CHAPTER-I

INTRODUCTION

&

RESEARCH

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CHAPTER - I

INTRODUCTION

DISASTERS:

Even with all our technology and the inventions that make modern life so much easier than it once was, it takes just one big natural disaster to wipe all that away and remind us that, here on Earth, we're still at the mercy of nature.

Neil deGrasse Tyson

Disasters, whether natural or man-made, have been part of man's evolution since times immemorial. It is theoretically believed that the creatures that roamed the Earth before the advent of mankind like the dinosaur, the mammoth, the Siberian tiger, to name a few, are supposed to have vanished from the face of the Earth due to some natural disaster climate change, loss of habitat or even a fall of meteor. The mysterious disappearance of the Indus Valley Civilization is also attributed by historian to some disasters – the change of course of a river, a drought or an epidemic.

Disasters are not strangers to mankind. Humanity has suffered these all disasters like, Drought, Floods, Famines, Epidemics, Earthquakes, Tsunami etc. and yet survived. That is the miracle of human existence – the ability to adapt to circumstances and overcome hardships. This has been well proved during the recent floods in Chennai when people reached out to each other in a tremendous efforts of humanity. However, disaster management cannot be left to human effort alone. Some elements of preparedness and planning is necessary to handle disasters both on the part of Governments and the community because when disasters actually strikes, the time to prepare would have passed. Care shouldn't start in Emergency room. Organizations like the National Institute of Disaster Management and National Disaster Management Authority are mandated to prepare pre-disaster management plan.

Natural disasters often strike without warning – like the tsunami which hit the Indian Ocean and left death and destruction behind. They are Nature's way of showing its power to mankind. And they have to be handled. Hence the greater need for post disaster response. Disaster team which can reach a disaster spot immediately well prepared for any emergency is an urgent necessity. That cry for help from below a fallen wall, or buried underneath the earth should be heeded immediately. Medical teams should be rushed to handle medical emergencies. Post trauma care is the most important requirement at this stage as it may mean the difference between life and death. Evacuation of victims is another important work at the time of disasters. The National Disaster Response Force was established to fulfill precisely this vital necessity.

Creating awareness among the local people is equally important as sometimes a little knowledge can go long way in mitigating the bad consequences of a disaster. People, especially living in disaster prone areas, can be trained to anticipate disaster and to

deal with it in case the disaster actually happens. Effective communication plays a greater role. The recent flood in Odisha are and are an ideal example of how a well-thought out communication strategy can assist in disaster management.

Conceptual Analysis of Disasters

Oxford English Dictionary states the word 'disaster' derives from the 16th century French word, disaster. Disaster is a combination of two terms, 'Des' and 'Astre'. 'Des' means bad or evil and 'Astre' means star, thus 'Disaster' signifying a 'Bad Star' or 'Evil Star'. Disasters therefore, was implying loss or damage occurring due to some unfavorable star.

However in terms of modern understanding, the term disaster denotes any odd event, whether natural or man-made, which can bring about sudden and great miseries to humanity in terms of loss of life and property.

Disaster means great sudden misfortune. In the light of these meanings, one can conclude that the event, which may be termed as 'disaster' would be big in magnitude. Secondly it comes without notice. In this manner the massive scale and suddenness are two essential ingredients of the destructive happening, is defined as disaster.

Disaster means a catastrophe mishap, calamity or grave occurrence in any area arising from natural or manmade causes, or by accident or negligence which result in substantial loss of life or human suffering or damage to, and destruction of property, or damage to or degradation of environment, and as if such is the nature or magnitude which is beyond the coping capacity of the affected area. Thus, Disaster is sudden, unwanted event with a potential for extensive impact.

When the word disaster is used, it actually implies a wider encompassment in term of coverage of geographical area, the intensity of catastrophe involving a large number of lives and property and having greater effects on the society bringing about changes in economic, legal, cultural, political and administrative systems.

DEFINITIONS OF DISASTER

According to:

Office of the Foreign Disaster Assistance of United State (OFDA):- It says that disaster is the alteration in people, material resources and environment, caused by a natural phenomenon or by human activities that exceeds the local response and capacity of the affected community."

The **United Nations** defines disasters as, "An event that cause 'sudden' and 'great' loss. The word 'sudden' indicate that such an event is unexpected, unpredictable and the human is not prepared for it and 'great' only means that the loss to life and property is beyond repair or compensation and that the losses have a great bearing on the survivors, in fact changing the courses of their lives.

The **Webster's Dictionary** defines a disaster as, "a grave occurrence having ruinous results".

The **World Health Organization (WHO)** defines disaster as "any occurrence that cause damage, economic destruction, loss of human life and deterioration in health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area."

As per **UNDHA (2001)**, "a disaster is a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope on its own resources."

Turner (1977) gave a rather comprehensive definition of disaster, "an event concentrated in time and space, which threaten a society or a relatively self-sufficient sub-division of a society which major unwanted consequences as a result of the collapse of precautions which held hitherto been culturally accepted as adequate."

Kreps (1984), "Disasters are events observable in time and space, in which societies or their larger such-units e.g. communities, religions incur physical damages and losses and or disruption of their routine functioning. Both the causes and consequences of those events are related to the social structures and processes of society or their sub-units."

DIFFERENT TYPES OF DISASTER

Generally, there are two types of Disasters – **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: ▪ Flood ▪ Drought ▪ Earthquake ▪ Cyclone	**Minor natural disasters:** ▪ Heat waves ▪ Cold wave ▪ Thunderstorms ▪ Mud slides ▪ Storm
Major manmade disaster: ▪ Epidemic ▪ Deforestation ▪ Pollution due to prawn cultivation ▪ Setting of fires ▪ Chemical Pollution ▪ Wars	**Minor manmade disaster:** • Road / train accidents, riots ▪ Food poisoning ▪ Industrial disaster/ crisis ▪ Environmental pollution

CHARACTERISTICS OF DISASTER:

1. Disruption to normal pattern of life which is usually severe, sudden and wide spread it is also not accepted easily by the affected community.
2. The effects of disaster are mostly adverse such as loss of life, livelihood, loss or damage to property or livestock, hardship severe injurious to the people and which affect their health status.
3. Disaster has negative impact on social structure, infrastructure, communication system, transport services & other essential sources.
4. The affected community is the need of food, shelter, clothing, medical assistance and social care.

   Thus, from the above given characteristics, preparedness should be done to minimize the impact of disaster.

CAUSAL FACTORS OF DISASTERS:

The magnitude of any disaster is measured in terms of deaths, damage or costs for the affected area or communities or the country. The magnitude of a disaster increases with the increase in the vulnerability of the population caused by higher birth rate, lack of economic opportunities and misallocation of resources to meet the basic needs of an increasing population. The following are the causal factors for disasters:

1. Poverty
2. Population Growth
3. Rapid Urbanization
4. Transitions In Cultural Practices
5. Environmental Degradation
6. Lack Of Awareness And Information
7. War And Civil Strife

Poverty:-

The most important single influence on the impact of a disaster is poverty. All other factors could be reduced if the affected population were not also limited by poverty. Virtually all disaster studies show that the wealthiest of the population either survive

the disaster unaffected or are able to recover quickly. Across the broad spectrum of disasters, poverty generally makes people vulnerable to the impact of hazards. Poverty explains why people in urban areas are forced to live on hills that are prone to landslides, or why people settle near volcano or Rivers that invariably flood their banks. Poverty explains why droughts claim poor peasant farmers as victims and rarely the wealthy, famines more any other than not are the result of a lack of purchasing power to buy food rather than an absence of food. Increasingly, poverty also explains the reasons why many people are forced to move from their homes to other parts of their Countries or even across borders to survive. Such crisis-induced migration poses considerable challenges both in terms of immediate assistance to the displaced and of longer-term development. Poor people suffer a lot at the time of Disasters.

Population Growth:-

There is an obvious connection between the increase in losses from a disaster and the increase in population. If there are more people and structures where a disaster strikes, then it is likely there will be more of an impact. The growth of population has been so spectacular that it is inevitable that more people will be affected by disaster because more will be forced to live and work in unsafe areas. Increasing numbers of people will be competing for a limited resources (such as, employment opportunities, and land) which can lead to conflict. This conflict may result in crisis-induced migration. Such growth occurs predominantly in developing countries, resulting in various contributors to disasters. If the population can be controlled then automatically the impacts of disasters can be controlled.

