

## INTRODUCTION

A disaster is a social disruption that can occur at the level of individual, the community or the state. Natural disasters appear to be on the increase. A natural disaster is a catastrophe that occurs when a hazardous physical event such as an earthquake, a volcanic eruption, landslide, hurricane or a Tsunamis and other natural phenomenon leading to extensive damage to property, a large number of casualties or both.

The damage caused by disasters is immeasurable and varies with the geographical location, climate and the type of earth surface/degree of vulnerability. This influences the mental, socio-economic, political and cultural state of the affected area. Generally, disaster has the following effects in the concerned areas :

1. It completely disrupts the normal day-to-day life.
2. It negatively influences the emergency systems.
3. Normal needs and processes like food, shelter, health etc. are affected and deteriorated depending upon the intensity and severity of the disaster.

It may also be defined as "*a serious disruption of the function of society, causing widespread losses which exceed the ability of the affected society to cope using its own resources*".

At the present time, the challenges and opportunities for reducing loss from environmental hazards has never been greater. Theoretically, the challenge is easily defined, but to eliminate all disasters, which cause loss of property, lives and to environment is impossible to achieve.

The existing databases are inadequate for the precise determination of spatial and temporal patterns of disaster worldwide but available evidence suggests that the overall losses remain high. Despite increased investments in hazard mitigation measures, deaths and material damage shows few signs of a sustained decline. The continuous growth of population and the encroachment of humans into hazardous zones plus the rise in exposed wealth resulting from economic growth are the main causes.

The prevention and preparedness are the predisaster activities of mitigation. The response is a post disaster mitigation exercise. Besides other measures like disaster rescue, rescue workers, rescue plans, equipment needed in rescue operation, medical relief, repairs & restoration of built infrastructure and housing construction with structural safety features comes under disaster management.

## 6.1 SOME IMPORTANT TERMS USED IN DISASTER MANAGEMENT

1. **Disaster** : It may be termed as "*a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceeds the ability of the affected society to cope using its own resources*". Thus, a disaster may have the following main features :



1. Unpredictability
2. Unfamiliarity
3. Speed
4. Urgency
5. Threat etc.

Thus, in simple words, we can define disaster as a hazard causing heavy loss to life, property and livelihood e.g. An earthquake killing thousands of people and loss of property, in cities, can be considered as a disaster.

**Types of Disaster :** Generally, disasters are of two types; Natural and Manmade. Based on the devastation, these are further classified into major/minor natural disaster and major/minor manmade disasters. Some of the disasters are listed below :

Major Natural Disasters	Minor Natural Disasters
<ul style="list-style-type: none"> <li>❖ Earthquake</li> <li>❖ Cyclone</li> <li>❖ Drought</li> <li>❖ Flood</li> </ul>	<ul style="list-style-type: none"> <li>❖ Cold wave</li> <li>❖ Thunderstorms</li> <li>❖ Heat waves</li> <li>❖ Mud slides</li> <li>❖ Storm</li> </ul>
Major Manmade disaster	Minor manmade disaster
<ul style="list-style-type: none"> <li>❖ Setting of fires</li> <li>❖ Epidemic</li> <li>❖ Deforestation</li> <li>❖ Pollution - chemical and due to war etc.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Road/train accidents, riots</li> <li>❖ Food poisoning</li> <li>❖ Industrial disaster/crisis</li> <li>❖ Environmental pollution etc.</li> </ul>

**2. Risk :** Risk is a measure of the expected loss due to hazardous event of a particular magnitude occurring in a given area over a specific time period. Risk is a function of particular occurrences and the losses each would cause. The level of risk depends upon :

- (a) Nature of hazard
- (b) Vulnerability of the elements which are affected
- (c) Economic value of those elements.

**3. Vulnerability :** It is defined as the "extent to which a community, structure, service, or geographic area is likely to be damaged or disrupted by the impact of particular hazard, account of their nature, construction and proximity to hazardous terrain or a disaster prone area".

**4. Hazards :** It is defined as the "Phenomenon that poses a threat to people, structures, economic assets and which may lead to a disaster. They could be either manmade or natural occurring in our environment".

The extent of damage in a disaster depends upon :

- (i) the impact, intensity and characteristics of the phenomenon and
- (ii) how people, environment and infrastructures are affected by the phenomenon.

The relationship can be written in an equation as ;

$$\text{Disaster Risk} = \text{Hazard} \times \text{Vulnerability}$$

## 6.2 DISASTER MANAGEMENT

Effectively and efficiently managing a disaster situation is known as Disaster Management. The effective disaster management can be achieved by taking care of all the three phases of disaster management.

