Disaster management _

- Collective term for **planning emergencies for disasters**
- **Pre and post events**
- **Risk** and **consequences** of event
- More than **relief and response**
- it is a systematic process aimed at **reducing the negative impact** and/or consequences of adverse events

---

.

Goals of disaster management

- **Proactive plans** to mitigate various business risks
- **Minimizing loss** via more effective preparedness and response
- Creating more effective and durable recovery

Disaster

- **A serious disruption** of the functioning of a community or a society
- **Causing** - human,economic or environmental losses
- A disaster is a **function of the risk process**.
- It **results** from the

1. combination of hazards,
2. conditions of **vulnerability** and
3. insufficient capacity

- measures to reduce the potential negative consequences of risk
- Disaster includes

  Any occurrence that causes
  - Damage,
  - ecological disruption,
  - loss of human life
  - deterioration of
  - health and health services

Levels of disaster.

1. **Minor Disaster**: Any disaster that falls within the response capabilities of **Local Government**
   and requires minimal **State or Federal assistance**.

2. **Major Disaster**: Any disaster that **exceeds** the local government capabilities and requires a
broad range of **State and Federal assistance.**

3. **Catastrophic Disaster**: Any disaster that require **massive** State and Federal assistance,
including immediate military involvement. Potential **Federal** assistance will involve **response**
as well as **recovery** measures.

Approaches to Disaster Analysis

(a) Sociological Approach
(b) Anthropological Approach
(c) Development Studies Approach
(d) Disaster Medicine and Epidemiology Approach
(e) Geographical Approach
(f) Technical Approach

(a) Sociological Approach

- Sociologists have **agreed** on the definition of disaster.
- They have **"interpreted** disasters as special types of social phenomena, Because,
    - they are dramatic historical happenings (events),
    - compel collective reactions (social catalysts)".

- sociologists study a range of different types of **events.**
- They are **natural hazards** (tornadoes,floods, hurricanes, earthquakes, volcanic eruptions),
- **accidents** (air disasters, explosions, large scale fires, breaking of dams).
- **Not lots** of sociological disaster studies have been done on
famines, epidemics, economic depressions, political revolutions and **wars**

(b) Anthropological Approach

- According to the Anthropologist "Disaster is seen as a **process leading to an event**
- **involves** -
    1. combination of a potentially destructive agent from the natural
    2. technological sphere
    3. a population in a socially produced condition of vulnerability"

- Henry (2005) has given an anthropological contribution to the complete life cycle of disaster,
    1. from issues of vulnerable and perceived risk,
    2. to individual and social responses
    3. and coping strategies, to relief and recovery efforts

(a) Pre-Disaster Risk and Vulnerability:
(b) Responses to Disaster:
(c) Providing Relief:

(a) Pre-Disaster Risk and Vulnerability:

1. Within the same social system, a group of people are more vulnerable to disasters than others.
2. This **inequality** increases discrimination as well as tensions
3. both during the times of crisis and relief.
4. **The severity of disaster impact** is increased by conditions like

- ☐ poverty,
- ☐ racism,
- ☐ gender
- ☐ Inequality,
- ☐ history of colonial exploitation,
- ☐ global inequities,
- ☐ imbalances of trade and
- ☐ Underdevelopment

(b) Responses to Disaster:

- The anthropology of disaster has focused on **changes occurring within cultural institutions**
    - ☐ like religion,
    - ☐ ritual,
    - ☐ economic organisation,
    - ☐ politics (local cooperation or conflict),
    - ☐ conflict), the ability of local institutions to mitigate the impact of a disaster
    - ☐ and the differential capabilities of response due to ethnicity,
    - ☐ gender,
    - ☐ age and
    - ☐ socioeconomic status (Henry, 2005).
- They have shown adaptive coping strategies that have been used traditionally to cope with disasters.
- They have noted how disasters change political organisations and power relations between individuals, the state and international actors.

- They have also looked at the changesthat disasters bring to economic system in the form of employment, sharing etc.

