT APPROACHES AGAINST landslides

- 👍 Transportation facilities and highways are rehabilitated including some route changes;
- 👍 Slope stability-improvement constructions such as: retaining walls, draining, trenches and planting are realized.



# TURKEY and MAJOR NATURAL DISASTER RISKS: **Floods**



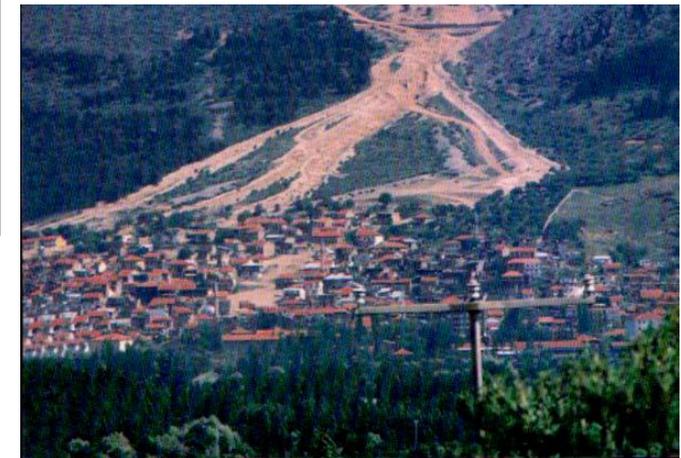
Between 1970-2012:

**237 Floods**

**180 casualties**

**5293 effected people**

July 13, 1995 Senirkent-ISPARTA



Annual rate distribution for flood events:

■ **> 100** events in **4** provinces;

■ **10~100** events in **26** provinces

Making **37%** of total provinces and **41%** of the total land area of Turkey.

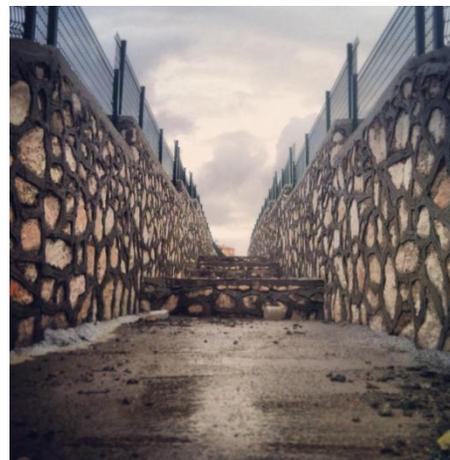
# TURKEY and MAJOR NATURAL DISASTER RISKS: **Floods**