Rapid Urbanization:-

Rapid population growth and migration are related to the major phenomenon of rapid urbanization. This process is also accelerated in developing countries. It is characterized by the rural poor or civilians in an area of conflict moving to metropolitan areas in search of favorable economic circumstances and security. These massive numbers of urban poor increasingly find fewer options for availability of safe and desirable places to build their houses. Here again, competition for scarce resources, an inevitable consequence of rapid urbanization, can lead to human-made disasters.

Many of the landslides, or flood disasters are closely linked to rapid and unchecked urbanization which forces low income families to settle on the slop of hillsides or banks of rivers. To control the urbanization process, government should focus more on Rural Development.

Transitions in Cultural Practices:-

Many of the inevitable changes that occur in all societies lead to an increase in the societies' vulnerability to disasters. Obviously, all societies are constantly changing and in a continual state of transition. These transitions are often extremely disruptive and uneven, leaving gaps in social coping mechanisms and technology. These transitions include nomadic populations that become sedentary rural people who move to urban areas, and both rural and urban people who move from one economic level to another. Moreover, these examples are typical of a shift from non-industrialized to industrializing societies. One example of the impact of these transitions is the introduction of new construction materials and building designs in a society that is accustomed to traditional materials and designs. This often results in new materials being used by incorrect way. In disaster prone areas, inadequate new construction techniques may lead to houses that cannot withstand earthquakes or wind storms. People should be trained to use disaster proof materials.

Environmental Degradation:-

Many disasters are either caused or exacerbated by environmental degradation. Deforestation leads to rapid rain runoff, which leads to flooding. The destruction of mangrove swamps decreases a coast line's ability to resist tropical winds and storm surges. The creation of drought conditions and the relative severity and duration of time the drought lasts–is mainly a natural phenomenon. Drought conditions may be exacerbated by: poor cropping patterns, overgrazing, the stripping of topsoil, poor conservation techniques, depletion of both the surface and subsurface water supply, and, to an extent, unchecked urbanization. Environment should be protected on regular basis.

Lack of Awareness and Information:-

Disasters can also happen because people vulnerable to them simply didn't know how to get out of harm's way or to take protective measures. This ignorance may not necessarily be a function of poverty, but a lack of awareness of what measures can be taken to build safe structures on safe locations. Perhaps some people did not know about safe evacuation routes and processes. Other populations may not know where to turn for assistance in times of acute distress. Nevertheless, this point should not be taken as a justification for avoiding the coping mechanisms of the majority of people affected by disasters. In most disaster-prone societies, there is a wealth of understanding about disaster threats and responses. This understanding should be incorporated into any efforts to stipulate external assistance. So, awareness campaigns, trainings and mock drills should be arranged for community on regular basis.

War and Civil Strife:-

War and civil strife both are considered as hazards, which is, extreme events that create disasters. War and civil strife often result in displaced people, a target population of this training programmed. The responsible factors of war and civil strife include competition for scarce resources, religious or ethnic intolerance, and ideological differences. Many of these are also byproducts of the preceding six causal factors of disasters. War and Civil Strife is very critical condition which lead to the situation of disasters.

ASPECT OF DISASTER:

HAZARDS:-

Hazard is the potential occurrence, in a specific time period and geographic area, of a natural phenomenon that may adversely affect human life, property or activity to the extent of causing a disaster. The probability that a hazard will or will not occur, and its magnitude when it does occur also contributes to risk. Methods of predicting various hazards and the likelihood and frequency of occurrence vary widely by type of hazard.

These are the various types of hazards.

Geological Hazard

- Earthquakes
- Tsunamis
- Volcanic Eruptions
- Landslides

Climatic Hazards

- Tropical cyclones
- Floods
- Drought

Environ mental Hazard

- Environnemental Pollution
- Déforestation
- Désertification
- Pest Infestation

Thèse are some types of hazards which sometimes convert in to Disasters.

RISK:-

Risk is defined differently by people in different situations. Risk as under stood by a politician is different from risk to a seismologist, or to an insurance company executive, or to a family living in an earthquake zone. Risk is also different to local and national governments involved with disaster management. Here the context is those of local and national public policy authorities who make decisions for the well-being of the community. For policymakers, the community elements at risk include its structures, services, economic and social activities such as agriculture, commercial and service businesses, religious and professional associations and people. Risk is the expected losses to a community when a hazard event occurs, including persons injured, lives lost, property damaged and economic activities or livelihoods disrupted. The relationship of these elements can be expressed as a simple mathematical formula which illustrates the concept that the greater the potential occurrence of hazard and the more vulnerable a population, then the greater the risk. So, Risk Assessment is very much important before disastrous situations.

RISK = HAZARD × VULNERABILITY

VULNERABILITY:-

Vulnerability is the inclination of things to be damaged by a hazard. People's lives and health are at risk directly from the destructive effects of the hazard. The losses caused by a hazard, such as an earthquake or storm, will be proportionally much greater to more vulnerable populations – those living in poverty, with weak structures, and without adequate coping strategies. Human vulnerability is the relative lack of capacity of a person or community to anticipate, cope with, resist, and recover from the impact of a hazard. Physical or Structural vulnerability is the extent to which a structure or service is likely to be damaged or disrupted by a hazard event. Community vulnerability exists when the elements at risk are in the path or area of the hazard and susceptible to damage by it. Vulnerability should be reduced through proper planning.

ASSESSMENT:-

The process of arbitrating the impact of disaster or events on a society, the needs for immediate, emergency measures to save and sustain the lives of survivors, and the possibilities for expediting recovery and development. Assessment is an interdisciplinary process undertaken in phases and involving on-the-spot surveys and the correlation, evaluation and interpretation of information from various sources concerning both direct and indirect losses, short- and long-term effects. It involves arbitrating not only what has happened and what assistance might be needed, but also defining objectives and how relevant assistance can actually be provided to the victims. It requires attention to both short-term needs and long-term implications. Before disasters Risk Assessment and after disasters Damage Assessment are very important phenomenon.

MEANING & CONCEPT OF D.M:

Disaster management is a process or strategy that is implemented when any type of catastrophic event takes place. Sometimes referred to as disaster recovery management, the procedure may be initiated when anything threatens to turmoil

normal operations or puts the lives of human beings at risk. Governments on all levels as well as many businesses create some sort of disaster plan that make it possible to overcome the misfortune and return to normal function as quickly as possible.

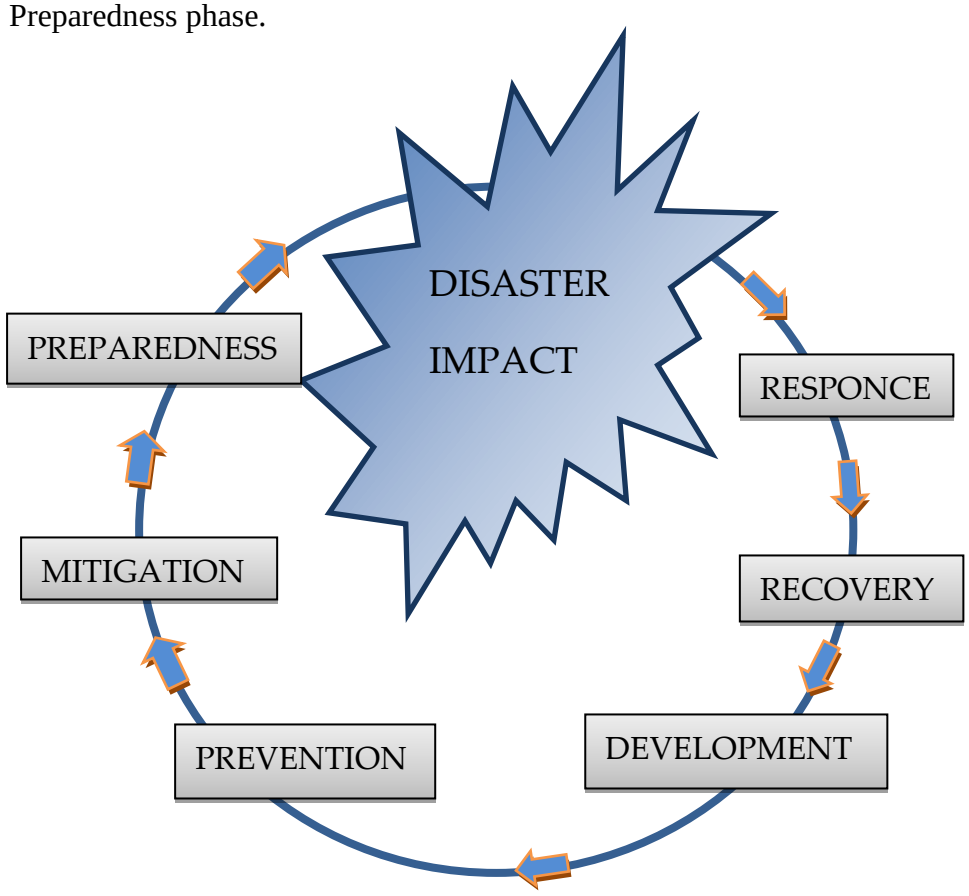
According to P.C.SINHA, "Disaster management is a body of policy and administrative decision and operational activities which pertain to the various stages of a disaster at all levels."