1. Pre Disaster Phase
2. Emergency Phase
3. Post Disaster Phase

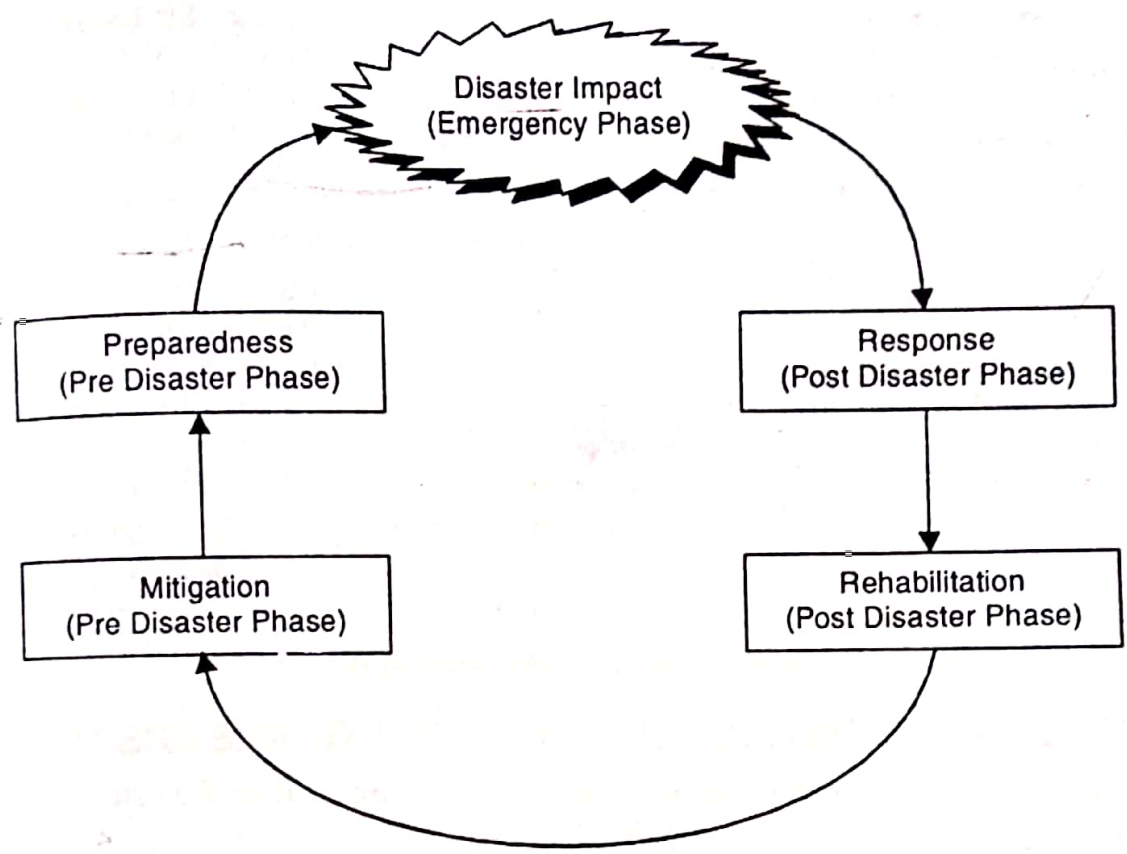


Fig.6.1 : Disaster Management Cycle

## 6.3. DISASTER RISK MANAGEMENT

The disaster risk management may be defined as the sustainable reduction programme of natural disaster risk in some of the most hazard prone areas. The four main objectives of this programme are :

- (i) National capacity building support to the Ministry of Home affairs.
- (ii) Environment building, education, awareness programs and strengthening the capacity at all levels in natural disaster risk management and sustainable recovery.
- (iii) Multi hazard preparedness, response and mitigation plans for the programme at state, district, block and village/ward levels.
- (iv) Networking knowledge on effective approaches, methods and tools for natural disaster risk management, developing and promoting policy frame work.

## 6.4 EARTHQUAKE DISASTER MITIGATION

Mitigation means to reduce the effect of hazard itself and the vulnerability conditions. Mitigation also includes reducing physical, economical and social vulnerability.



**Physical Vulnerability** is related to building, infrastructure, agriculture etc. In the event of disaster, these get severely affected and thereby the public services and basic amenities get disrupted.

**Social Vulnerability** is related to socially marginalized groups such as women, elderly, physically challenged etc. Their support mechanism is very much restricted and thereby they find very difficult to cope with a disaster.

**Economic Vulnerability** means that the poor people who have a very little to cope up with any disasters as it completely destroys whatever they have in possession (like land, buildings, cattle etc.)

