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DISASTER MANAGEMENT

for Civil Servies Examination

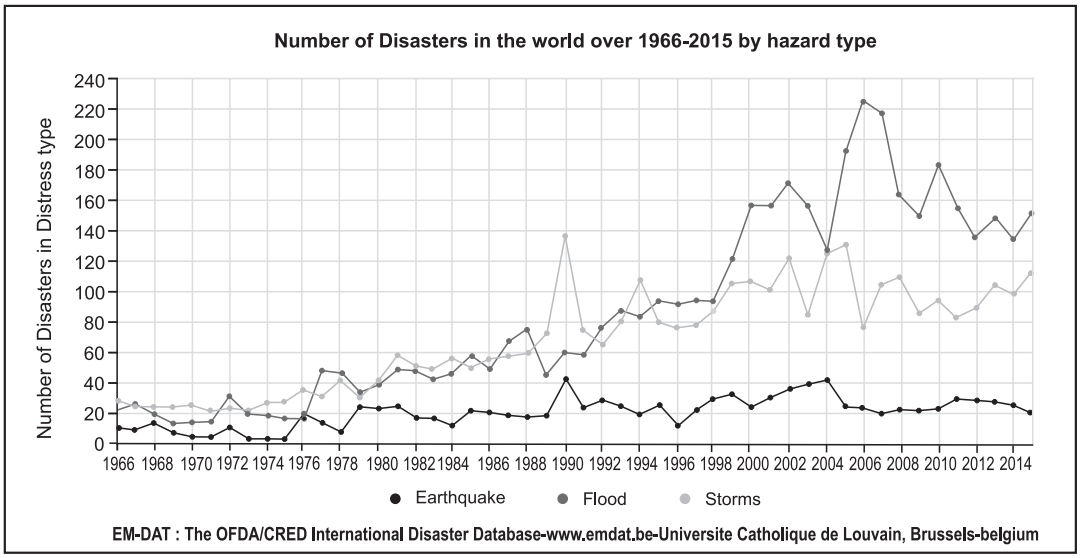
Contents

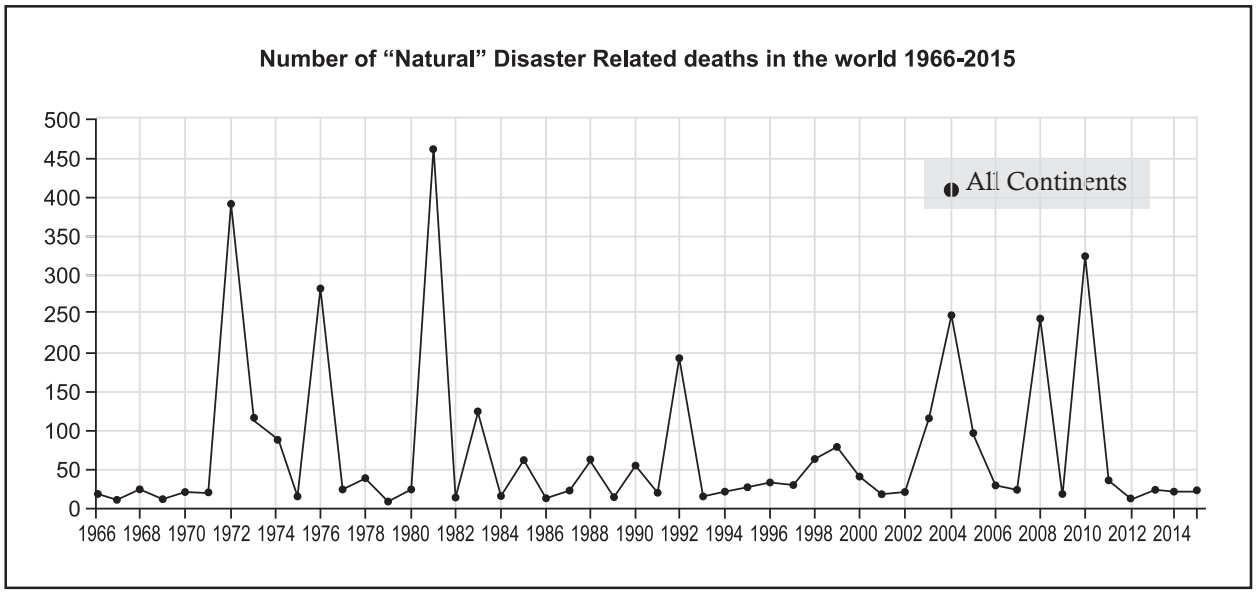
1.