Disaster Management also focuses on the planning and implementation of some policies and strategies to minimize the effects of disasters.

Disaster Management Cycle:

Disaster management cycle includes the following stages/ phases

1. Disaster phase.
2. Response phase.
3. Recovery/ Rehabilitation phase.
4. Risk Reduction/ Mitigation phase.
5. Preparedness phase.



1. Disaster Phase

The phase during which the event of the disaster has happened. This phase is characterized by profound damage to the human society. This damage or loss may be that of human life, loss of property, loss of environment, loss of health or anything else. In this phase, the population is taken by profound shock. It is really very critical stage for local people.

2. Response phase:

This is the period that immediately follows the occurrence of the disaster. In this phase, all individuals respond to the disaster, but in their own ways. The ambulances and medical personnel arrive, remove the injured for transportation to medical camps or hospitals and provide first aid and life support. The public also take part in relief work. One can even find injured victims help other injured ones. Almost everyone is willing to help. The needs of the population during this phase are immediate medical help, food – 'roti', clothing – 'kapda' and shelter – 'Makan'. The Response Phase includes Search, Rescue and Evacuations. And in this phase the local people are trained then the search, rescue and evacuation activities become smoother.

Activities that take place when a disaster strikes to reduce loss of life and to deliver relief as possible to the affected people.

For example:

1. Search and rescue
2. Need Assessment
3. Provide First Aid service
4. Emergency food, water, medicines supply
5. Provision of temporary shelters & other relief supply
6. Restoring family links etc.

3. Recovery phase:

When the immediate needs of the population are met, when all medical help has arrived and people have settled from the hustle – bustle of the event, they begin to enter the next phase, the recovery phase which is the most significant, in terms of long

term outcome. During this time that the victims actually realize the impact of disaster. It is now that they perceive the meaning of the loss that they have suffered. They are often housed in a camp or in some place which is often not their house, along with other victims. During this time, they need intensive mental support so as to facilitate recovery. When the victims have physically and mentally recovered from the trauma, they realize the need to return back to normal routine. That is, to pre-disaster life. During this phase, they need resources and facilities so as to enable them to return back to their own homes, pursue their occupation, so that they can sustain their life on their own, as the help from the government and other nongovernmental organizations is bound to taper in due course. Thus, they are provided with a whole new environment, adequate enough to pursue a normal or at least near normal life. This is called as Rehabilitation.

Measures taken after the Disaster, to bring back the condition within the community to normal or even better than before…For example:

1. **Social Rehabilitation**
    a) Welfare Center
    b) Anganwadi
    c) Self-help group
    d) Reconstruction of health care facilities
2. **Economic Rehabilitation**
    a) Financial Loans
    b) Incentives (food for work)
    c) Distribution of livelihood kits
3. **Psychological Rehabilitation**
    a) Counseling
    b) Meet primary needs
    c) Be together with family members
    d) Support the community
    e) Advise to go for daily routine work & Follow up

4. Risk reduction phase:

During this phase, the population has returned to pre disaster standards of living. But, they recognize the need for certain measures which may be needed to reduce the extent or impact of damage during the next similar disaster. For example, after an earthquake which caused a lot of damages to improperly built houses, the population begins to rebuild stronger houses and buildings that give away less easily to earthquakes. Or, at the time of tsunami, to avoid housings very close to the shore and the development of a 'green belt'- a thick stretch of trees lying near to the coast line in order to reduce the impact of the tsunami waves on the land. This process which reduce the effects of disasters is called Mitigation.

Long term measures taken before a disaster to lessen its effect on the community.

For example:

1. Strengthening of existing buildings and infrastructures
2. Raised earth platform in flood prone areas
3. Taking out insurance policies
4. Plantation of drought resistant crops
5. Build cyclone shelters, reinforcement of river banks in flood prone areas.
6. Public awareness programs
7. Community based health care / health promotion.

5. Preparedness phase:

This phase involves the development of awareness among the population on the general aspects of disaster and on how to behave in the face of a future disaster. This includes education on methods of safe and successful evacuation, warning signs of disasters and first aid measures. This concept justify the statement, "Prevention is better than Cure".

Measures designed to enable a community to cope with and respond quickly and effectively to any further disaster. These activities should take place before a disaster.
For example:

- Assessment of the Vulnerability and Capacity (VCA) of the community through mapping exercise.

- Develop early warning systems.
- Formation of community evacuation & rescue team and plan
- Formation of community disaster preparedness and response committee and plan.
- Community based first aid, disaster preparedness & response training programmed.
- Prepositioning of essential relief items in strategic location for timely response.
- Increasing community disaster awareness.
- Improving coordination.
- Developing and implementing community based risk reduction activities and programmers.
- Understanding information flow channels and develop information and reporting system.

FLOOD:

Floods are among the most common and devastating natural hazards causing severe damage to public and private services, infrastructure, the environment, the economy and devastation to human settlements. Recurring flood losses have handicapped the economic development of both developed and developing countries. Floods usually are local, short-lived event that can happen suddenly and sometimes with little or no warning.

It is evident from the available data that the frequency and severity of floods is increasing regularly. As per the Central Water Commission data, the average annual losses due to flood damages amount to 938.56 crores. Even though the problem of floods has been receiving increasing attention and in spite of vast investments in this sector during the last few decades, it is noted that the flood damage in the country has continuously been showing a rising trend.

It was in this context that the National Flood Commission was set up in July, 1976 by the Government of India to look into and advice on various aspects relating to floods. In its report submitted in 1981, inter-alia, the commission laid great stress on proper flood plain management without diluting the importance of structural steps for specific situation.

In India, of all the disasters that occur in the country, river floods are the most frequent and often the most devastating. The cause for flood is chiefly the peculiarities of rainfall in the country, 75% is concentrated over a short monsoon season of three to four months. Consequently, there is a very heavy discharge from the River during this period causing widespread floods. As much as 40 million hectares of land in the country has been identified as flood-prone. An average of 18.6 million hectares of land is flooded each year. Floods are caused mainly in the Ganga-Bramhputra-Meghna basin which carry 60% of the nation's total river flow. And incidentally, that is heartland of the country. Himalaya is the very young mountain range.

DEFINITIONS OF FLOOD:

National System for Prevention Mitigation & Management of Disaster: (NSPMMD)

"Flood is a natural phenomenon or disaster caused by too much rain or water in a particular location which could be caused by many different sets of condition like prolonged rainfall, a storm, rapid melting of large amount of snow or swelling of rivers from access precipitation upstream and cause wide spread damage to the downstream areas & the bursting of manmade dams."

TECHNICAL DICTIONARY OF IRRIGATION & DRAINAGE – 1966 (ICID):

"Flood is a relatively high flow or stage in a river markly higher than the usual. A mass of water rising, swelling & over flowing land"

Forecasting and Warning

Flood forecasting and flood warning system in a scientific way commenced in the year 1958 by Central Water Commission (CWC). At present, the flood forecasting and warning network of CWC covers 62 major interstate river sub catchments which include 132 water level forecasting stations and 25 inflow forecasting stations for important reservoirs. Hydrological and hydro meteorological data from nearly 700 stations in these rivers are collected and analyzed, and flood forecasts and warning messages are issued, generally 24 hours to 48 hours in advance. In the event of very large incoming floods, advisory forecasts i.e. 72 hours in advance or more are also issued which warns against the incoming floods at the downstream locations. Co-ordination between neighboring districts, states and countries is promoted to reduce loss of livelihood and life.

