

Disaster Risk Management

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Disaster

A serious **disruption** of the functioning of a community or a society at any scale due to **hazardous events** interacting with conditions of **exposure**, **vulnerability** and **capacity**, leading to human, material, economic and environmental losses and impacts.

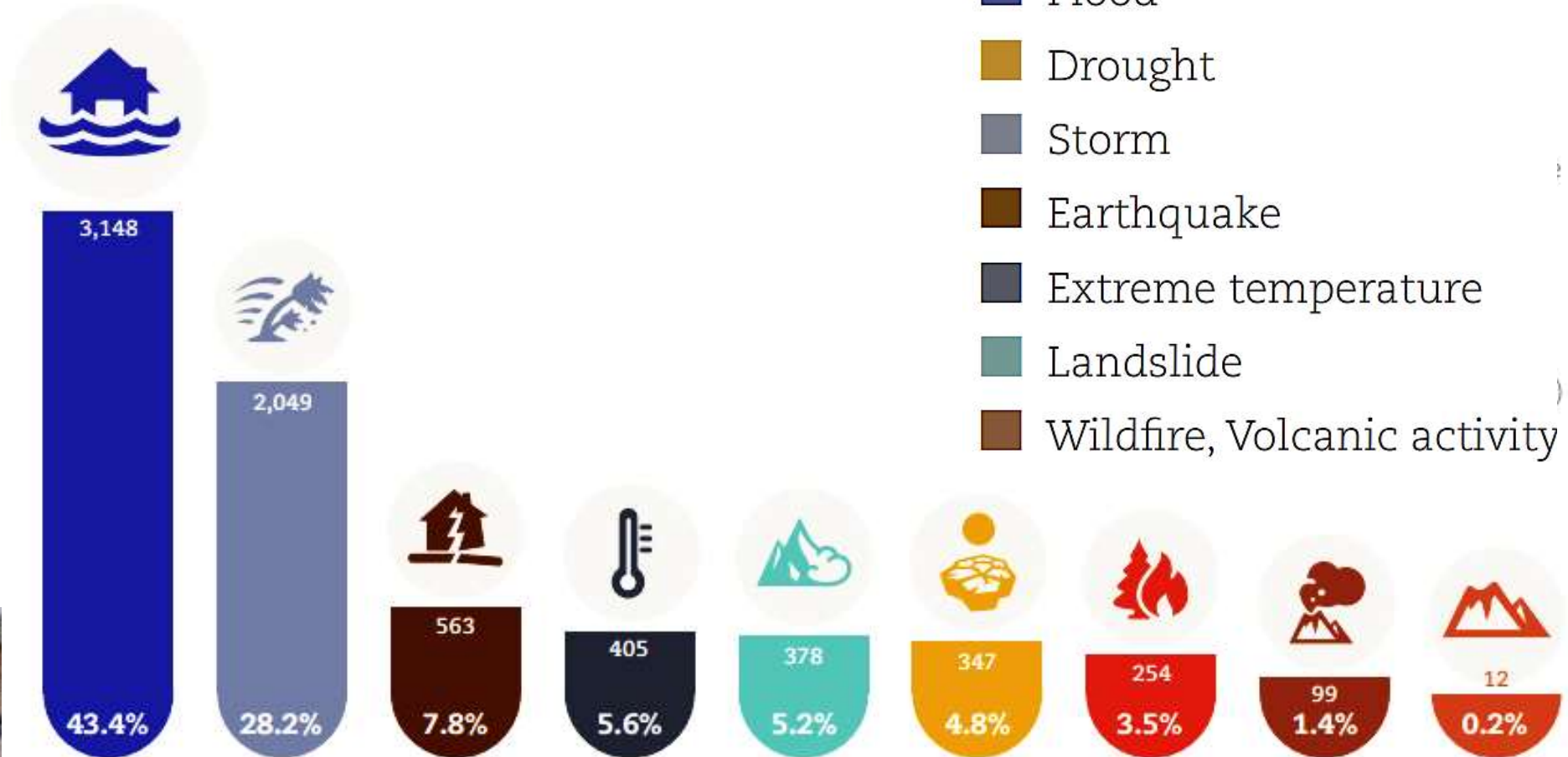


DISRUPTION & DAMAGE

Global Disaster Trends



Numbers of disasters per type 1998-2017





What are most frequent Disasters

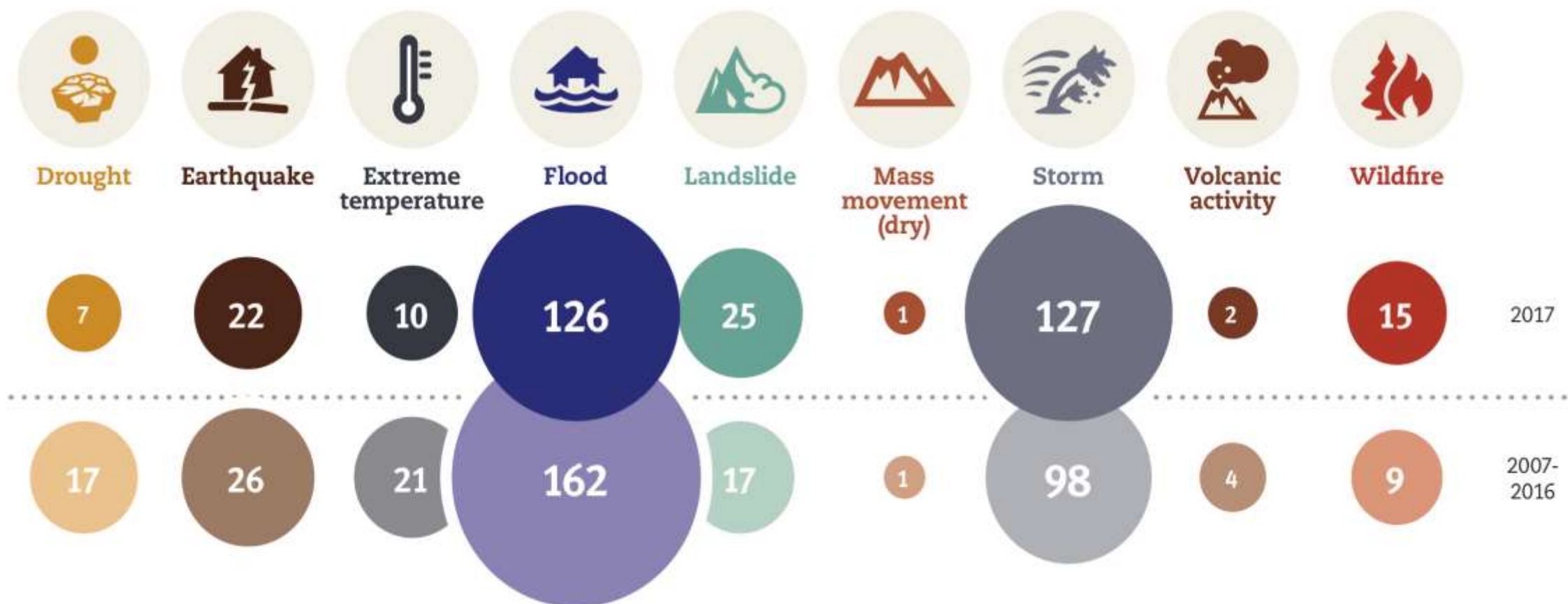
Figure 2