INTRODUCTION TO DISASTER MANAGEMENT

Introduction

- The term 'disaster', means **'Bad star'** in Latin. Disaster, **as defined by the United Nations**, **is a serious disruption of the functioning of a community or society**, which involves widespread human, material, economic or environmental impacts **that exceed the ability of the affected community or society to cope using its own resource**.
- The **Disaster Management Act, 2005** defines disaster as **"a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area".**
- Disasters are as old as human history but the dramatic increase and the damage caused by them in the recent past have become a cause of national and international concern. Over the past decade, the number of natural and man made disasters has climbed inexorably. From 1994 to 1998,reported disasters average was 428 per year but from 1999 to 2003, this figure went up to an average of 707 disaster events per year showing an increase of about 60 percent over the previous years. The biggest rise was in countries of low human development, which suffered an increase of 142 percent. In this scenario, prevention and mitigation of disaster plays an important role which is part of disaster management.

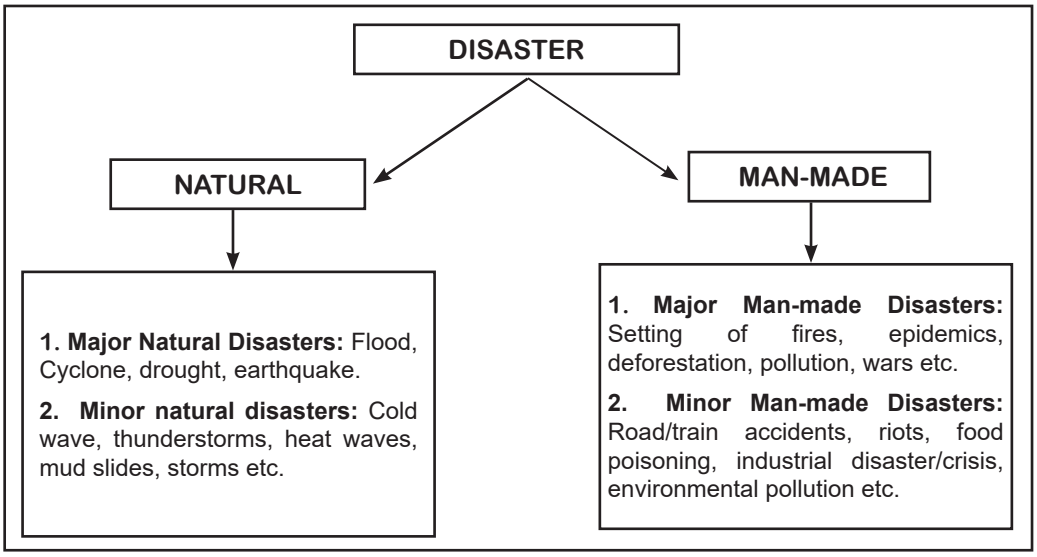




- **Disaster management** is how we deal with the human, material, economic or environmental impacts of said disaster; **it is the process of how we "prepare for, respond to and learn from the effects of major failures"**. Though often caused by nature, disasters can have human origins. According to the International Federation of Red Cross & Red Crescent Societies a disaster occurs when a hazard impacts on vulnerable people. The combination of hazards, vulnerability, and inability to reduce the potential negative consequences of risk results in disaster.

Classification of Disasters

- Disasters are classified into natural and man-made disasters.



Natural Disasters	Man Made Disasters
Water and Climate ► Floods ► Cyclones ► Tornadoes and Hurricanes ► Hailstorms	**Chemical, Industrial and Nuclear** ► Chemical and Industrial disasters ► Nuclear

➤ Cloudburst ➤ Heat wave and Cold wave ➤ Snow avalanches ➤ Droughts ➤ Sea erosion ➤ Thunder/lightning ⊙ **Geological** ➤ Landslides and Mud flows ➤ Earthquakes ➤ Large fires ➤ Dam failures and Dam bursts ➤ Mine fires ⊙ **Biological** ➤ Epidemics ➤ Pest attacks ➤ Cattle epidemics ➤ Food poisoning	⊙ **Accidental** ➤ Forest fires ➤ Urban fires ➤ Mine flooding ➤ Oil spill ➤ Major building collapse ➤ Serial bomb blasts ➤ Festival related disasters ➤ Electrical disasters and fires ➤ Air, road, and rail accidents ➤ Boat capsizing

Natural Disasters

- According to the International Federation of Red Cross & Red Crescent Societies Natural Disasters are **naturally occurring physical phenomena caused either by rapid or slow onset events that have immediate impacts** on human health and secondary impacts causing further death and suffering.
- The United Nations Office for Disaster Risk Reduction **characterise Natural Disasters in relation to their magnitude or intensity, speed of onset, duration, and area of extent e.g.** Earthquakes have short durations and usually affect a relatively small region, whereas Droughts are slow to develop and fade away and often affect large regions.

