DISASTER MANAGEMENT

The word 'disaster' is originated from French word "Desastre". Des= bad or evil, aster= star. i.e., bad or evil star.

What is a Hazard?

Hazard is a dangerous natural or man-made condition or event, that could cause injury, loss of life or damage to property, livelihood or/and environment.

A hazard could be natural hazard, like earthquake, cyclone, flood, drought, forest fire etc. Man-made hazards are generally associated with industries and factories and they include explosions, leakage of toxic gases, pollution, dam failures and rail, road and sir accidents. Also include war, insurgencies, civil strife, riots and acts of terrorism.

What is Vulnerability?

Vulnerability is the extent to which a community, structure, service or geographic area that is likely to be damaged or disrupted by the impact of a particular hazard.

It could be due to several causes present in the community itself. This include poverty, lack of information, poor living conditions, overloading poorly maintained equipment, inadequate safety precautions, bad constructions, proximity to disaster prone area.

Vulnerability broadly divided into physical and socio-economic vulnerability. Physical vulnerability relates to the physical location of people and elements at risk; building, infrastructure etc. and their proximity to the hazard. Socio-economic vulnerability relates to the degree to which a population is affected by the calamity in relation to the prevailing social and economic conditions.

Vulnerability precedes disasters, contribute to their severity, impede disaster response and may continue to exist long after a disaster has struck. It is vulnerability and hazard that turn a situation into a risk or possibility of a disaster in an area.

What is Disaster Risk?

Risk is a measure of the potential to cause damage. It is a measure of the expected loses due to a hazard event of a particular magnitude in a given area over a specific time period. The level of risk depends upon the nature of the hazard, vulnerability of the elements which are affected, economic value of those elements. High vulnerability and high hazard are associated with high disaster risk and vice versa.

It is the product of hazard and vulnerability minus Capacity.

Risk = H x V - C
(Hazard x Vulnerability-Capacity)

Capacity could be defined as the community (and inventories) to intervene and manage a hazard in order to reduce the ability of its potential impact.

What is Disaster (Calamity)?

a. A disaster is a man made or natural event which results in widespread loss of human beings, livelihood, property causing causing human suffering and loss in a definite area.

b. The U. N. defines disaster as " ….the occurrence of a sudden or major misfortune which disrupts the basic fabric and normal functioning of a society or community".

c. An occurrence arising with little or no warning, which causes or threaten serious disruption of life, and perhaps death or injury to large number of people , and requires therefore a mobilization of efforts in excess of that normally provided by the statutory emergency services.

The consequences of states pertaining to a disaster as follows:

Hazard + Vulnerability → Risk → Threat → Disaster → Aftermath

(A hazard may be regarded as the pre-disaster situation in which some risks of disaster exists. Natural hazards cannot be prevented but if vulnerability of a community is reduced one can prevent a hazard from becoming a disaster).

A disaster has the following main features:

- Unpredictability
- Unfamiliarity
- Speed
- Urgency
- Uncertainty
- Threat
- most of the disaster strikes quickly
- It changes the lives of all it touches and its effect are felt even after the event.
- Its forces are largely outside the control of the people whom it effects.

The country is divided into various hazard zones depending upon the vulnerability of the area to various disasters. eg., seismic hazard zonation maps, Landslide vulnerability zonation maps etc.

Causal factors of disasters:

1. Poverty:- Poverty explains why people in urban areas are forced to live on hills that are prone to landslide or why people settle near volcanoes or rivers that are invariably flood their banks.

2. Population growth:- There is an obvious relationship between loss from a disaster and increase in population. The magnitude of each disastermeasured I death, damage or costs of a given developing country increases with the increasing population.

3. Rapid urbanisation:- Many landslides and flooding are related to rapid and unchecked urbanization which causes low-income families to settle on slopes.

4. Transition in cultural practices:- Many of the inevitable changes that occur in all societies leads to disasters.

5. Environmental degradation:- deforestation leads to rapid run-off, leading to flooding; destruction of mangrove swamp decreases coastline stability.