Occurrence by disaster type:
2017 compared to 2007-2016

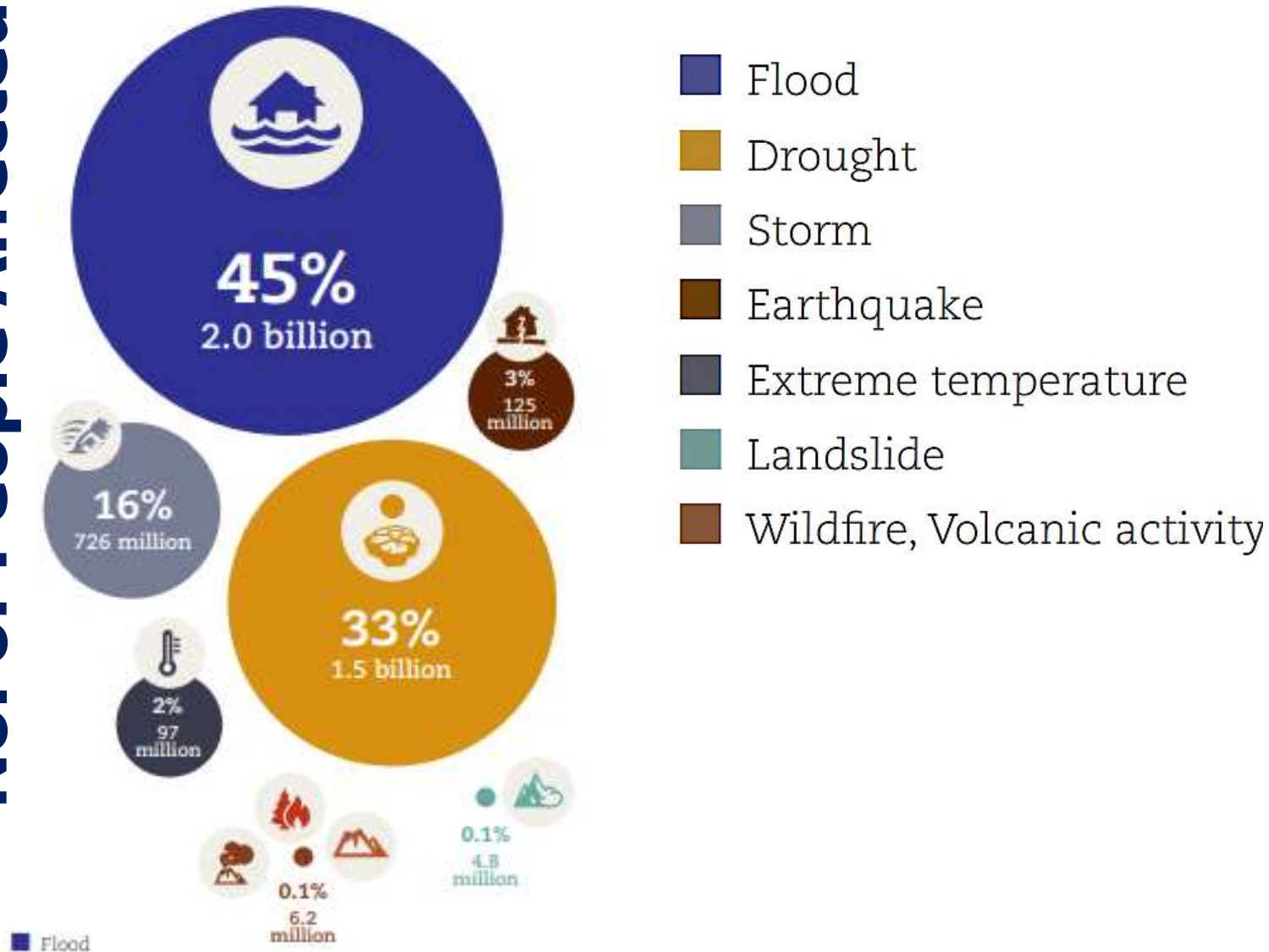
354
2007 to 2016

>

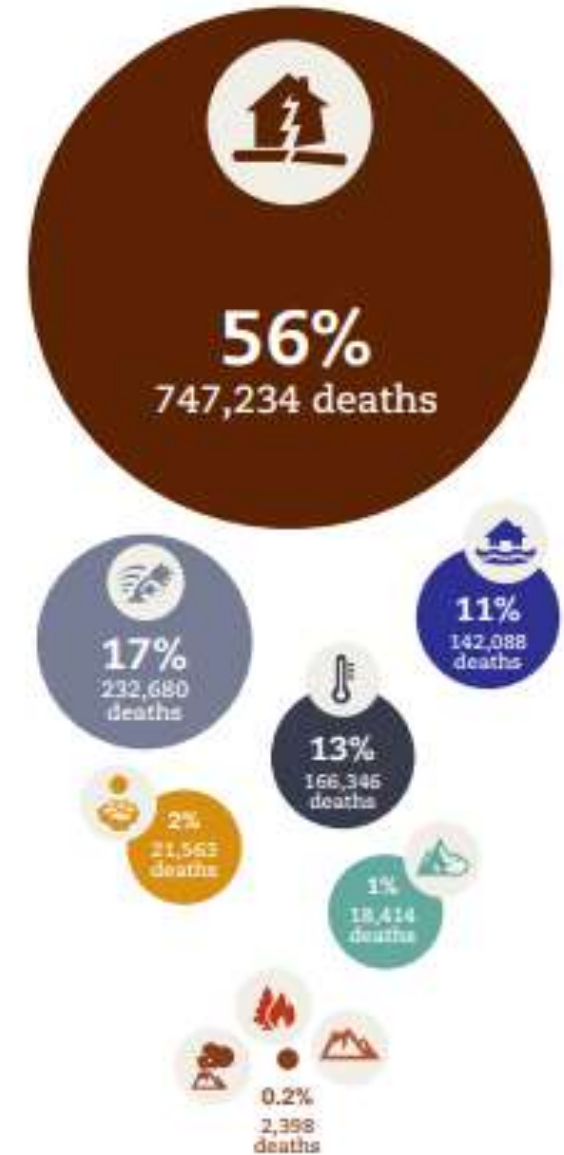
335
in 2017



No. of People Affected

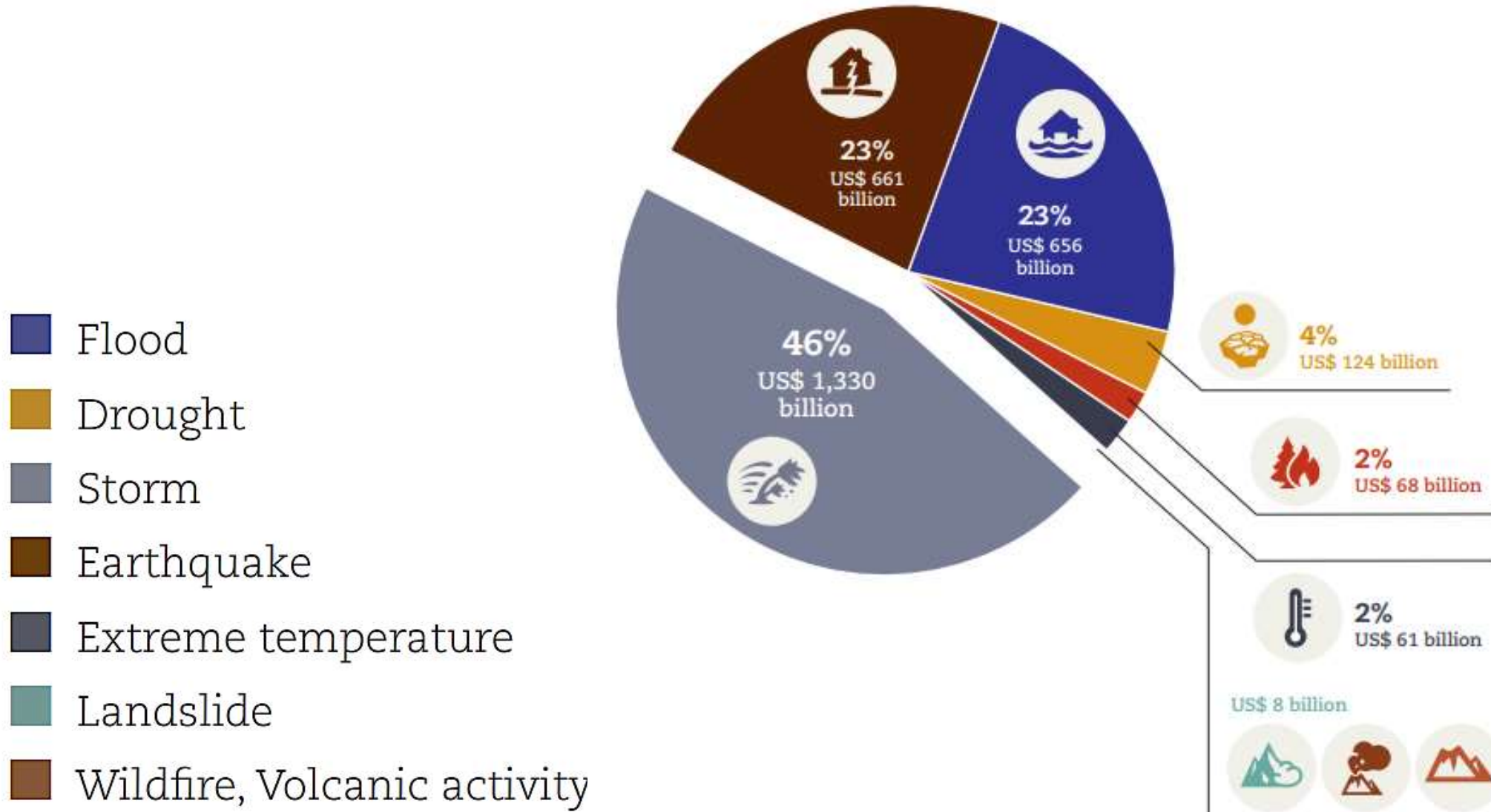


No. of Death





Economic Losses Disaster