*Most recent flood:* **27.08.2010 Rize**

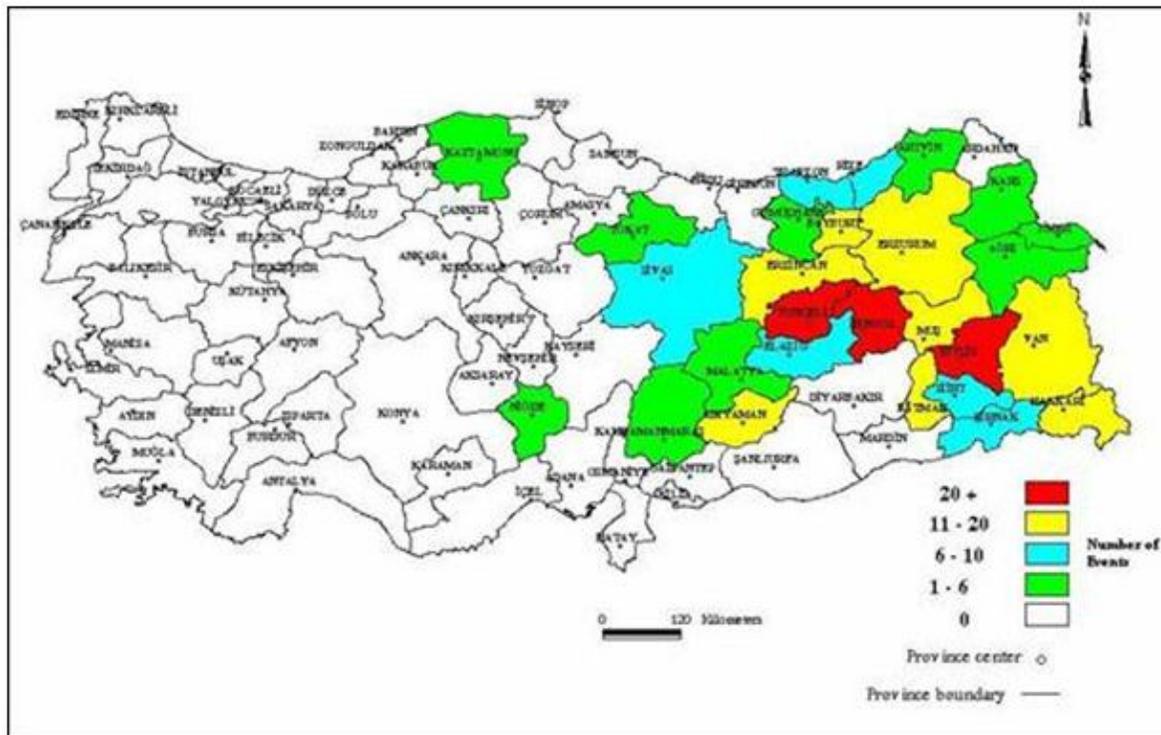


## HARD & SOFT APPROACHES AGAINST floods

- 👍 Along the rivers, where the flow rate is significantly high or have the potential of flooding, dykes are constructed.
- 👍 Settlement and construction on alluvial plains and stream beds are prohibited.
- 👍 Early warning system is realized.
- 👍 Rehabilitation of most of the stream beds by levees; bridges; draining structures; terracing and planting is carried out.



# TURKEY and MAJOR NATURAL DISASTER RISKS: **Snowslides**



Between 1890-2009:

**1227 Snowslides**

**1417 casualties**

**Feb. 1, 1992 Görmeç-ŞIRNAK**

**151 casualties**



Annual rate distribution for snowslide events:

- **> 20** events in **3** provinces;
- **11~20** events in **8** provinces

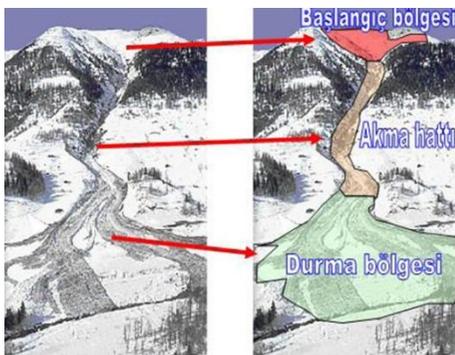
# TURKEY and MAJOR NATURAL DISASTER RISKS: **Snowslides**

*Most recent snowslide:* **29.01.2012 Bitlis**

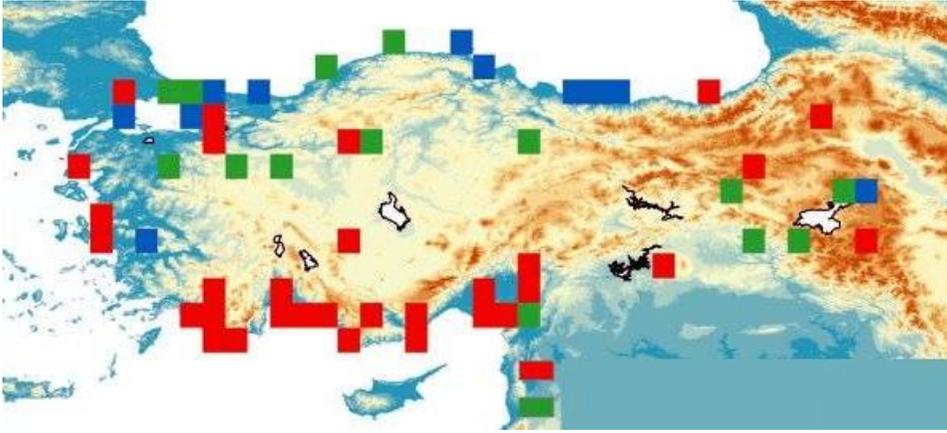


# HARD & SOFT APPROACHES AGAINST snowslides

-  Flow-line controlling constructions and snow fencing applications are realized near urban settlement locations.



