

Disaster Mitigation and Management

Disasters in 2020 - India



**Cyclone – Nisarga
(Maharashtra)**



**Cyclone – Nivar (Southern
India)**



Kerala flood



Assam flood



Hyderabad flood



Oil and gas leak - Assam



Vizag gas leak

Disasters in 2021 - India

1. Uttarakhand flood – Started on 7 February 2021
2. Assam earthquake – April 28, 2021 (Resulted in two fatalities and at least 12 injuries)
3. Nipah virus outbreak in Kerala
4. Cyclone Tauktae – Gujarat
5. Cyclone Yaas – West Bengal and Odisha
6. Cyclone Jawad – Andhra Pradesh, Odisha and West Bengal
7. Maharashtra flood – Started on 22 July 2021

Disasters

- Sudden adverse or unfortunate extreme event which causes great damage to human, plants and animals
- Occurs rapidly, instantaneously and indiscriminately

Natural or man-induced extreme events (Disaster)

Losses of property and life

How to reduce losses due to disaster?



How to reduce losses due to disasters?

- Disaster Management
- Last decade (1990 – 1999) – International Decade for Natural Disaster Reduction
- Decade dedicated to promote solutions for reducing risks from natural hazards

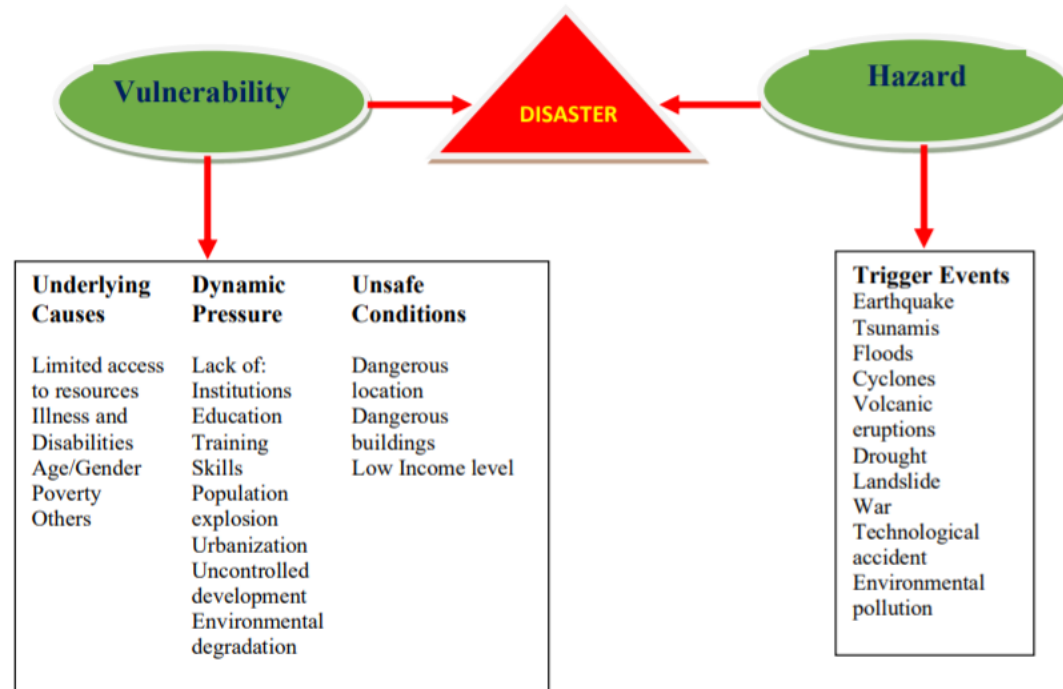


Questions

1. Covid – 19 is considered as what type of disaster?
2. Name some man made disasters in India.
3. Bhopal gas disaster is a kind of _____
4. How to reduce the impact of disaster?

Definition for Disaster

- Deaster – Des (BAD) + aster (STAR)
- United Nations - **A serious disruption of the functioning of a community or a society causing widespread human, material, economic and environmental losses which exceed the ability of the affected community/society to cope using its own resources.**