Man-Made Disasters

- According to UNISDR, Man-made (i.e., anthropogenic, or human-induced) hazards are defined as **those "induced entirely or predominantly by human activities and choices"**.
- Man-Made Disasters as viewed by the International Federation of Red Cross & Red Crescent Societies are events that are caused by humans which occur in or close to human settlements often caused as a result of Environmental or Technological Emergencies.

Types of Emergencies

■ Complex Emergencies

- Some disasters can **result from multiple hazards, or, more often, to a complex combination of both Natural and Man-made causes** which involve a break-down of authority, looting and attacks on strategic installations, including conflict situations and war.
- According to **ICRC** these **Complex Emergencies** are typically characterized by:
  - Extensive Violence
  - Displacement of Populations
  - Loss of Life
  - Widespread Damage to both Societies and Economies
  - Need for Large-scale, Humanitarian Assistance across Multiple Agencies

- Political and Military Constraints which impact or prevent Humanitarian Assistance
- Increased Security Risks for Humanitarian Relief Workers

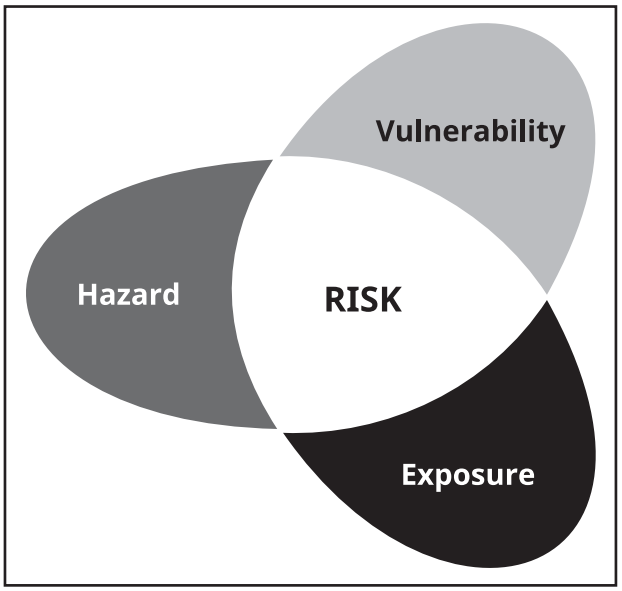
Pandemic Emergencies

- Pandemic is **an epidemic of infectious disease that has spread across a large region, which can occur to the human population or animal population and may affect health, disrupts services leading to economic and social costs**. It may be an unusual or unexpected increase in the number of cases of an infectious disease which already exists in a certain region or population or can also refer to the appearance of a significant number of cases of an infectious disease in a region or population that is usually free from that disease. Pandemic Emergencies may occur as a consequence of Natural or Man-Made Disasters.

Basic Definitions and Terminology

Hazard

- Hazard may be defined as "**a dangerous condition or event, that threaten or have the potential for causing injury to life or damage to property or the environment."**
- It can also be defined as "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". Hazards may be single, sequential or combined in their origin and effects. Each hazard is characterized by its "location, intensity or magnitude, frequency, and probability".



Exposure

- It is defined as "**the situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas**".
- As stated in the UNISDR glossary, "measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability and capacity of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest".

Vulnerability

- The vulnerability may be defined as "**The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted** by the impact of a particular hazard, on account of their nature, construction, and proximity to hazardous terrains or a disaster prone area."
- Vulnerabilities can be categorized into physical and socio-economic vulnerability.
  - **Physical Vulnerability:** It includes notions of who and what may be damaged or destroyed by a natural hazard such as earthquakes or floods. It is based on the physical condition of people and elements at risk, such as buildings, infrastructure, etc; and their proximity, location, and nature of the hazard. It also relates to the technical capability of building and structures to resist the forces acting upon them during a hazard event.
  - **Socio-economic Vulnerability:** The degree to which a population is affected by a hazard will not merely lie in the physical components of vulnerability but also on the socio-economic conditions. The socio-economic condition of the people also determines the intensity of the impact. For example, people who are poor and living in the sea coast don't have the money to construct strong concrete houses. They are generally at risk and loose their shelters whenever there is strong wind or cyclone. Because of their poverty they too are not able to rebuild their houses.