Understanding Disaster Risk

HAZARDS



Floods



Cyclone



Tsunami



Earthquake



Fires



Heatwave



Virus

Hazard is a process, phenomenon or human activity that *may cause* loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.



Fires



Viral Fever



Rains

HAZARDS



DISASTER



Understanding Disaster Risk

Exposure is the situation of people, infrastructure, housing, production capacities and other tangible human assets ***located in hazard-prone areas.***

**ALL
EXPOSED**



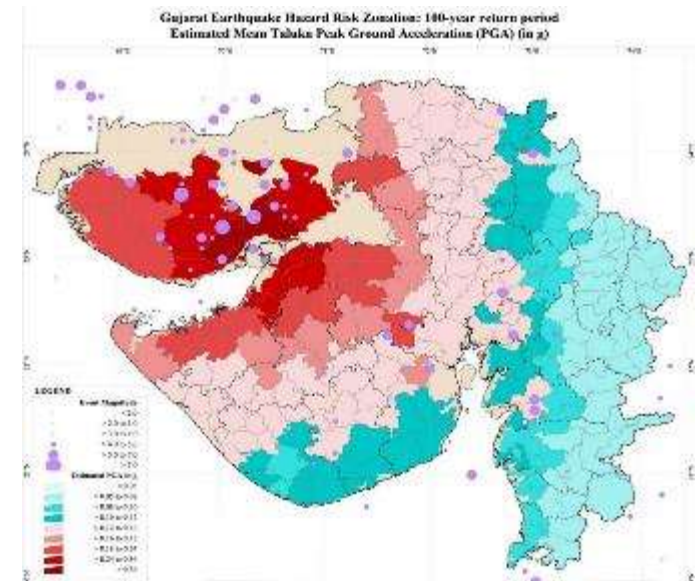
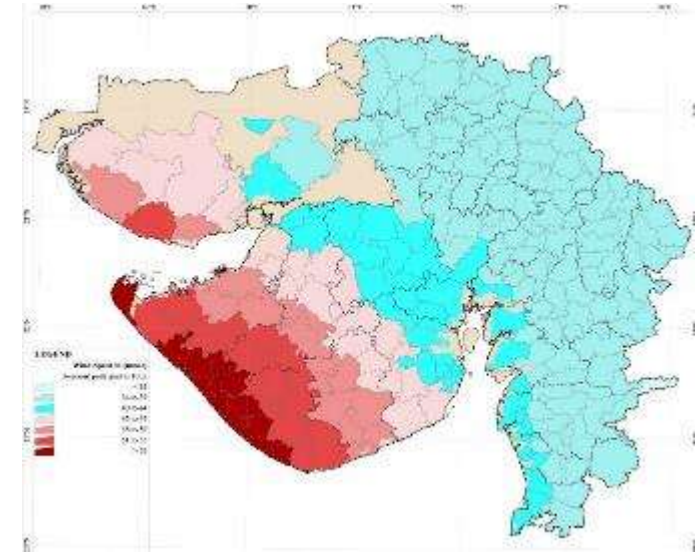
**ALL
DAMAGED**