Experiments in India

In managing disaster, the basic responsibility is that of the concerned State Government. The role of the National government is supportive, in term of supplementation of physical and financial resources and complementary measures in areas like transport, and interstate movement of food grains. The national government also sets out the policy climate and extracts lessons from disasters. The lessons

learned are communicated to State and National initiatives are made possible. The Union Department of Agriculture and Co-operation (DAC) is the nodal Department. An additional Secretary in the DAC is nominated as the Central Relief Commissioner. He provides the central point for interaction with the State Government, and other Departments and for the effective implementation of the decision of the Union Government.

Now, as a national initiative, the representatives of the communities and the NGOs are convened in the operational and policy processes so as to achieve greater impact of mitigation and preparedness measures. For example, CARE (India) co-ordinates the Government of India, NGO Committee and Disaster Mitigation Institute is invited to join hands in dissemination of information and awareness programme and different task forces formed for disaster management related activities. The department of Agriculture and Co-operation in the Agriculture ministry is the nodal department for all matters pertaining to natural disasters relief at the Centre. In the DAC the relief commissioner functions as a nodal officer to co-ordinate relief operations for all natural disasters. The Central Relief Commissioner receives information relating to forecast/ warning of the natural calamity from the Director-General, Indian Meteorological Department (IMD) or from the Central Water Commission on a continuing basis. Besides, he also keeps an eye on the developments taking place and provides the necessary feedback, through the Agriculture Secretary to the Agriculture Minister, the Prime Minister and the Cabinet.

CAUSES OF FLOOD:

- Floods are natural disaster occurring in rivers. The rainfall in India is largely depend on the monsoon, Climate changes and on depression Most of the rainfall in India is received during the south west monsoon season during which heavy rain is experienced in the catchment areas of the rivers of the rivers and dams.
- The jamming of rivers due to landslides or artificial abstraction increases the chances for flood.
- Flood damages are the combined result of the natural phenomena of flood supported with human activities.

- The fertile deltas have promoted large scale for human settlement & industrial development near the rivers.
- Cultivation of land near the river bank or in the river bed obstructs the flow of water causing flood.
- The special and economic activities of people go on increasing on one hand while on the other hand the rivers continue to experience flood of various intensities which cause damage to property
- In a way, the damage caused by flood is the price paid for human occupation & exploitation of the rivers and the nearby areas.
- As we know now, the basic cause of flood in India is heavy rainfall, which size of catchment areas also affected by the nature of flood.
- Rivers with small catchment areas experience flash flood, while rivers with big catchment areas experience slow onset flood.
- Flood is a result of a complex interaction of various causes.

CHARACTERISTICS OF FLOOD:

Flood may be measured and analyzed by following criteria.

1. Depth of water :-

Building foundation and vegetation will have different degree of tolerance to bring inundated water.

2. Duration :-

Damage or degree of damages to structure, infrastructure & vegetation is often related to length of time with water induction.

3. **Velocity :-**

Dangerously high velocities of flow may create erosive forces & pressure which may destroy or weaken foundation supports. These may occur on the flood or in the main river channel.

4. Rate of rise :-

Estimation of the rate a rise & discharge of a river is important as a basis for flood warning, Evacuation plan & zoning regulation.

5. Frequency of occurrence :-

The cumulative effect and a frequency of occurrence measures over a long period of time will determine what type of construction and agricultural activities should take place on the flood plains.

6. Seasonality :-

Flooding during sowing or growing season may completely destroy crop, while cold weather floods from snow melting may seriously affected the functioning of community.

TYPES OF FLOODS:

Water and ground, being the basic factor in floods, decides the types of floods. Consequent upon the variations in the nature of these two factors, floods may be classified as follows depending upon the source of water and the ground location.

- **Precipitation Floods**

I) Rainfall Floods

- Heavy rainfall floods
- Single event floods
- Multiple event floods

II) Flash Floods

- Single event (cloud burst)
- Multiple event (temporary blocking)

III) Precipitation other than rainfall Floods

- Snowmelt
- Ice melt

- **Non-precipitation Floods**

  I) Estuarine Floods

  II) Coastal Floods

  - storm surges due to cyclonic storms
  - Tsunamis due to under-ocean earthquakes

  III) Breach floods due to breaches in canals, river embankments and leaves

  IV) Dam burst Floods.

FLOOD MITIGATION STRATEGIES:

There are two different ways to mitigate floods: -

1. Structural

2. Non- Structural

- Structural measures are in the nature of physical measures and help in **"modifying the floods", while non- structural measures are in the nature of planning and** help in **"modifying the losses due to floods".**
- In the structural measures we keep the water away from people and in the non-structural measures to try to keep the people away from water. These all works are divided into long term and short-term measures.

STRUCTURAL MEASURES:

A.)Embankments:

Embankments have been extensively used for protection against floods of important towns and lands. However, the embankments are now the best means of communication in the flood-prone areas and are being recklessly used for transportation of materials by tractors and other heavy vehicles. During floods, people shift to the embankments for temporary shelter and often settle down there for good. Thus, embankments and their slopes become permanent settlements to flood victims and their livestock. It messes up proper maintenance, and embankments become

susceptible to breaches during floods. Whenever there are lapses in maintenance, the protected areas are exposed to serious flood hazards.

B) Water Shed Management: -

Timely cleaning, de-silting and deepening of natural water reservoir and drainage channels (both urban and rural) must be taken up.

C) Reservoirs:-

The entire natural water storage place should be cleaned on a regularly. Encroachments on tanks and ponds or natural drainage channel share to be removed well before the onset of monsoon.

D) Natural Water Retention Basins:-

Construction and protection of all the flood protection embankments, ring bunds and other bunds. Dams and levees can also be constructed which can be used as temporarily storing space which reduces the chances of lower plains getting flooded.

E) Buildings on Elevated Area:-

Elevated area and if necessary on stilts and platform should be used for constructing the buildings in flood prone areas.

However, complete flood control in terms of structural methods of flood protection are neither economically viable nor these are environment friendly. Therefore, non-structural methods are more useful and popular in mitigating flood disaster.

NON STRUCTURAL MEASURES:

A. Flood Plain Zoning:-

Flood plain zoning, which places restrictions on the use of land on flood plains, can reduce the cost of flood damage. Local governments may pass laws that prevent uncontrolled building or development on flood plains to limit flood risks and to protect nearby property. Landowners in areas that adopt local ordinances or laws to limit development on flood plains can purchase flood insurance to help cover the cost of damage from floods.

B. Flood Mapping:-

Satellite data can be used very effectively for mapping and monitoring the flood inundation areas. It is useful for flood damages assessment, flood hazard, zoning & post flood survey of river configuration and protection work.

C. Flood Proofing:-

Such measures help greatly in mitigation of disaster to the population in flood prone areas. It is essentially a combination of structural change & emergency action without evacuation. Flood proofing programme stipulates the raised platform as flood shelter for human beings and cattle through raising the public utility installations above flood levels.

D. Flood Fighting :-

On receipt of flood forecasts, the flood forecasting station disseminate flood warning to the officials concerned and the people of the affected areas, to take necessary precautionary measures like strengthening of the flood protection and mitigation works, evacuation of people to safer places etc. The essential materials is stocked in advance at appropriate places & measures for distribution of supplies are arranged to mitigation the miseries.

E. Flood Forecasting and Warning:-

These are issued for different areas mostly by the Central water Commission/ Meteorological department and by the State Irrigation/ Flood Department.

- However, an effective Warning System is one that can release warning in advance, i.e. 72hrs, 48hrs and 24hrs. It can change the existing scenario substantially and provide informed decision making in adopting proper measures towards disaster preparedness, mitigation, control, planning and management. This kind of advance warning can help the authorities for better flood preparedness and also effective flood mitigation. Therefore, leading action have to be taken to modernize the operation of Flood Forecasting & Warning by adopting the state of art technology and integrating it into the forecast and warning dissemination process.

Monitor ---- forecaster ----- decider ----- forecasting & warning ---- trigger

F. Flood Insurance:-

Flood insurance system is prevalent in developed countries but in developing countries it is not given priority. In India, it has started recently. It has several advantages and means to modify the burden of loss. It is being provided to cover the flood risk on a limited and selective scale. This is mainly due to involvement of intricacies in the matter of premium fixing & possibility of payments concerning frequent claims to aquatically flood prone areas. Crop insurance has a large scope and needs to be propagated for adoption by farmers in developing countries.

FLOOD PREPAREDNESS:

Floods, which are a natural hazard, need not become a disaster, if we are prepared and are aware of how to deal with them. This would minimize the losses of life and reduce human suffering. This guide lists simple things one can do to stay safe and protect one from floods.