6. Lack of awareness and Information:- People do not know how to get out of the harm.

Classification of the Disasters:

Type I.

a. Natural disasters- eg., earthquakes, volcanoes, cyclone, floods etc.
b. Anthropogenic disasters- due to human actions, deliberate or otherwise Eg., dam failure, industrial disaster, nuclear disaster etc.
c. Hybrid disasters- combination of the above. Eg., spread of a disease (endemic) from a community which has no natural immunity.

Type II.

A total of 31 types of disasters identified and are classified into 6 groups

1. Meteorological/climatological (tropical cyclones, drought, lightning, forest/wildland fire, heat and cold wave/thermal extremes)

2. Geological (earthquake, volcanic eruptions, tsunamis, landslide/mass movement, land subsidence)

3. Hydrological (flood/flash flood, wave surge/coastal erosion, avalanche)

4. Biological (epidemic/pandemic, pest attacks/locusts/insect infestations)

5. Technological/man-made (industrial, nuclear, transportation, dam failure, stampede, terrorism, pollution)

6. Extra-terrestrial (asteroids/meteoroids/comets impact).

Type III.

a. Sudden onset disasters:- eg., earthquakes (in seconds), tornadoes (in minutes), flash floods (in hours), volcanoes (in weeks) etc.
b. Slow onset disasters:- subsidence (in years).

DISASTER MANAGEMENT (DM):

It is a body of policy and administrative decisions and operational activities designed to mitigate the effects of a disaster and the emergency situations and to provide a framework for helping people at risk to avoid or recover from the impact of a disaster. DM cannot be a quick-fix mechanism. It implies meticulous planning and coordination between various role-players, to prevent and to mitigate their impact.

Managing disasters includes steps to be taken prior to, during and after the disaster. Hence, there are three key stages of activities in DM. These are pre-disaster, disaster and post-disaster stages. Pre-disaster means to reduce the potential for human, material or environmental losses caused by hazards and to ensure that these losses are minimized when the disaster actually strikes. During disaster to ensure that the needs and provisions of the victims are met to alleviate and minimize sufferings. Post-disaster means to achieve rapid and durable recovery which does not reproduce the original vulnerable conditions and bring back normalcy.

A successful DM planning must encompass the complete realm of activities and situation that occur before, during and after a disaster. The different phases of a DM can be visualised as a disaster management cycle.

Components of Disaster Management Cycle:

Disaster management has two broad stages, viz., disaster crisis management and disaster risk management. Each of this is again divided into several sub-stages.

I. Disaster Crisis Management:

This includes various steps and actions taken immediately prior to and following a disaster impact**.** This include the following sub-stages.

a. Quick Response and Relief:

This is the first reaction or first stage after any calamity. These are the measures to be taken immediately prior to and following a disaster impact to save life and protect property. This include setting up of control rooms, putting the contingency plan in action, issue warnings, deploying search and rescue teams, activation of evacuation,

taking people to safer areas, rendering relief materials like medical aid to the needy, supplying water and food etc

(Relief refers to a period immediately following the occurrence of a disaster when steps are taken to meet the needs of the survivors with respect to shelter, water, food and medical care).

b. Recovery (Rehabilitation and Reconstruction):

It is used to describe the activities that encompass the three overlapping phases of emergency relief, rehabilitation and reconstruction.

Emergency Relief: Activities include immediate relief, rescue, damage and need assessment etc.

Rehabilitation:- It includes activities that are undertaken to support the victim's return to normal life and re-integration into regular community functions. This is done by providing temporary utilities and housing as interim measures to assist long term recovery.

Reconstruction:- it is an attempt to return communities to improve pre-disaster functioning. This include the removal of debris, restoring essential service like water, electricity, sewage, communication facility etc., restoring employment opportunities, reconstruction of new building and repairing of damaged ones etc

c. Development:- . It is an ongoing activity for an evolving economy. This include long term prevention/disaster reduction measures like construction of embankments against flooding, increasing plantation for reducing the occurrence of landslides etc.

II. Disaster Risk Management

This has three components.

a. Risk identification and assessment
b. Risk reduction
c. Risk transfer

a. Risk identification and assessment:- This would help the communities to assess the hazards like earthquakes, floods, cyclones, terrorism etc which threatens the community, its vulnerabilities and capacities. It evaluates the elements which are at risk and analysis the causes of the vulnerable conditions. This includes physical, geographical, social, political and psychological factors that cause certain category of people to be particularly exposed to various hazards.

b. Disaster Risk reduction:- It includes all measures, which reduce disaster related loss of life, property or asset by either reducing the hazard or vulnerability. An element is said to be at risk when it is exposed to hazard and is likely to be affected by the impact of the hazard. Risk reduction has three components, viz., preparedness, prevention and mitigation.