(c) Providing Relief: Development and Power: They supported a more developmental approach to prevent future disasters than a top-down strategy.

A Development Studies Approach

- This approach looks at the problems of **providing aid and relief to Third World Countries.**
- Mainly it **addresses the problems** of **refugee management, health care** and the **avoidance of starvation** (Alexander, 1993).
- Most of the disaster impact occurs in **developing countries**.
- increases **poverty and human vulnerability**.
- This approach is more concerned about the **issues of vulnerability and livelihood security.**

A Medicine and Epidemiology Approach

- This approach mainly focuses on the management of **mass casualties, treatment of physical trauma** and the **epidemiological surveillance of communicable diseases.**
- The **incidence of such disease** generally increases after a disaster as there is a **disruption of public health** (Alexander,1993).
- **Medical suppor**t is the first priority after the initial **search** and **rescue phase** (Beinin, 1985).
- For example disasters like **floods** can create **epidemic** in the form of **diarrhea, respiratory andinfectious** diseases
- Disasters like **earthquakes and technological accidents** create problems like **bone fractures** and **psychological trauma**.

A Geographical Approach

- This approach has used the social science methods and
- emphasis is given to the spatio-temporal distribution of hazards, impacts and vulnerability.
- They have discussed how choices are made between different types of adjustment to natural hazards

A Technical Approach

- This is the approach of physical and natural scientists.
- They give more stress to seismology,volcanology, geomorphology and other geophysical approaches (Alexander, 1993).
- The emphasis here is on nature, scale, intensity and impacts on human structure or engineering.
- It may have some elements of human ecology.

HAZARD

A hazard is any source of

- potential damage,
- Harm
- or adverse health effects on something or Someone
- Basically, a hazard is the potential for harm or an adverse effect
- (for example, to **people as health effects**, **to organisations as property** or **equipment losses**, or to the environment).
- Sometimes the resulting harm is referred to as the hazard instead of the actual source of the hazard.
- For example, **the disease tuberculosis (TB) might be called a "hazard"** by some but, **in general, the TB-causing bacteria (Mycobacterium tuberculosis) would be considered the "hazard" or "hazardous biological agent".**

A common way to classify hazards is by category:

biological - bacteria, viruses, insects, plants, birds, animals, and humans, etc.,
chemical - depends on the physical, chemical and toxic properties of the chemical,
ergonomic - repetitive movements, improper set up of workstation, etc.,
physical - radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise,
etc.,
psychosocial - stress, violence, etc.,
safety - slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns.

VULNERABILITY

- Vulnerability has been defined as the degree to which a system, or part of it, may react adversely during the occurrence of a hazardous event.
- This concept of vulnerability implies a measure of

risk associated with the physical, social and economic aspects and implications

- resulting from the system's ability to cope with the resulting event.
-

VULNERABILITY AND CAPACITY ASSESSMENT

- The social activities of vulnerability have been **unexplored** in the recent years
- It has been **recently recognized** and that's why we have to reduce vulnerability
- It is also required to **reduce the capacity** to cope up with **natural disaster capacity**
- It should be explored in an appropriate way to reduce **potential losses** due to disasters
- The term capacity is not restricted to recent communities, but has a wider context in terms of
    1. Government
    2. Leadership
    3. Social org
    4. Social capital and others
- CVA is a framework for planning and evaluation
- The full of **cva** is CAPACITY VULNERABILITY ANALYSIS
- For viewing peoples vulnerabilities and capabilities, in 3 broad interrelated areas
    1. **Physical / material**
        - This is the most visible feature of vulnerability
        - It includes land, env, water , health, skills, labour, infrastructure, housing finance and tech
    2. **Social / organisational**
        - It includes
            - ☐ Social strategy
            - ☐ Internal conflict
            - ☐ External linkages
    3. **Motivational / Attitudinal**
        - It includes how
            - ☐ People in society view themselves
            - ☐ Their ability to alter their env