- **Risk**
  - Risk is a "**measure of the expected losses due to a hazard event occurring in a given area over a specific time period.** Risk is a function of the probability of particular hazardous event and the losses each would cause." The level of risk depends upon:
    - Nature of the hazard
    - Vulnerability of the elements which are affected
    - Economic value of those elements
  - **A community/locality is said to be at 'risk' when it is exposed to hazards and is likely to be adversely affected by its impact**. Whenever we discuss 'disaster management' it is basically **'disaster risk management'**. Disaster risk management includes all measures which reduce disaster related losses of life, property or assets by either reducing the hazard or vulnerability of the elements at risk.

Disaster Risk Reduction

- "**It is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development**".
- The **UNISDR** definition further annotates that **"disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans".** Disaster Risk Reduction strategies and policies define goals and objectives across different timescales, with concrete targets, indicators and time frames.
- **Capacity**
  - Capacity can be defined as "**resources, means and strengths which exist in households and communities and which enable them to cope with, withstand, prepare for, prevent, mitigate or quickly recover from a disaster**". People's capacity can also be taken into account. Capacities could be:
    - **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 family members have skills, which enable them to find employment if they migrate, either temporarily or permanently.
    - **Socio-economic Capacity:** In most of the disasters, people suffer their greatest losses in the physical and material realm. Rich people have the capacity to recover soon because of their wealth. In fact, they are seldom hit by disasters because they live in safe areas and their houses are built with stronger materials. However, even when everything is destroyed they have the capacity to cope up with it.
  - Hazards are always prevalent, but the hazard becomes a disaster only when there is greater vulnerability and less of capacity to cope with it. In other words, the frequency or likelihood of a hazard and the vulnerability of the community increases the risk of being severely affected.
- **Information Management in Disaster Risk Reduction**
  - In recent years, researchers and experts have been developing methods to conduct the assessment of hazards, vulnerability, and coping capacities; as well as techniques to combine such assessments in order to present them in risk map format. Such maps are essential in developing strategies to reduce the level of existing risks, and as a way to avoid a generation of new risks due to underlying social and economic risk drivers.