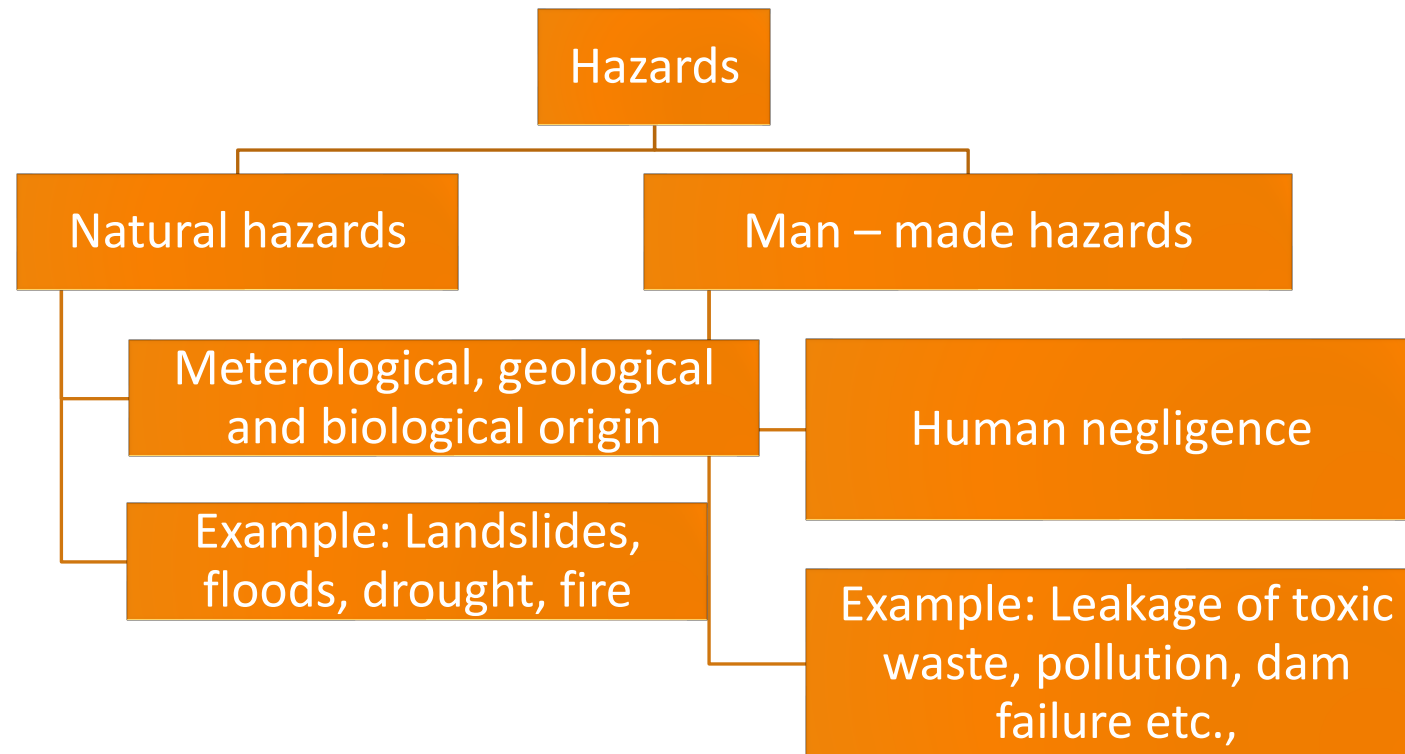


Vulnerability, Disaster and Hazard

- Earthquake – disastrous only when it affects people, properties and activities
- Earthquake in remote area with greater intensity – Not disaster
- Only Hazard does not lead to disaster
- Hazard + Vulnerability – Disaster

Components of Disaster - Hazard

- Hazard - Dangerous condition or event or threat that have the potential for causing injury to life or damage to property or the environment



Types of Hazards

Geological Hazard



Climatic Hazard



- a. Tropical Cyclone
- b. Sea erosion
- c. Heat and Cold wave
- d. Hailstorm

Environmental and Biological Hazards



- a. Environmental Pollutions
- b. Deforestation
- c. Pest infection
- d. Food poisoning
- e. Weapons of mass destruction