Before flood:-

1. Know the route to the nearest safe shelters that you are aware off.
2. Keep the First Aid Kit ready with extra medication for snake bite and diarrhea
3. Strong ropes for tying things
4. A radio, torch and spare batteries
5. Stocks of fresh water, dry food, candles, matchbox, kerosene etc.
6. Umbrellas and bamboo sticks (to protect from snakes)
7. Higher ground where people and animals can take shelter

When you hear a flood warning:-

1. Tune in to your radio or watch for warning and advice
2. Keep attention of flood warning given by local authorities
3. Keep dry food and drinking water and warm clothes ready
4. Check your emergency kit

If you need to evacuate:-

1. Pack clothing, essential medication, valuables, personal papers etc in water proof bags to be taken to the safe shelter.
2. Raise furniture, appliances on beds and tables
3. Put sandbags in the toilet bowl and cover all drain holes to prevent sewage back flow.
4. Do not get into water of unknown depth and current
5. Lock your house and take the recommended or known evacuation routes for your area of safe shelter.

During Flood:-

1. Drink boiled water or use halogen tablet to purify water before drinking.
2. Keep your food covered
3. Do not let children remain on empty stomach
4. Use bleaching powder and lime to disinfect the surroundings
5. Avoid entering flood waters. If you need to enter then were proper foot wear.
6. Stay away from water over knee level.

After a Flood:-

1. Stay tuned to local radio.
2. Do not allow children to play in, or near, flood water.
3. Stay away from drains, culverts.
4. Do not use electrical appliances.
5. Do not eat food, which has been in floodwaters.
6. Boil tap water.
7. Use halogen tablets before drinking.
8. Be careful of snake bites, snakebites are common during floods.

Dos & Don'ts of Flood:

Before flooding occurs:

✓ Analyze the history of flooding in your area and determine the impact of such floods in the past.

✓ Do not construct your houses near the river/unsafe areas. Contact local authorities for support.

If your residence is in a flood prone area:

1. Prepare an emergency evacuation plan.
2. Keep your disaster supplies ready such as portable drinking water, match boxes, torch with batteries, blankets, nonperishable food items, first aid kit and any other essential emergency items.
3. Be prepared to move to the designated evacuation/safe areas marked by concerned authorities or areas where your family members have agreed it to be safe (higher grounds)
   - ✓ After a flood warning, be on alert and listen to radio/television/online news for updated emergency information/instructions.
   - ✓ During bad weather or heavy rain, avoid going to river sides /river banks to witness the event.

During Floods:

- ✓ Avoid unnecessary traveling/driving. If your car stalls, leave it immediately and reach to higher ground.
- ✓ Scoured road edges, weakened bridge structures and pot holes could be hazardous, so never attempt to drive/walk over flooded roads or bridges.

When outside during a flood event:

- ✓ Avoid going to flood devastated areas. Your presence might hamper rescue and emergency operations, putting you and others at risk.
- ✓ Never let children play outside during a flood.
- ✓ Closely watch out for falling/submerged power lines and wires for possible electrocution. Report fallen electrical lines to the concerned authority.

- ✓ Do not stand on unstable ground; watch out for falling objects and debris. Abstain from going to flooded river banks for catching fish or logs/timbers or to witness the event.

- ✓ As far as possible, quickly abandon your house/building if you have time to evacuate to safer higher grounds. If you don't have time climb to a higher floor, roof top and signal for help.
- ✓ Shut off all power points in the house/building and all fires in the kitchen if possible. Fire is the most frequent hazard after a flood.
- ✓ Avoid walking around after a flood as steps and floods are often slippery and covered with debris, including broken glass pieces and other hazardous materials.

After a Flood

- ✓ If you are inside a flooded building, ask for help or stay inside until flood water subsides.
- ✓ But if you are outside, stay out of the building if flood water remains around the building. Flood water often weaken/scour building foundations causing sudden collapse.

- ✓ Ensure buildings are safe before reoccupying them. Examine buildings– walls, floors, doors, windows etc. for damages.
- ✓ Use battery powered lanterns or flashlights when examining buildings. Battery powered lighting is the safest and handiest in preventing fire hazards.
- ✓ Continue listening to the radio/television for further instructions and warning from relevant authorities.
- ✓ Look for electrical damages. If you see broken or frayed wires, or smell burning insulation, turn off the electricity at the main fuse box. Call an electrician for help.
- ✓ Boil and distill water before use. Throwaway food that has come in contact with flood water. Food contaminated by flood water can cause severe infections

- Do not go near the river to collect fish brought down by the flood. Such fish can be poisonous.

Flood Preparedness Planning:

Flood preparedness planning is to put appropriate arrangement in prior for an effective response to floods. Some of the commonly identified flood preparedness activities are:

- Raising Public awareness on flood preparedness, response and mitigation measures;
- Stockpiling of emergency relief materials i.e., food, fodder for livestock, emergency medicines, materials for temporary shelter etc.;
- Installation of community-based early warning system for providence of timely and effective flood warnings;
- Management of safe areas for temporary removal of people and property from a threatened location;
- Transportation to safe areas/ evacuation center;
- Ensuring access to health and sanitation facilities;
- Conducting drills and rehearsals. The main thing for flood preparedness planning is to have a clarity and agreement on the roles and responsibilities of related stakeholders such as the disaster management organizations, government line agencies, Red Cross, voluntary groups as well as community members. Such an arrangement is possible though forming disaster management committee and teams at various levels to agree on set of standard operating procedures (SOPs) defining what actions to be taken before, during and after floods. The benefits of the flood preparedness planning are many and some of them are listed:
- Systematic arrangement and distribution of resources to reduce the impact of flood disaster;
- Vulnerable communities to get access to crucial information, such as timely flood forecasts and warnings;
- The provision of basic needs, such as clean water, shelter and medical care, sanitation and food during floods;
- Continued access to livelihoods, in order to minimize disruption of economic activities;
- Effective systematization among disaster management agencies to ensure efficient emergency response during floods;
- Urgent restoration of critical infrastructure and measures to be taken to bring normalcy immediately after the floods.

COMPONENTS OF FLOOD PREPAREDNESS PLAN:

A flood preparedness plan (FPP) which is an integral component of the multi-hazard disaster management plan, is an action oriented document detailing specific actions to be undertaken prior to floods, which set the ground for effective execution of emergency response and recovery activities during and after floods. The components of a FPP are:

1. Assessment of probable needs:-

Based on ancient data from prior flood disasters, officials at the State and district levels compile a list of likely needs and available resources. Gaps between needs and resources are identified in advance and also ways to mobilize them.

2. Institutional Mechanism for implementation of FPP:-

The Flood Preparedness Plan outlines the institutional structure of the States, District or Community level Committees for Disaster Management, its roles and responsibilities before, during and after floods. The Plan also establishes the coordination among the line agencies and other stakeholders in implementation of priority activities identified in the plan.

3. Activating early warning and disaster response systems:-

The FPP defines how to warn the whole community, based on the forecast received from the national and regional agencies and what they should do in advance. The plan ensures ways of involving all stakeholders, according to their roles and responsibilities, and outlines these in the plan.

4. Resource mobilization and allocation:-

Responding to a flood requires resources; therefore the plan specifies what resources are already available at the State, district, community and village levels. The plan also specifies what resources will be needed and where to find those resources.

5. Communication within and outside the community:-

To ensure clear and effective messages in an emergency, the plan specifies how communication will take place and via what media (radio or indigenous systems, etc.)

6. Sectoral components:-

A flood preparedness plan outlines standard operating procedures (SOPs) for specific measures such as search & rescue, emergency medical assistance, provision of water supply and sanitation, food and nutrition, logistics and transport, health, agriculture and environment management, temporary shelter, evacuation procedures; protection and security.

Challenges and Recommendations:

The biggest challenge for Flood Preparedness Planning is the elemental capacities of the State and district authorities as well as the lack of resources to undertake implementation of the priority activities. In most case, local resources and capacities are often overlooked, thus relying too much upon external assistance. The association between disaster management and the national and local socio-economic development processes are most often ignored, resulting in re-creation of risks in already flood prone communities. For a successful flood preparedness planning, it is imperative to learn from the experiences and best practices for greater collaboration and information sharing to enhance the synergy and to allocate the resource base for more effective implementation of flood preparedness programs. It is also important to establish and integrate FPP within the overall developmental plan for securing resources for better implementation.