EXPOSURE



Earthquake & Cyclone Prone region





Understanding Disaster Risk

HAZARDS



Floods



Cyclone



Tsunami



Earthquake



Fires



Heatwave



Virus

EXPOSURE



DISASTER



Understanding Disaster Risk

VULNERABILITY

Vulnerability is the conditions determined by **physical, social, economic** and **environmental** factors or processes which **increase the susceptibility** of an individual, a community, assets or systems to the impacts of hazards.





Understanding Disaster Risk

Capacity includes infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership, management and resources available within a society to ***manage disaster risks.***



COPING CAPACITY





Increasing frequency of Hazards

HAZARDS



Floods



Cyclone



Tsunami



Earthquake



Fires



Heatwave



Virus



Climate Change



Population Density



Rapid and Unplanned Urbanization



Understanding Climate Change





Disaster Risk & Reduction

$$\text{Disaster Risk} \propto \frac{\text{Hazard} \times \text{Exposure} \times \text{Vulnerability}}{\text{Coping Capacity}}$$

$$\text{Disaster Risk Reduction} \propto \frac{\text{Reduce Hazard} \times \text{Reduce Exposure} \times \text{Reduce Vulnerability}}{\text{Increase Coping Capacity}}$$



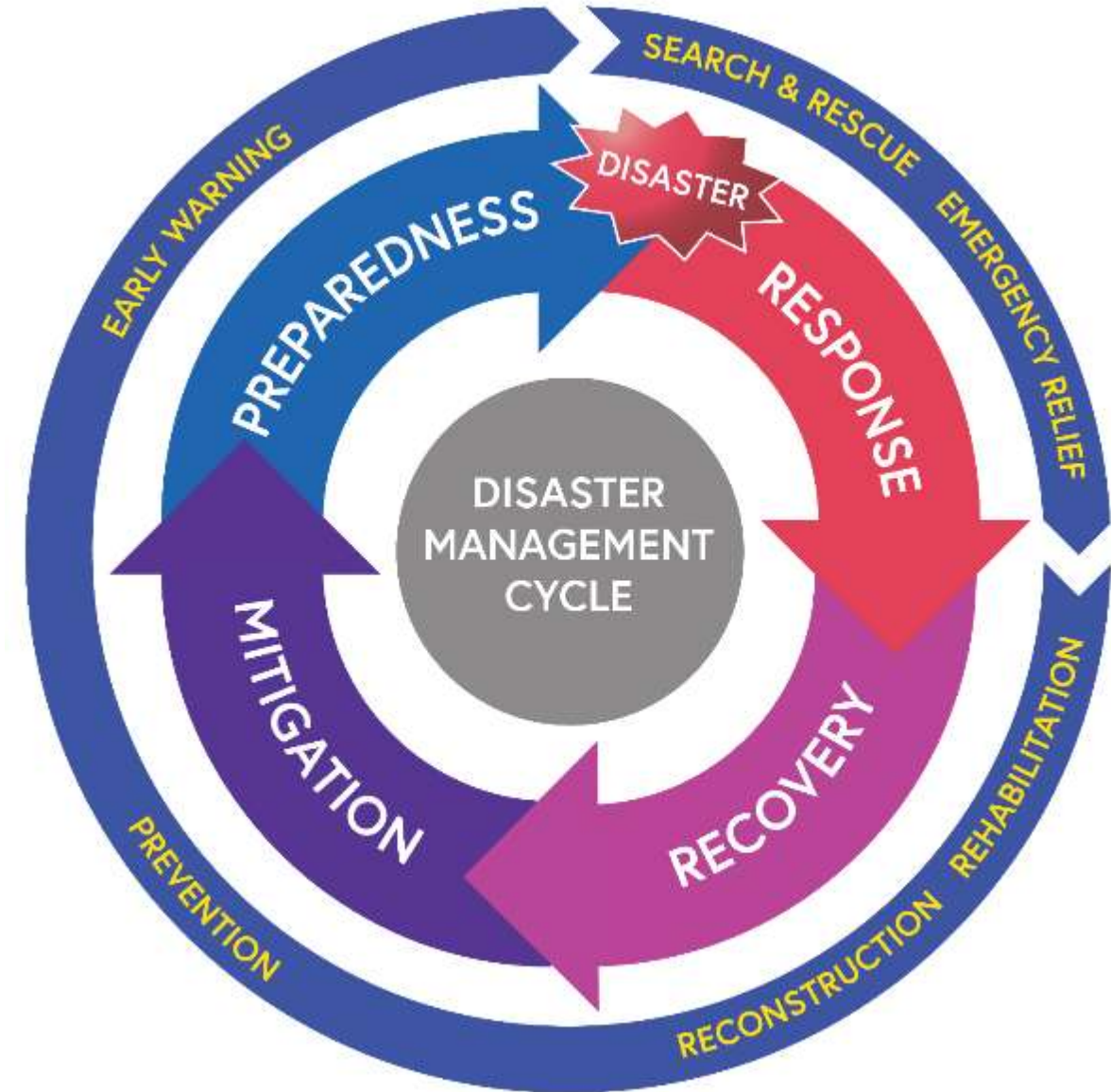
Disaster Management Cycle

Disaster Risk Management is Cyclic Process on follows the another

Prevention : Event will not happen

Mitigation : Event will happen, however impacts would be reduced

Preparedness : State of Readiness





Sendai Framework for DRR (2015 – 2030)

P1- Understanding Disaster Risk

P2- Strengthening Disaster Risk Governance

P3- Investing in Disaster Risk Reduction

P4- Enhancing Preparedness for Response & BBB

SUBSTANTIALLY REDUCE

-  A. Global disaster mortality
-  B. Number of affected people
-  C. Economic loss in relation to GDP
-  D. Damage to critical infrastructure and services disruption