        It includes
            - ☐ Ideology
            - ☐ Belief systems
            - ☐ Awareness
            - ☐ Traditional systems

VULNERABILITY AND POVERTY

- Vulnerability implies a measure of risk combined with level of social and economic liability and ability to cope up with resulting event
- Vulnerability can be defined as a degree to which a system or a part of a system may react adversely during a hazardous event.
- For vulnerable people the access to resources at household or at an individual level is the most critical factor in achieving a secure livelihood or recovering effectively from a disaster
- The household with direct access to capital, tools,, equipments and able bodied members are strong when a disaster strikes

- **Physical vulnerability :** buildings, infrastructure, agriculture
- **Social vulnerability:** women, mentally and physically handicapped
- **Economic vulnerability**
- Relation between poverty and vulnerability
    1. **Direct :** physical and social infra, crop damage
    2. **Indirect :** loss of production, employment, vital services

- **Relation between poverty and vulnerability**
    1. Poverty can be qualified in terms of human poverty index measure as deprivation in basic human development resulting in deaths, literacy, poor access to health services
    2. All these indicators are outcomes of poverty which makes poor vulnerable
    3. Poverty is one of the causal factors of been exposed to vulnerability
    4. People from poor household, community are more likely to be disadvantaged than people from less poor homes
    5. Therefore, we can say that vulnerability is a dependent variable on poverty

---

COASTAL VULNERABILITY AND CLIMATE CHANGE

- Global climate change is expected to affect **coastal communities** all over the world
- The vulnerability arises due to a simple mechanism that is climate change will warm the earth to such appoint that the polar ice caps will start **melting**
- And this ice free water will **increase the water level** of the sea leading to drawing of coastal settlements
- Vulnerability is a function both of **climate change** and the ability to **adapt to impacts associated with that exposure**
- It is imp to note that vulnerability should be assessed both of **location** and **community**
- **IPCC** has defined vulnerability of coastal areas by their degree of incapability to cope up with impacts of climate change and accelerated sea level rise
- The assessment also include the susceptibility of **coastal zone to physica**l zone changes

- Exposure of social environments can be characterised by **susceptibility , resilience and resistance**
-

Concept of RISK
The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihood, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerabilities

Risk Severity describes the highest level of damage possible when an accident occurs from a particular hazard. Damage can be: Catastrophic, Critical, Moderate, or Negligible.

Risk management
Risk management is the

- ☐ identification,
- ☐ evaluation, and
- ☐ prioritisation of risks

- followed by coordinated and economical application of resources
- minimise, monitor, and control the probability or impact of **unfortunate events** or to maximise the realisation of opportunities.
- Risks can come from various sources including uncertainty in international markets, threats from project failures
- There are two types of events i.e.**negative events can be classified as risks** while **positive events** are classified as **opportunities.**

Emergency management consists of five phases:

1. **Prevention**
2. **Mitigation**
3. **Preparedness**
4. **Response**
5. **recovery**

Disaster risk

- **UNDP** has stated that disasters triggered by natural hazards put development gains at risk
- At the same time the development choice made by the individuals, communities, nations can pave way for unequal distribution of disaster risk
- Meeting the MGDS is extremely challenging in many countries

- ☐ The destruction of infrastructure
- ☐ Erosion of livelihood
- ☐ Damage to integrity of ecosystem
- ☐ Damage to architectural heritage
- ☐ Illness
- ☐ Injury
- ☐ Death

  Are the direct outcomes of disasters

- Disaster losses can also give stress and shocks like
  - ☐ Financial crises
  - ☐ Political conflict
  - ☐ Social conflict disease
  - ☐ Env degradation
- And sich disaster loses may set hack social investments aiming to
  - ☐ Remove poverty
  - ☐ Remove hunger
  - ☐ Access to education
  - ☐ Access to health services
  - ☐ Safe housing
  - ☐ Drinking water
  - ☐ Sanitization
- Every **schoo**l that collapses in an **earthquake**, and every **road or bridge** that is washed away in the flood began as development activity
- Thus it is extremely important that critical development infrastructure need to adopt and implement risk reduction measure