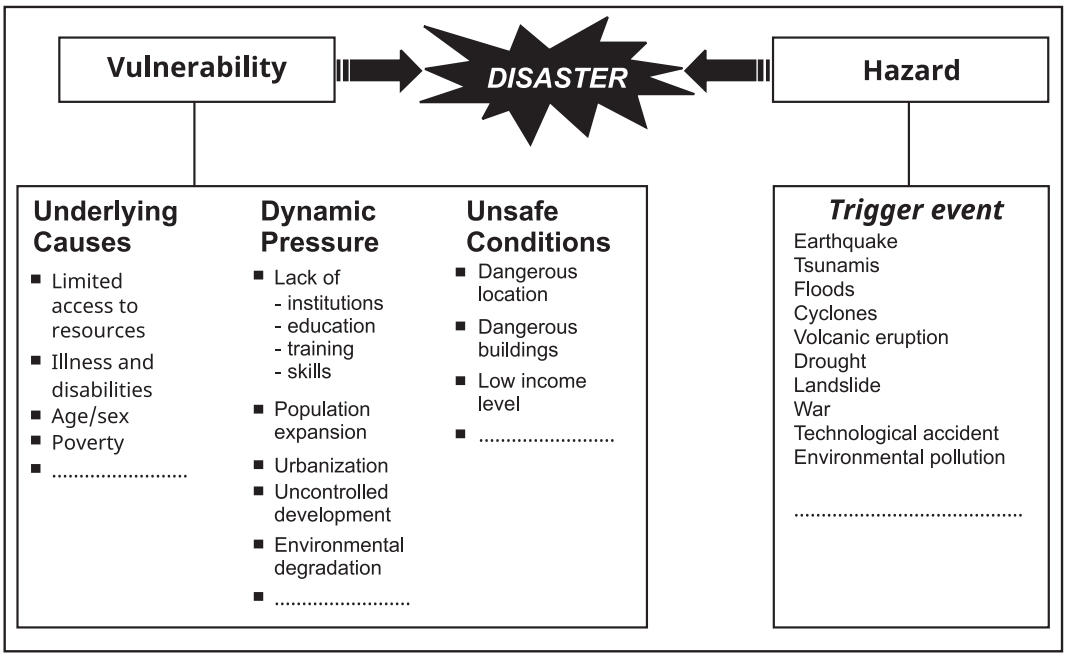
Disaster Risk Management

- According to United Nations Office for Disaster Risk Reduction (UNISDR), disaster-risk management is **the systematic process of using administrative directives, organizations, and operational skills/capacities to implement strategies, policies and improved coping capacities; in order to lessen the adverse impacts of hazards, and the possibility of disaster**. When successful, disaster-risk management efforts aim to reduce the effects of hazards, through activities and measures related to prevention, mitigation, and preparedness.
  - Emergencies are events that can be managed with local resources. However, disasters are by definition those events that surpass the responders capacity on the ground to manage them locally, hence requiring external assistance to be managed.
  - Emergency and disaster management encompass three types of phases: **response, rehabilitation,** and **recovery**. While response and rehabilitation efforts are conducted in the days and weeks following the

onset of the disaster, recovery efforts are conducted in the months and years after the onset and include reconstruction of infrastructure and the restoration of livelihoods.

- In short, Disaster management efforts aim to reduce or avoid the potential losses from hazards, assure prompt and appropriate assistance to the victims of a disaster, and achieve rapid and effective recovery.
- When a hazard event (such as a drought, flood, cyclone, earthquake or tsunami – among others) occurs, triggering a loss of life and damage to infrastructure, it highlights the reality that society and its assets are vulnerable to such events. When discussing disaster risk management, a disaster can highlight the following in a community:
  - The geographical area where the community is settled is exposed to such a hazard;
  - The society (including individuals) and its infrastructure, assets and other processes - as well as services which may have experienced damage or destruction - are vulnerable.