COMMUNITY APPROACH TO FLOOD MANAGEMENT:

- ✓ The nature causes immense damage to the civilizations and the people inhabiting it.
- ✓ All these problems are related to the individual human being win turn forms the basis for community.
- ✓ So, the community participation approach to face and to take to come back to the stage of normal, after the floods have occurred can be fulfilled through the following:

I) Participation Level: The participation level is mainly for local resource mobilization, for community mobilization, for inputs to the planners and authorities

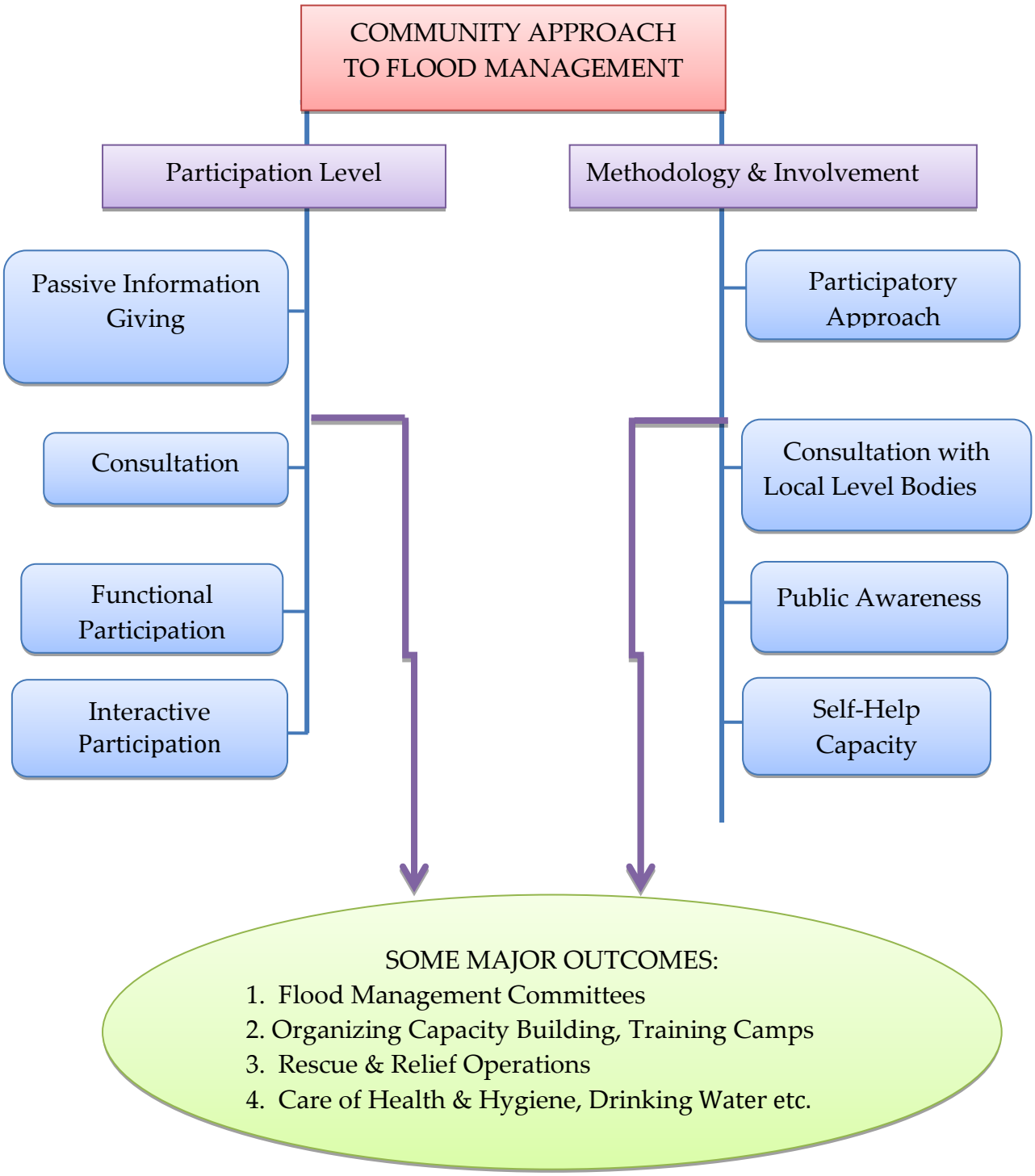
Participation should be effective and efficient

The participation level of this technique for flood management includes:

- ➢ Passive information giving
- ➢ Providing Consultation
- ➢ Functional participation
- ➢ Interactive Participation

II) **Methodology and Involvement:** This approach is, infact the 'Golden Approach' if we consider the **benefits** and the achievements through this.

But, there occurs some constraints



The different techniques to overcome effects of hazards and to take active participation are as under:

- Participatory Approach
- Consultation and Involvement of Local Level Bodies
- Public Awareness
- Self-Help Capacity

III) Some major outcomes: The participation of the community and the different methods and techniques applied by them to overcome the intricacies of flood occurrence, **ultimately** comes out with many fruitful results

- formation of Flood Management Committees
- organizing capacity building training camps
- rescue and relief operations
- Care of Health and Hygiene, Drinking Water etc.

DISASTER PREPAREDNESS:

MEANING OF DISASTER PREPAREDNESS:

Disaster Preparedness is a state of being ready to react promptly and effectively in the event of an emergency. Being prepared means that a plan of action presents for an emergency so that it is clear as to what to do before the emergency occurs. Preparedness measures to be undertaken depends upon the analysis of hazard severity and vulnerability, which is also the basis for deciding mitigation strategy. In some cases, such as a flood or hurricane, an early warning gives several hours to act. However, often no prior warning of an impending emergency, such as with earthquakes, tornadoes, explosions, or major fires is possible. Preparedness for any emergency, especially those, which strike without prior intimation, requires a plan. It is essential to identify the resources available, and ways to utilize them. It must also be logically certain that the plan will work in an emergency situation. Preparedness Plan - The purpose of a plan is to provide a systematic way of responding to an emergency situation.

CONCEPT OF DISASTER PREPAREDNESS:

Disaster preparedness includes forecasting and taking precautionary measures prior to an expectant coercion when advance warnings are possible. Preparedness planning improves the response to the effects of a disaster by organizing the delivery of timely and effective rescue, relief and assistance. Preparedness concerns the development and regular testing of warning systems (linked to forecasting systems) and plans for evacuation or other measures to be taken during a disaster alert period to minimize potential loss of life and physical damage. It also involves the education and training of officials and the population at risk, the establishment of policies, standards, and organizational arrangements the training of intervention teams, and operational plans to be applied following a disaster. Effective plans also consider securing resources, possibly including stockpiling supplies and earmarking funds. These plans must be supported by enabling legislation earmarking funds. These plans must be supported by enabling legislation. Disaster preparedness minimizes the adverse effects of a hazard through effective precautionary actions, rehabilitation and recovery to ensure the timely, appropriate and effective organization and delivery of relief and assistance following a disaster. This is a broad definition of disaster preparedness. Let's analyze some of the points made in this definition. "Minimizes the adverse effects of a hazard-"Long-term risk reduction measures are intended to minimize the adverse effects of a hazard by eliminating the vulnerabilities which hazards would otherwise expose. These measures directly lessen the potential impact of a hazard before it strikes. Disaster preparedness assumes that certain groups of people or property will nevertheless remain vulnerable, and that preparedness will have to address the consequences of a disaster's impact. Too often the end product of disaster preparedness is seen as a standstill plan to be devised and then field until it is needed. Disaster preparedness must be seen as an active, on-going process. Preparedness plans are dynamic ventures which need to be reviewed, modified, updated and tested regularly. Some analysts distinguish between "active" and "passive" disaster preparedness measures. Passive aspects of disaster preparedness include the preparation of disaster manuals, stockpiling of relief goods and the development of computer lists of resources and personnel. "Active" disaster preparedness would include developing comprehensive response plans, monitoring hazard threats, training emergency personnel, and training members of the communities at risk.