# A NEW DISASTER TYPE for TURKEY TORNADO

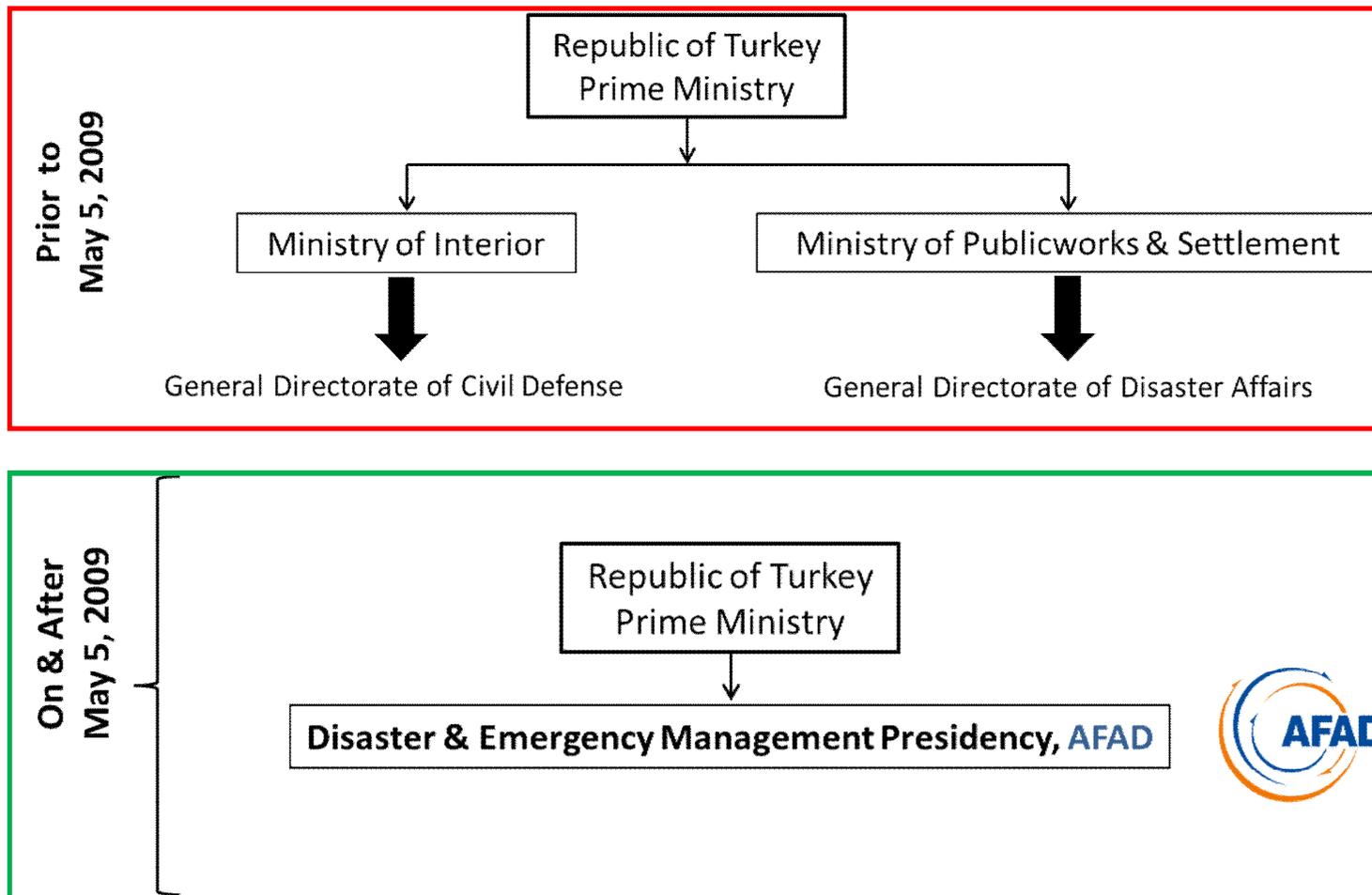


Due to the global climate changes, Turkish people now get used to tornado events. Major events have been seen in the Mediterranean shores and Marmara Sea, while a few events occurred in the Aegean coasts.



## EFFORTS for DISASTER RISK PREVENTION

- As a nationwide effort, establishment of **Disaster and Emergency Management Presidency** (AFAD) is an important change in Turkey, which decreased a significant amount of bureaucracy. Furthermore, AFAD handles all four stages of emergency management: **Preparedness**, **response**, **recovery** and **mitigation**.



## EFFORTS for DISASTER RISK PREVENTION

- Although disaster victims still hold the right to benefit from public funding for their damaged properties, **Turkish Catastrophe Insurance Pool** founded in **2000** provides the contribution of entire property owners to share the economic burden.
- The latest **Construction Inspection Law** increased the quality of structures.
- By the recently enforced **Urban Renewal Law**, owners whose properties are seismically insufficient can replace their buildings with exemptions of many taxes and disbursements.



# EFFORTS for DISASTER RISK PREVENTION

- Emergency training, drills and education initiated in the last two decades yielded an increase in the awareness of the society.



- Including higher education, retrofitting and strengthening techniques are considered, experimentally researched and taught. Real world applications are commonly seen, especially for public buildings, schools, hospitals and transportation facilities.



# EFFORTS for DISASTER RISK PREVENTION

- International workshops and framework project partnerships became very common.



- In the international level, current disaster and emergency management system and insurance pool applications in Turkey became a model for surrounding countries such as Iran, Iraq, Syria, Cyprus, Romania, Slovenia, Bosnia & Herzegovina, Macedonia, Kosova.
- Collaboration with **JICA** for the last 40 years and **FEMA** for the last 15 years provided initiation of graduate level education programs, international exchange of experts and establishment of institutes on emergency management.



- Being trained by JICA, Turkey became a trainer for the Third Countries within the last decade.





as **JSCE-Turkey** Section

we would like to

**THANK YOU VERY MUCH !**