Prepardness:-

The processes that help us to face disasters effectively is known as disaster preparedness. This enables governments, community and individuals to respond rapidly to disaster situations and to cope with them effectively. This include the formation of a viable emergency plans, development of warning system, maintenance of inventories and the training of the personnel. This is done at local, district, state and national levels. At local level it is the responsibility of the community and local self government. At district level, disaster management plans are made and Collector is responsible for preparing and implementing them. District Disaster Management Committies have representatives from all concerned departments like police, electricity, PWD etc. At state level it is the Secretary Disaster Mmanagement who is responsible to prepare the State Disaster management Plan. State level Disaster Management Authority is headed by Chief Minister. At national level, Ministry of Home Affairs is the nodal agency to prepare national disaster management plan. The National Disaster Management Agency is headed by the Prime Minister.

Prevention:- Prevention is more applicable to man made and technological disasters. Stringent safety precautions through technological innovations can bring these changes.

Mitigations:

A set of measures taken in advance of a disastreous event in order to reduce, if not prevent, the impact of the event. It is a collective term used to encompass all actions taken prior to a disaster. This include preparedness and long–term risk reduction measures like awarness programe, scientific land use planning, infrastructure design and location decisions etc. Investment on disaster mitigation plan save at least triple the amount in economic and social recovery costs. This include structural and non-structural measures.

Structural Mitigations:-

Non-structured Mitigations:-

Separate note will be sent to you.

Important Sectors in Disaster Management

(1) Health and Medical care
(2) Communication
(3) Remote Sensing and GIS
(4) Insurance
(5) Social work- community Participation
(6) NGO's
(7) Media
(8) Fire Services
(9) Police and Paramilitary forces
(10) Civil Defence and Home Guards
(11) Armed Forces

(1) Health and Medical Care

A list of action plans are chalked out to provide timely, appropriate and adequate health facilities during the disaster and post-disaster periods. This include
(1) Identification of disaster prone areas and its population
(2 Identification of disease pattern of the high risk areas
(3)Identification of factors responsible for aggravating disease during disaster
(4)Identification of number and location of health facilities in high risk area
(5)Location of manpower available in the area
(6)Arrangement for the training of personnel- medical and para-medical at operational and managerial level.

For the organization of emergency medical and public health relief, the action include:
1) Identification of the list of medical supplies
2) Quantification and stockpiling of emergency supplies at the district and PHC levels
3) Preparation of the list of mobile teams consisting of medical and paramedical personnel for deployment on short notice
4) Arrangement of disease surveillance activities
5) Arrangement of treatment for injured patients
6) Arrangement for rapid health assessment with two days of disaster.

(2) Communication

The entire hierarchy right from the central govt to the district level and even subdivision level is connected with telecommunication system. Mainly land phone system and if it fails then radio telecommunication is resorted to. HAM Radio is one example. The wireless network is maintained by the police.

(3). Remote Sensing and GIS

The tools used in remote sensing are aerial photos and satellite imageries. These are very much useful in assessing the condition of a terrain during pre-disaster and post-disaster events. Further, geographic information system (GIS), a computer assisted operation using various thematic maps, enable the authorities to assess the vulnerable condition of the disaster affected terrain and take mitigatory measures to reduce the risk.

4). Insurance

In developed countries, private insurance sector is a major contributor for funding reconstruction after a disaster. Insurance companies can offer discounts on premiums for buildings which are disaster resistant. Similarly our equipments, crops can be insured for the potential losses.

(5) Community Participation

In disaster situation, it is the community which responds first before any other agency (like govt) responds. Usually inadequate infrastructure of transport and communication makes immediate intervention by govt and other agencies difficult. Over the years communities have developed their own coping mechanism to manage disaster situations. The accumulated experience of the community and the resilience built by it are valuable assets which need to be effectively made use of, shared and suitably strengthened by supportive and empowering measures.