Disaster management involves the response to or apprehension of a hazardous event. Disaster mitigation includes both disaster preparedness and prevention. One of the most difficult aspects of disaster management is that of timing. Timing is also critical to disaster preparedness. Speed and timeliness are often treated synonymously, causing serious problems in the relationship between relief inputs and their effects. There are certain basic needs in some types of disasters, such as shelter and clothing that may be required immediately. In terms of alleviating immediate distress, speed will be essential. However, there are other forms of relief that, under certain circumstances, may be disruptive unless delayed. There is the obvious example of food. Rushing in excessive amounts of food aid before a clear assessment of local market conditions and agricultural prospects are known can create dependency and undermine local economies. Timeliness, not speed, should be the preparedness criterion appropriate assistance requires careful scrutiny.

The list of incompatible relief items that find their way to disaster affected communities is all too long. The issue goes beyond the standard stories of canned ham sent to non pork eating communities and spiked-heeled women's shoes sent to flooded regions. There is a natural and important linkage between disaster preparedness, recovery and rehabilitation. Authority must consider whether the provision of appropriate relief and assistance is designed merely to ensure the immediate survival of affected communities or to pave the way for recovery. Practical implementation of Disaster Preparedness Plan is also very important and it becomes a practical element in the type of measures and resources Authority commit to the implementation of a disaster preparedness plan. If one ignores the linkage between disaster preparedness and recovery and rehabilitation at the peril, or at the peril of the affected community. Effective disaster preparedness planning should consolidate readiness for self-reliant action that will be needed for communities for survival and recovery. The effective organization and delivery of the disaster response suggest obvious criteria for disaster preparedness. Inevitably, disaster situations create conditions of chaos. The best laid plans can reduce, but not eliminate, that those in need receive adequate relief and assistance. Effectiveness is relative. Preparedness plans should seek to anticipate the sources of chaos and should tell us what to do when plans go awry. The criterion of effectiveness becomes particularly important in the context of distribution. The key here is that effectiveness is measured in terms of

the ability to deliver needed relief to those in need. Often in emergency situations, food and non-food relief arrives at the scene of a disaster without a pre-established structure to ensure that those greatest need are the immediate beneficiaries. The most important test of effectiveness is that house in need receive adequate relief and assistance.

Purpose of Disaster Preparedness

The purpose of Disaster Preparedness is to introduce to basic concepts related to disaster preparedness. The first part of this set is sets forth various categories to consider in planning for disaster preparedness: from assessing vulnerability to actually rehearsing the plan. In the second part of the set, we will learn about international collaboration for preparedness with a focus on the U.N. system. There should be heightened awareness of the roles and limitations of international agencies in coordinating disaster preparedness efforts..

DISASTER PREPAREDNESS INVOLVES SUCH CATEGORIES OF PLANNING ACTIVITIES:

1. Vulnerability assessment:

A dynamic on-going process of people and organizations that assess hazards and risks establishes a data base that focuses upon the likely effects of potential hazards anticipates relief needs and available resources.

2. Planning:

A process for generating clear goals and objectives which identifies specific tasks and responsibilities for people and agencies in disaster emergencies and includes grassroots organizations, local and national governments, NGOs, donors and which have a long-term commitment in vulnerable areas

3. Institutional framework:

The “horizontal” and “vertical” coordination of people and organizations which avoids the creation of new structures for disaster preparedness and instead works within established networks and systems. Emphasizing the strengthening of existing

communities and specific responsibilities which reflect established expertise and roles and responsibilities which are clearly defined and appropriate.

4. Information systems:

Coordinate means of gathering and disseminating vulnerability assessment and early warning within and between agencies and organizations and with the public

5. Resource base:

Anticipated disaster relief and recovery needs should be made absolute and specific arrangements and written agreements should be established in order to assure the provision of goods and services as required, including:

- Disaster Relief Funding
- Disaster Preparedness Funding
- Mechanisms For Aid Coordination
- Stockpiling.

6. Warning systems:

Warning system must be developed that will convey to the public effective warnings without assuming that normally functioning communication systems will be available. In addition, the international community should be forewarned about hazards that might lead to appeals for international assistance.

7. Response mechanisms:

A vast number of disaster responses ought to be considered, incorporated into the disaster preparedness plan and communicated to the population that would coordinate and participate in those responses if a disaster occurred.

8. Public education and training:

Through a variety of public education Programs those who may be vulnerable by a disaster ought to learn what to expect and what they will be asked to do in times of disasters. As education providers present warning systems and response mechanisms to the public they should plan to learn from local population's problems and gaps that may exist in the plan.

9. Rehearsals /mock drills:

Provide opportunities to re-emphasize training programmed instructions, identify gaps that may exist in the disaster response plan and inform on-going revisions of that plan.

COMMUNITY BASED DISASTER PREPAREDNESS:

The objective of this CBDP is to strengthen the capacities of people and institution at community level to face disasters. The plans are prepared with the involvement of community as they can better identify the existing resources, hazards they are exposed to prevailing infrastructure, resources, coping mechanisms etc. Hence preparedness plan needs to take cognizance of different types of activities needed at various stages of disaster management. The Community Based Disaster Preparedness planning process is when the community identifies its capacities and vulnerabilities, and develops a plan to prepare for, respond to, and recover from disasters. The community is guided through the process by a CBDP animator who facilitates PRA activities and ensures active participation across the community, including the most vulnerable. There are three phases in the planning process:

1. Getting to Know the Community: The CBDP animator spends time meeting everyone in the community, and local government, NGOs and other organizations to introduce the program and learn about their work. One should do some preliminary mapping and a transect walk to observe and learn about the disaster risks in the community. Key informant interviews can be used at any point to gain additional understanding of disaster risks and community coping strategies.

2. Knowledge regarding impact of Disasters on the community: The whole community participates in mapping exercises to analyze how different people and places are affected during disasters, and understand why some are more affected than others. An institutional mapping exercise identifies what capacities the community has to deal with disasters, and what capacities exist outside the community.

3. Planning How to Prepare for Disasters: Smaller groups formed according to socio-economic status, gender or location identify the key problems faced during disasters and possible solutions. They take time to discuss and learn from other

community members, to ensure the plan uses local knowledge and is appropriate to the context. The community endorses the plan and individuals and groups take responsibility for implementing activities within specified timeframes. The implementing groups sit together to make a plan on how to check progress. Finally the plan is submitted to the local government for approval

The community-based disaster preparedness required performance of several types of activities at three different stages i.e., pre-disaster, during-disaster and post- disaster. Those activities are to identify which can be reflected in the preparedness plan.

Community-based disaster Preparedness in Pre- disaster Phase:

a) Aware the community towards the nature and effects of the disasters to which they are vulnerable.

b) Taking stock of the resources of the community such as schools, primary health centers, cyclone shelters, communication facilities, roads and other infrastructure and skilled individuals.

c) Assessing the risks and vulnerabilities of the community. The various elements at risk that include the physical structures, as well as the vulnerable sections of the community such as women, children, physically challenged, old, etc., need to be assessed so that the preparedness measures are effectively planned.

d) Formulating preparedness plan at the community level that takes into cognizance the community needs, measures to be taken by the community before, during and after the disaster strikes, resources available at various places, clear allocation of responsibilities amongst all concerned officials, departments, Panchayati Raj Institutions, NGOs, and CBOs. A properly prepared plan facilitates the community to effectively execute the plan.

e) Specifying the role of community in handling to the disaster.

Community-based disaster Preparedness During- disaster:

a) Organizing Search, Rescue and Evacuation activities. This includes identifying the disaster victims, bringing them to safer places, provision of first aid, distribution of relief, adhering to evacuation plan etc.

b) Providing shelter for people as well as livestock. This included arrangements for water supply, sanitation, kitchens, fodder for animals, medical services and first aid etc.

c) Clearing of debris from collapsed buildings, bridges, trees, other structures, reestablishing of transport and communication services.

d) Moving of injured to the nearby health centers and hospitals.

e) Disposing of dead humans in order to contain the spread of diseases is another important task. Identification of dead bodies, compliance with police formalities, mobilizing resources for disposal of bodies in accordance with religious and cultural practices, are activities which involve the community. Disposal of dead animals is important as it has effect on health and environment.

f) Assessing damages immediately on the occurrence of disaster facilitates quick emergency relief. This is so be one with reference to the number of households, population, livestock, area affected etc.

