

# Chapter twenty-three

## Disaster Management

### Understanding Disasters

*Disasters and their management generally get discussed in their aftermath, but practically it should result in planning and preparing the strategy to tackle and mitigate disasters in a responsible and effective manner. Disasters, both natural and unnatural, are macro level events or processes, which induce disturbances and turmoil for a prolonged life-threatening environment for a community.*

- The Disaster Management act, 2005 defines a disaster as "a catastrophe, mishap, calamity or grave occurrence from natural or man-made causes, which is beyond the coping capacity of the affected community".
- Disasters are sometimes classified according to whether they are natural disasters or human-made disasters. e.g. disasters caused by floods, droughts, tidal waves and Earth tremors are generally considered natural disasters, while disasters caused by chemical or industrial accidents, environmental pollution, transport accidents and political unrest are classified as human-made or human-induced disasters since they are the direct result of human action.

### Disaster Management

- It is the term used to designate the efforts of government, communities or businesses to plan for and co-ordinate all personnel and materials required to either mitigate the effects of or recover from, natural or man-made disasters. *Disaster management consists of five phases which are as follows :*

#### (i) Prevention

- Preventive measures are taken on both the domestic and international levels. Not all disasters, particularly natural disasters can be prevented, but the risk of loss of life and injury can be mitigated with good evacuation plans, environmental planning and design standards.

#### (ii) Mitigation

- This includes an assessment of possible risks to person's health and property, steps taken to minimise the effects of a disaster. e.g. in earthquake prone areas, these preventive measures might include structural changes such as the installation of an earthquake valve to instantly shut off the natural gas supply, seismic retrofits of property and securing of items inside a building by mounting of furniture, refrigerators, water heaters and breakables to the walls and the addition of cabinet latches.

#### (iii) Preparedness

- It focuses on preparing equipment and procedures for use when a disaster occurs. Generally, it involves construction of shelters, implementation of an Emergency Communication system, installation of warning devices, creation of back-up life-line and rehearsing evacuation plans.

#### (iv) Response

- The response phase of an emergency may commence with search and rescue, but in all cases, the focus quickly turns to fulfilling the basic humanitarian needs of the affected population.
- This assistance may be provided by national or international agencies and organisations.

#### (v) Recovery

- The recovery phase starts after the immediate threat to human life has subsided. The immediate goal of the recovery phase is to bring the affected area back to normalcy as quickly as possible.

# Natural Disasters

## Floods

- A flood is an overflow of water that submerges land which is usually dry. Floods are caused by heavy rains, high winds, cyclones, tsunami, melting snow, cloud burst and inadequate drainage system. Human factors which can lead to floods include deforestation, faulty agricultural practices, bursting of dams, siltation in river beds and accelerated urbanisation. Floods can lead to casualties, material loss, crop loss, structural damage, damage of public utilities and increase in waterborne diseases.
- India is one of the most flood prone country in the world. The principal reasons for flood lie in the very nature of natural ecological systems in this country, namely, the monsoon, the highly silted river systems and the steep, highly erodible mountains, particularly those of the Himalayan ranges. The average rainfall in India is 1150 mm with significant variation across the country. 24 of the 36 States and Union Territories in the country are subject to floods and roughly one-eighth of the country's geographical area is prone to floods.
- **Management** Proper management and planning can considerably reduce flood damage. *Some of the measures are as follows:*
  - Identification of frequency and magnitude of floods in flood prone areas.
  - Flood forecasting which involves giving prior information regarding the floods. Forecasting can lead to timely warning, which can help moving people to safer areas.
  - Flood control can be achieved through various means like reducing run-off through afforestation, construction of dams and deepening or increasing the embankment of rivers.
  - Land use planning which involve proper engineering of buildings in flood prone areas and connecting these areas to transport network so that help can reach in short period of time.

## Uttarakhand Disaster

In June, 2013, a multi-day cloudburst centered on the state of Uttarakhand caused devastating floods and landslides in the country's worst natural disaster since the 2004 Tsunami. According to figures provided by the Uttarakhand Government, more than 5700 people were presumed dead in the disaster.

## Earthquake

- An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves.
- Globally, earthquakes result in a loss of about 50000 lives every year. Earthquakes over 5.5 magnitude on the Richter Scale are progressively damaging to property and human life. Generally, massive earthquakes occur near the junction of two tectonic plates, e.g. along the Himalayan range, where the Indian plate goes below Eurasian plate.
- Besides tectonic activities, earthquakes also occur due to volcanic eruption, rock fall, landslides, subsidence in mining areas etc.
- According to latest seismic zoning map brought out by the Bureau of Indian Standard (BIS), over 65% of the country is prone to earthquake of intensity modified Mercalli Intensity Scale (MSK) VII or more.

- India has been divided into four seismic zones, these are:
  - Zone -5 is the most active, which comprises of whole of North-East India, the Northern portion of Bihar, Uttarakhand, Himachal Pradesh, Jammu and Kashmir, Gujarat and Andaman and Nicobar islands.
  - Zone-4 (Severe Intensity Zone) comprises of parts of Jammu and Kashmir and Himachal Pradesh, UT of Delhi, Sikkim Northern parts of Uttar Pradesh, Bihar and West Bengal, parts of Gujarat and small portions of Maharashtra near the West coast and Rajasthan.
  - Zone-3 (Moderate Intensity Zone) includes Kerala, Goa, Lakshadweep islands and remaining parts of Uttar Pradesh, Gujarat and West Bengal, parts of Punjab, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Maharashtra, Odisha, Andhra Pradesh, Tamil Nadu and Karnataka:
  - Zone-2 (Low Intensity Zone) covers remaining parts of the country.

## **Management**

- Community preparedness for mitigating earthquake impact, construction of houses and buildings according to standards and public education can be helpful.

## **Nepal Earthquake**

The Nepal earthquake occurred on 25th April, 2015 with an epicentre at Kathmandu, the capital city of Nepal. It was one of the most powerful earthquakes to strike Nepal since 1934.

Based on the information by UN, 8 million people have been affected by the disaster, which was more than a quarter of Nepal's population.

The earthquake induced many mass movements in mountainous areas resulted in landslide lakes, which could be another cause of secondary disasters.