To achieve this:

a) The local communities may be assisted in coping with the disaster situations.

b) The capabilities of local self govt institution, elected bodies and co-operative organizations may be enhanced by allocation of resources, equipment support and extension technology.

c) Community bodies, activists and social workers with potential for mobilizing community efforts and resources may be identified and involved in various activities.

d) Institutional arrangement may be made for involvement of the community in decision making in matters pertaining to disaster reduction.

(6) NGO's

There is limitation of a govt in taking up activities for mobilization of community efforts, awareness creation, extension of technology etc. Ngo with skill and experience can perform this.

They can provide the needed link between people and govt and can help the benefits of a disaster mitigation programme to the targeted group.

NGO now confined to only emergency response, administration of relief and to some extent construction work.

New Roles

a) Building up awareness among people about impact of disaster, disaster reduction, needed response etc.

b) Dealing with trauma cases, providing counselling to needed people.
c) Provide relief and development assistance to the people.
d) Mobilizing community efforts.
e) Preparing local communities for management of common property resource.
g) Promoting thrift groups of self-help.

(7)Media

Important role in taking the message of disaster reduction to people, avoid spread of misinformation, approach should be unbiased and constructive.

Recommended that:

a) Should highlight accurate information about disaster and their impact.
b) Should highlight the communities efforts in disaster reduction, besides covering the activities of govts and NGO's.
c) Should effectively spread the message of significance of preparedness.
d) May assist govt in mobilizing resources.
e) May undertake comprehensive documentation of natural disasters.

(11) Armed Forces

Provide prompt relief to the victims even in the most inaccessible and remote areas of the country. The organizational strength of the armed forces with their skills in technical and human resource management make them indispensable for emergency situations. When disaster occurs over large areas, they are called upon to organize relief measures.

Civil defence and home guard organizations are voluntary in nature and character come in handy in emergency situations like natural disasters. Their first job to save lives, minimizes damage etc.

Additional Points

- The UN Assembly declared the decade 1990-2000 as the "International Decade for the Natural Disaster Reduction (IDNDR)" The main objective was to reduce the loss of life, property damage in natural disasters.

- The IDNDR workshop in Yokohama in May 1994 evolved an action plan for disaster reduction called the "Yokohama strategy".

- In line with the Yokohama strategy, the Govt. of India set up a High Powered Committee (HPC) in 1999 to propose disaster management plan for the country. It covers national, State and district level plans.

National Organizational Setup

- Consists of a cabinet committee on Natural disaster management and a crisis management group presided over of cabinet secretary.
- A calamity Relief Fund (CRF) has been constituted for each State. 75% Central fund and 25% State fund.

State Organizational Setup

- At the State level, natural disaster are usually the responsibility of Revenue Dept. or Relief Dept.
- State crisis management group:- Under the chairmanship of Chief Secretary/ Relief Commissioner.

District Organizational Setup

- The collector co-ordinates and supervise all functions.
- District Relief Committee:
  District Control Room:
  Co-ordinator:

Survey and Assessment of the after-effect of a disaster:

It comprises a series of actions, the timing of which is largely determined by the particular disaster circumstances. Its prime objective are a). to obtain first general picture of the post-impact situation, b). to establish the state of accessibility into and within the striken area for the purpose of resource, medical relief, supply and other urgent action., c). to determine the level of damage to building and structure, d). to variefy the crop losses etc.

The success of survey and assessment dependent considerably on the basis of planning, organization and preparedness measures. Before survey and assessment is planned, it is necessary to identify what existing information may be used. This include, information from the previous disaster, map information, census information, specialist information of various kinds.

Crisis information should be accurate, up-to-date, sufficiently detailed to facilitate the organization of accurate response. The systems and facilities available for acquiring and monitoring crisis information include: a). Emergency services police, fire, ambulance services, civil defence, b). Govt. departments and agencies, NGOs, Media.

Emergency systems:

a). Air survey-visual air survey and photographic air survey
b). Ground survey
c). Air-ground survey.

On-site Emergency

If an accident/incident takes place in a factory, its effects are confined to the factory premises, involving only the personss working in the factory and the property inside the factory it is called as On-site Emergency.

Off-site Emergency

If the accident is such that its affects inside the factory are uncontrollable and it may spread outside the factory premises, it is called as Off-site Emergency.