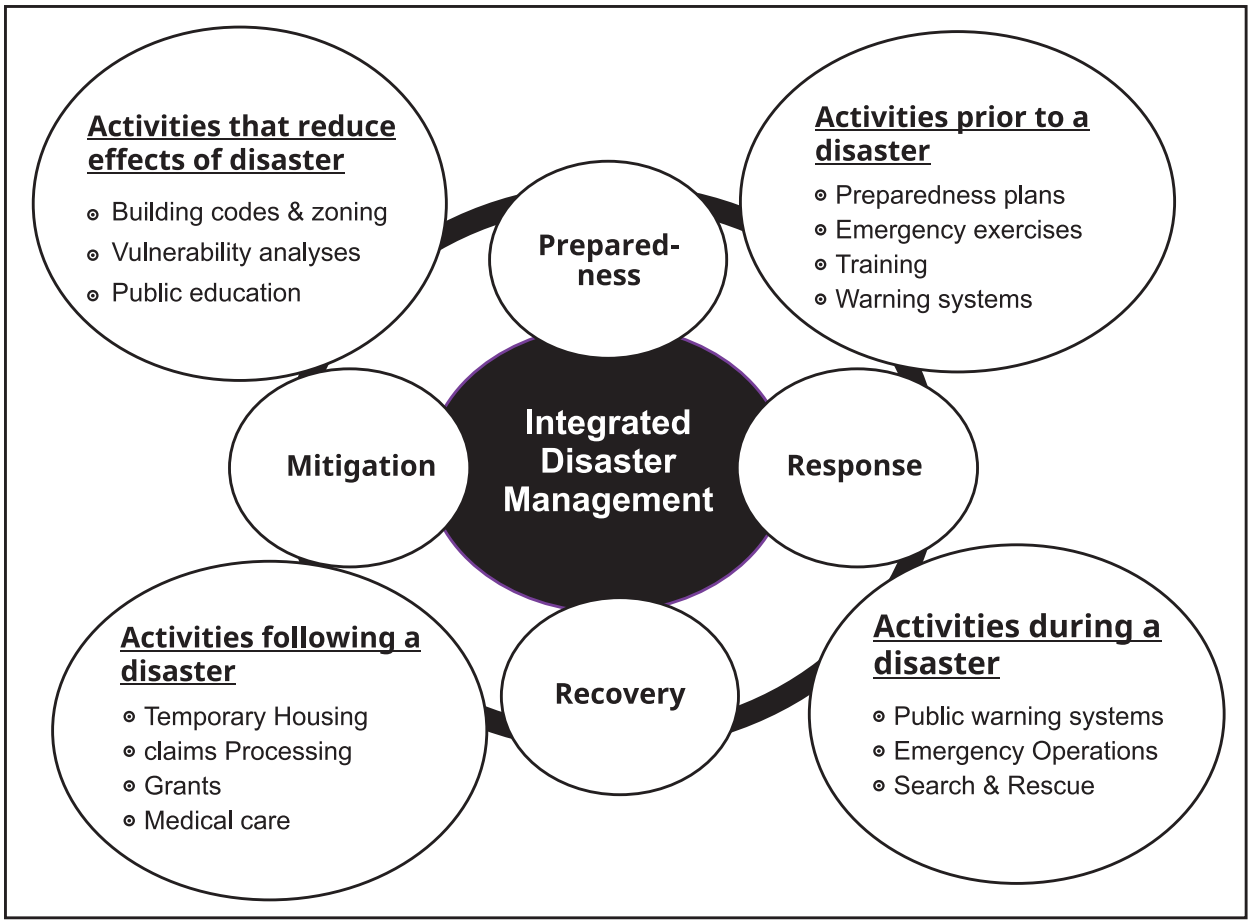
Disaster Risk



- According to the terminology of UNISDR, disaster risk is defined as "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, and capacity". In the technical sense**,** it is defined through the combination of three terms: **hazard, exposure and vulnerability**.
  - For example, when a settlement is established on the shores of a river, hydrologists can identify and characterise flood hazard by carrying out a hydraulic analysis. According to the UNISDR definition, a hazard is characterised by its "location, intensity or magnitude, frequency and probability". In some countries, such hazard areas outline the geographic extent of floods that have a 100 year period of possible return.
  - People, assets, infrastructure, and ecosystems located inside the area are all exposed to potential damage from floods. The degree of potential damage is then characterised by the area's vulnerability. For example, this can be defined by the physical structure of a building, as well as by the social and economic characteristics of a system. Additionally, hazard vulnerability can be characterised by the capacities of a society to cope with a hazard.

Disaster Management Cycle

- Disaster Risk Management includes **sum total of all activities, programmes and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses**. The three key stages of activities that are taken up within disaster risk management are:



Stages/Phases of Disaster Management Cycle:

- **Before a disaster (Pre-disaster)**
  - Activities taken to reduce human and property losses caused by a potential hazard. For example carrying out awareness campaigns, strengthening the existing weak structures, preparation of the disaster management plans at household and community level etc. Such risk reduction measures taken under this stage are termed as mitigation and preparedness activities.
- **During a disaster (Disaster occurrence)**
  - Initiatives taken to ensure that the needs and provisions of victims are met and suffering is minimized. Activities taken under this stage are called emergency response activities.
- **After a disaster (Post-disaster)**
  - Initiatives taken in response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities, immediately after a disaster strikes. These are called as response and recovery activities.

Broader Strategies Adopted in Disaster Management:

- **Mitigation:**
  - During the mitigation phase structural and non-structural measures are undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards. According to the United Nations International Strategy for Disaster Reduction (UNISDR), the adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions.

- Management activities in the mitigation phase encompass engineering techniques and hazard-resistant construction, as well as improved environmental policies and public awareness, as well as hazard vulnerability and risk assessment.
- Measures taken during the mitigation phase also address preventing natural or man-caused events from giving rise to disasters or any emergency situations, e.g. not allowing your child to have access to matches, gasoline, or kerosene oil.

Preparedness:

- During the preparedness phase of the CDM cycle measures are taken to reduce the minimum level possible, of loss in human life and other damage, through the organization of prompt and efficient actions of response and rehabilitation such as practicing earthquake and fire drills.
- Preparedness activities are geared towards minimizing disaster damage, enhancing disaster response operations and preparing organizations and individuals to respond. They also involve planning, organizing, training, interaction with other organizations and related agencies, resource inventory, allocation and placement, and plan testing.

Response:

- Actions carried out in a disaster situation with the objective to save life, alleviate suffering and reduce economic losses. The main tool in response is the implementation of plans which were prepared prior to the event.
- Response activities are post activities geared towards:
  - Providing emergency assistance
  - Reducing probability of additional injuries or damage
  - Speeding recovery operations
  - Returning systems to normal level

Recovery:

- In the recovery phase, also referred to as the recovery and rehabilitation phase, activities are geared towards the restoration of basic services and the beginning of the repair of physical, social and economic damage, e.g. lifelines, health and communication facilities, as well as utility systems.
- The recovery phase also includes efforts to reduce disaster risk factors.

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