There is less possibility of support mechanism like insurance etc. for recovery of the economic losses. The mitigation can be understood by the following diagram ;

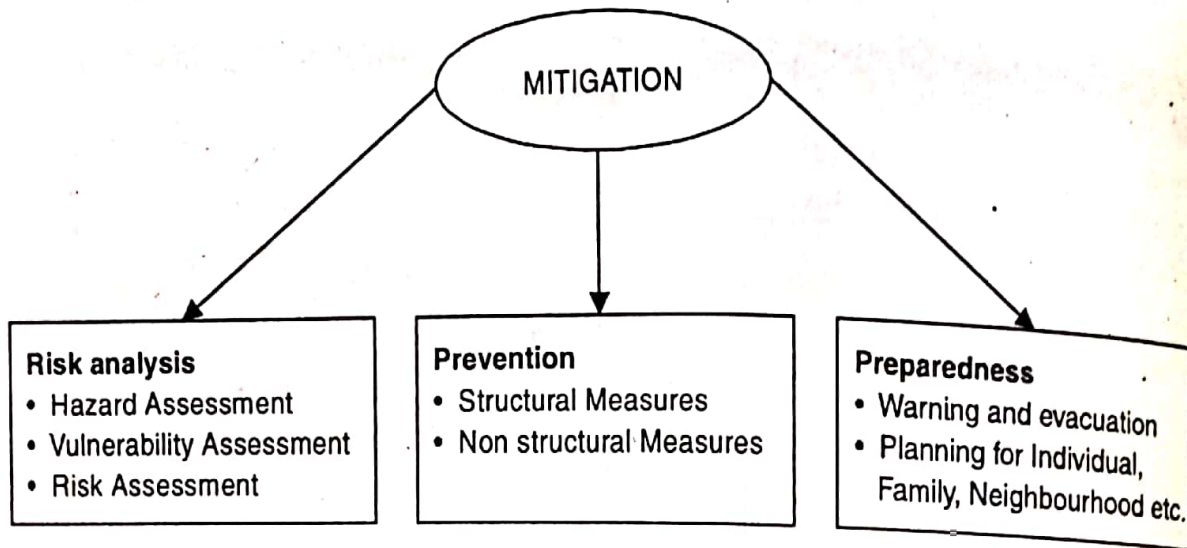


Fig.6.2 : Disaster Management

## 6.5 PREPAREDNESS MEASURES FOR EARTHQUAKE DISASTERS

First most important preparedness is to develop a culture of Risk Reduction by various players like Govt. and Non-Government organizations (NGO's). Community is a vital primary force for disaster management, particularly in mitigation and preparedness process. Preparedness for the disaster is divided into the following three phases.

1. **Pre Disaster Phase** : Risk Analysis, planning, mitigation etc.
2. **Emergency phase** : Disaster rescue, rescue workers, rescue plan, equipments debris clearance, casualty management etc.
3. **Post Disaster phase** : Rehabilitation, reconstruction etc.

### 6.5.1 PRE DISASTER PHASE

Pre disaster phase includes the followings :

1. **Preparedness plans** : This stage is the most important for effectively mitigating the earthquake disasters. The way to achieve the effective earthquake disaster management is through preparedness which is aimed at the strengthening the capacity of rescue, relief and rehabilitation. Disaster preparedness may be achieved through :

- (a) Awareness campaigns
- (b) Mock trainings & education
- (c) Development of emergency plans
- (d) Various skills and drills

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- (e) Evacuation Plannings
- (f) Warning systems
- (g) Land use planning

**2. Developing Leadership and Co-ordination qualities :** Disaster preparedness lays down detailed planning for prompt and efficient response once an earthquake strikes. The joint developing mutual understanding and confidence, so that people learn to operate together, to delegate and accept changed roles. This is the level where one really needs imaginative and instructive training. The training must follow simulation exercises (Mock drills) to test the decision making, communication and co-ordination system.

**3. Risk Assessment :** Hazards likely to be faced in each region and their impact are site specific, so the disaster preparedness training should be limited to emergency control aspects. Risk assessment should be done precisely and plans should be implemented accordingly.

**4. Prepare your family :** Planning and earthquake schemes for individual, family and neighbourhood can help to improve our chances of surviving and earthquake without injury or serious damage. Plan to check you family, friends and neighbours after an earthquake. After preparing the guidelines, educate them about the measures to be taken before, during and after the earthquake to reduce or avoid their sufferings caused by injuries, loss of life and damage to property. Steps to be followed under disaster preparedness in a family are :

- (a) Know you environment
- (b) Know you community resources
- (c) Plan the place to meet
- (d) Plan responsibilities