Types of Hazards

Chemical, Industrial and Nuclear Accidents

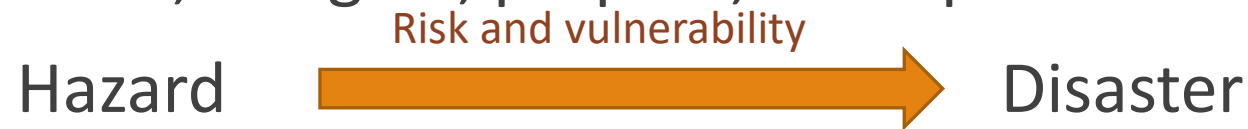


Accident related

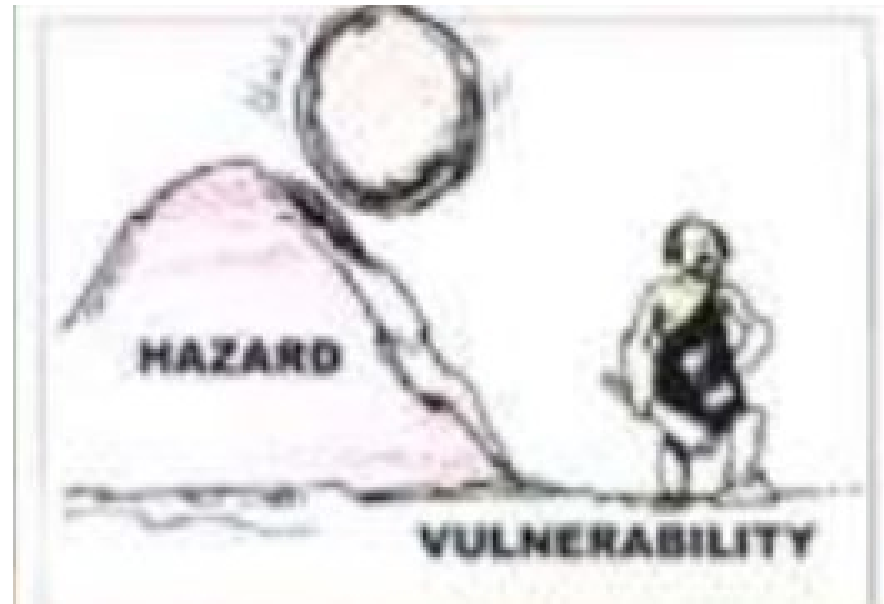
- a. Bomb Disasters
- b. Forest fires
- c. Building collapse
- d. Mine flooding
- e. Electric accidents

Vulnerability

- Extent to which a **community, structure, services or geographic area is likely to be damaged** or disrupted by the impact of particular hazard, on account of their **nature, construction and proximity to hazardous terrains** or a disaster prone area
- **Set of prevailing conditions** which adversely affect the community's ability to prevent, mitigate, prepare, or respond to a hazard.



Vulnerability?????



Example:

Cyclone prone area are more vulnerable because of:

- High exposure to cyclone
- Lack of proper management (Low resistance)
- Economic limitation (Low resilience)

TYPES - Physical Vulnerability

- Physical vulnerability
 - Depends upon geographic proximity to the source and origin of the disasters
 - Includes the difficulty in access to water resources, means of communications, hospitals, police stations, roads and exits of a building or/an area in case of disasters
 - Lack of proper planning and implementation in construction of residential and commercial buildings results in weaker buildings which is vulnerable to earthquakes, floods, landslides and other hazards.

TYPES – Social Vulnerability

- Refers to the inability of people, organizations and societies to withstand adverse impacts to hazards due to characteristics inherent in social interactions, institutions and systems of cultural values
- Linked to the level of well being of individuals, communities and society
- Example: During flood some citizens such as children, elderly, and differently able may be unable to protect themselves or evacuate if necessary

TYPES – Economic Vulnerability

- Depends upon the economic status of individuals, communities and nations
- Poor are usually more vulnerable to disasters because they lack the resources to build the structures

TYPES – Environmental Vulnerability

- Natural resource depletion and resource degradation are key aspects of environmental vulnerability
- Poor environmental management, overconsumption of natural resources, decline of risk regulating ecosystem services, extraction of soil from river bed etc.,

Capacity

- Resources, means and strengths that exists in households and communities which enable them to
 - WITHSTAND
 - PREPARE
 - PREVENT
 - MITIGATE
 - RECOVER FROM A DISASTER

TYPES – PHYSICAL CAPACITY

- People whose houses have been destroyed by the cyclone or crops have been destroyed by the flood can salvage things from their homes and from their farms.
- Some have skills which enable them to find employment if they migrate, either temporarily or permanently

TYPES – SOCIO ECONOMIC CAPACITY

- Rich people have the capacity to recover soon because of their wealth and their houses are built with stronger materials
- They have the capacity to cope up with it

RISK

- Measure of the expected losses due to a hazard event occurring in a given area over a specific period
- Risk – Probability of particular hazardous event and the losses it would cause
- Risk – depends upon nature of the hazard, vulnerability

RISK

The level of risk depends upon:

- Nature of the hazard
- Vulnerability of the elements which are affected
- Economic value of those elements

Disaster Management Cycle

- Activities, programmes and measures taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses.
- Before – To avoid a disaster or warning for disaster
- During – To reduce its impact
- After – To recover from its losses

Stages of activities in disaster risk management

- Before a disaster (Pre-disaster)

- Activities taken to reduce human and property losses caused by a potential hazard.

- Awareness meeting, strengthening the existing weak structures.
Preparation of the disaster management plans at household and community level

- **MITIGATION AND PREPAREDNESS ACTIVITIES**

Stages of activities in disaster risk management

- During a disaster (Disaster occurrence)
 - Initiatives taken to ensure that the needs and provisions of victims are met and suffering is minimized
 - **EMERGENCY RESPONSE ACTIVITIES**



Stages of activities in disaster risk management

- After a disaster (Post-disaster)
 - Activities taken to achieve early recovery and rehabilitation of affected communities, immediately after disaster
 - **RESPONSE AND RECOVERY ACTIVITIES**

Disaster Management Cycle