-  E. Number of countries with national and local DRR strategies by 2020
-  F. International cooperation to developing countries
-  G. Availability and access to early warning systems and DRR information

**SEVEN TARGETS
TO ACHIEVE
BY 2030**

SUBSTANTIALLY INCREASE



Group Activity

**All students are requested to answer in the
chat section**

Ready ?



Development Issue

You are a Project Manager for planning and designing a hospital near a village. Village is prone to floods and landslides. What will be the best site for the Hospital?

Options:

A ?

B ?

C ?



Highlight key features as may be required.



Please answer in Chat Box with **Reasons**





Hazards impacts Development

Is it Safe, Accessible, Functional as a Critical Resource ?





Worst Case Scenario





Risk Informed Development





Flood Risk Informed Development

- **Disaster Resilient Construction**
- **Flood Plain Analysis**
- **High Flood Level**
- **History of Floods**
- **Flood Protection Wall**
- **Higher level**
- **Ramps for Access of Vulne**



$$\text{Disaster Risk} \propto \frac{\text{Hazard} \times \text{Exposure} \times \text{Vulnerability}}{\text{Coping Capacity}}$$



Disaster Risk Management Cycle

- **Understanding Risk**
- **Prevention of New Risk**
- **Reduction of Existing Risk**
- **Enhancing Coping Capacities**
- **Comprehensive Responses**
- **Building Back Better**



**Risk Informed Development
Planning & Execution**



Disaster Risk

The **potential** loss of life, injury, or destroyed or damaged assets;

- which could occur to a **system**, **society** or a **community**
- in a specific period of time,
- determined probabilistically as a function of **hazard**, **exposure**, **vulnerability** and **capacity**.

$$\text{Disaster Risk} \propto \frac{\text{Hazard} \times \text{Exposure} \times \text{Vulnerability}}{\text{Coping Capacity}}$$



**Discussion: What is role of
Trained Masson in Disaster
Risk Reduction ?**

Questions ?