---

DISASTER RISK REDUCTION :

- Disaster risk was considered as merely relief and reconstruction issues till late 1980's
- 1990 to 1999 during IDNDR declared by UN , the focus was to advance a **wider commitment to activities** that could reduce the consequences of natural disasters
- **The Yokohama strategy** and plan of action stated that every country has primary responsibility to protect its
  - ☐ People
  - ☐ Infrastructure
  - ☐ National social assets
  - ☐ Economic assets

  From the impact of natural disaster
- We have to focus more on socio-economic factors
- Involved human actions can reduce the vulnerability of societies to natural hazards

STRATEGIES AND PRACTICES OF DISASTER RISK REDUCTION

- DRR is systematic development and application of policies and strategies
- It practises to minimise vulnerabilities
- Also practices to reduce disaster risk through a society
- To limit adverse impacts of hazards within the broad context of sustainable development
- Disaster risk reduction strategies include first and foremost
    - ☐ vulnerability and risk assessment
    - ☐ No of institutional capacities
    - ☐ Operational abilities
- The assessment of vulnerabilities of
    - ☐ critical facilities ,
    - ☐ social infrastructure
    - ☐ Economic infrastructure
    - ☐ Use of effective early warning system
    - ☐ Application of scientific methods

Are the essential features of DRR strategy

- The sharing of info and experience for the purpose of
    - ☐ Public info
    - ☐ Education
    - ☐ Professional training

      Are imp for creating a safety culture

RISK MANAGEMENT FRAMEWORK":

- RISK MANAGEMENT is a systematic process for undertaking risk reduction measures
- It relates to wide areas of **qualitative and quantitative f**actors requiring insight and input from many sources
- The risk management framework was developed by **joint technical group of standards australia and standards new zealand**
- It defined management as the culture, process and structure that are directed towards effects management of potential opportunities and adverse effects
- The process outlined within AS/NZS 4360 :1999 includes the foll elements
    - ☐ Establish the context
    - ☐ Identify risks
    - ☐ Analyse risks
    - ☐ Treat risk
    - ☐ Monitor and review
    - ☐ Communicate and consult
- The key issue is to repeat the process sat diff levels

- In the context of communities managing risks arising from natural hazards , it is clear that it is not a single management process
- It consists of many processes within which the risk must be considered
- It includes public sector processes as well as private sector processes
- It is important that all of these processes are strategically aligned
- In order to make most effective and efficient decisions about risks, the overall framework should dictate the process for
    - ☐ Determining the types
    - ☐ Levels of reduction
    - ☐ Levels of response activities

A community might utilise with respect to particular risk

CATASTROPHIC RISK OCCURRENCE AND MANAGEMENT

1. KINDS OF CATASTROPHES
    - **NATURAL** :
        - ☐ Earthquakes, seaquakes, volcanic eruptions
        - ☐ Tropical cyclones
        - ☐ Floods
        - ☐ Tornadoes
        - ☐ Landslides
        - ☐ avalanches
    - **Human made**
        - ☐ Terrorism
        - ☐ Riots
        - ☐
2. Exposure levels and past experiences of catastrophic cyclones:

TYPES AND GROUPS OF DISASTERS

- Man made and natural
- Made made >>>>>
- HPCOM INDIA 1999
- 5 GROUPS - 31 DISASTERS
    1. Water and climate related
    2. Geographically related
    3. Chemical, industrial, nuclear
    4. Accident related
    5. Biological related

Impacts:

Economic costs

1) Direct: physical, economic infrastructure, local infrastructure
2) Indirect : goods, salary, telecommunications, medical, injury, health

---

Components of mitigation

1. Preparedness activities: structural , non structural
2. Response activities
3. Recovery activities
4. Mitigation activities