Community-based disaster Preparedness in Post- disaster Phase:

a) Undertaking a detained damage assessment covering verified number of human lives, identification of live victims as well as the dead, livestock, infrastructure, damage to crops and the estimated value

b) Drawing up a comprehensive economic rehabilitation plan that included restoration of agricultural activity through necessary inputs, rehabilitation of artisans, marginal, small-scale and business people, those pursuing other occupations, replacement of cattle, agricultural and other equipment, boats, fishing nets etc.

c) Ensuring social rehabilitation through strengthening of existing health centers, schools, Anganwadi, community centers, vocational training centers, psychological counseling to the affected to enable them get back to their normal routine.

d) Building an appropriate monitoring and evaluation mechanism in community-based disaster preparedness programmed. This is needed to facilitate proper utilization and implementation of resources.

Community-based disaster preparedness is essential to assess the damages arising out of disasters, determine the extent and type of assistance. A community-based disaster preparedness plan is a comprehensive action plan which specifies the demographic profile resources available with the community, measures to be taken before, during and after the occurrence of disaster. It is said to contain an inventory of several types of resources available at the community level, roles and responsibilities of different administrative agencies, NGOs, CBOs, Panchayati Raj Institutions, and community.

VILLAGE DISASTER MANAGEMENT PLAN:

Gram Panchayat disaster management committee is the over all in-charge of Gram Panchayat disaster management committee. He is responsible for preparation of future action plan. Other committee members & team members will support the president and team managers whenever required. The committee member will prepare and update the Gram Panchayat Disaster Preparedness & Mitigation Plan with the help of RDA (Rural Development Agency), field functionaries, Ward level Disaster management committees & teams. The committee has to submit the complete updated plan copy to the district authorities for information every year. The committee members are responsible for organizing awareness programmes & mock drills at village level.

ROLE AND RESPONSIBILITIES OF VDMC:

Pre Disaster:-

- Identifying and analyzing risk and deciding the related action.
- Identifying, selecting and given importance to the most effective actions in implementing disaster reduction activities in the village.
- Mitigation activities through awareness programme like distribution of pamphlets, tree plantation, channelizing the river etc.
- Mock drills involving the whole villages.

During:-

- Be a part of the different task force.

Post Disaster:-

- Helping the district administration in proving the accurate damage reports.

- Reflect on the disaster suffered and learn from the experience

FORMATION OF VILLAGE DISASTER MANGEMENT TEAM:

Since the villagers are the first responders in event of any disaster in the village and have to cope with the disaster with their own available resource until the administration reach the village. As a result, the village taskforce members are equipped with skills and capabilities to carry out various mitigations, preparedness, preventive, response and recovery activities in pre, during and post disaster period. The villager taskforce are volunteers who are brave and are willing to serve their community in event of any disaster.

SR NO.	***ACTION GROUP***	***DISASTER SITUATION & RESPONSE***		
		Pre	**During**	**Post**
1.	Warning	✓	✓	✓
2	Shelter	✓	✓	✓
3.	Evacuation	-	✓	✓
4.	First Aid & Medical	-	✓	✓
5.	Water & Sanitation	-	✓	✓
6.	Carcass disposal	-	-	✓
7.	Trauma counseling	✓	✓	✓
8.	Damage Assessment	-	-	✓
9.	Relief & Coordination	-	-	✓
10.	Patrolling	-	-	✓

1. WARNING TEAM (WT):

ROLE AND RESPONSIBILITIES:-

Pre - Disaster:

- Liaison with the district administration.
- WT will monitor the river water level.
- They will quickly disseminate information regarding the rise of water level when it is nearing the danger level. (34-24 hrs. ahead)
- Perform mock drills to see the efficiency of their warning system.

During- disaster:

- Their duty is to inform the administration by any means about the occurrence of the disaster facing by the village.
- Assist the search and rescue and first aids teams.

Post – disaster:

- Liaison with the District Administration and prove information to the villages if it is save for them to go back to their homes.
- Helping to restore the villages back to their home.
- Assist in damage assessment.

2. FIRST AID & MEDICAL TEAM:-

ROLE AND RESPONSIBILITIES:-

Pre- disaster:

- Training should be provided to the First Aid team
- The team would be accountable for preparing an updating list of the vulnerable people in the village at regular intervals.
- The first aid kit has to be kept ready with medicines for fever, diarrhea, cuts, burns, fractures, sprains, lesions etc. Medicines like ORS, bleaching Powder, halogen tablets etc. should be kept ready by procuring from the PHC or from village contingency fund.

During- disaster:

- In each shelter sites (Relief camps) one male and one female first aid trained volunteer are to be stationed.
- At least one first Aids member should accompany the search and rescue team.
- Halogen tablets should be distributed
- All first aids activities will be implemented by this team
- When the doctors arrive at the site, the first aids team will assist the doctors.

Post – disaster:

- The First aids volunteers will continue their work with the supervision of the medical doctors.
- They will need to check their supplies of the basic necessary medicines and restock their supplies.

3. <u>SERACH & RESCUE TEAM</u>

ROLE AND RESPONSIBILITIES:

Pre-disaster:

- The primary role of the team shall be to identify the vulnerable people i.e. pregnant women, lactating member, children and elderly and surveillance on susceptible sites in the village.
- Mock drills and training should be conducted every 6 months.

During- disaster:

- At the time of the first warning by the WT, this Team should help households to pack the necessary items like money, clothes, medicines, baby food, dry food, water, utensil and other valuable items and keep them safer places.
- Help the village people especially the identified vulnerable group i.e. pregnant women, lactating member, children and elderly to evacuate their homes to the identified safe shelter.
- Rescue people who are hurt or are in susceptible sites or situations.

Post – disaster:

- They should also maintain the list of such displaced persons with breakup of male female and children.
- Keeping account of the people of the village and sought out missing persons.
- Identifying and burying of the death.
- Helping in reconstruction of the village and assisting the district administration.
- This village's task force would also be responsible for lifting and restoring of people and livestock back to their homes after the disaster

4. RELIEF, SAFE-SHELTER AND CO-ORDINATION TEAM:-

ROLE AND RESPONSIBILITIES:

Pre- disaster:

- Identify a safer shelter place for the human and bovine of the village. This shelter places should be marked with red flags for clear identity.
- The members of the relief, safe shelter and coordination team should be present at each shelter sites
- They must have the stock of polythene, brooms, basket, saws, axe, ropes, matchboxes and other cutting equipment in their ready stock for disposal of carcasses if located in the village.

During- disaster:

- The team is responsible for providing safe drinking water and proper sanitation facilities to the sheltered people of the village during disaster. The team should erect temporary structures for toilet on the elevated land separately for male and female.
- They are responsible for distribution of relief items such as dry food and ration commodities to victims sheltered. All relief items received from various sources viz. NGOs; govt. will be in the purview of the team. Record should be properly maintained for such receipts.
- They should maintain cleanliness of the village and wells, tanks and ponds if available properly bleached with bleaching powder, chlorine etc.

Post- disaster:

- Help in restoring the people and livestock back to their homes
- They should maintain cleanliness of the village and wells, tanks and ponds if available properly bleached with bleaching powder, chlorine etc.
- Help the district administration in reconstruction of the community.

5. DAMAGE ASSESSMENT TEAM:-

ROLE AND RESPONSIBILITIES:

Post disaster:

- The team will assess by holding meeting with the villagers, the extent of damages caused to their property including loss of life and property and report to the nearest Admin Officer, CO/ Sub-Division.

6. COUNSELORS:-

ROLE AND RESPONSIBILITIES:

Post Disaster:

- The counseling team shall spread awareness among the community members about the Government intervention and support.
- The members will be responsible for providing counseling to the bereaved and stressed people in the shelter places.

Early Warning Team: The members of this team are responsible for providing latest warning information to the villagers so that the villagers get ample time to get prepared for the advent of the hazard. At the time of the disaster the members of this team keep a track of the developments. Emergency contact telephone numbers are collected well in advance of the hazard season, tools such as radio, television etc. are to be kept in working condition prior to the hazard period. During the occurrence of the event, the team would be responsible to inform every household of the latest position. They would also keep a track of the situation and listen to the de-warning messages to decide on the timing for calling off the emergency state.

Evacuation, Search and Rescue Team: This team Members are mainly accountable to evacuate and carry out search and rescue operation at the time of emergency. The members of this team are mainly young men and women of the village, ex-service men; swimmers, etc. Rescue kits necessary to carry out the activities of this team would be ideally made with locally available and indigenous materials. These members are trained with the help of Civil Defense, Police, Fire services etc.

Shelter Management Team: Members of this task force takes care of the identified shelter buildings in pre, during and post disaster scenario. Care needs to be taken to stock necessary material such as food, drinking water, medicines, bleaching powder, firewood, lantern, etc. Animal stock should be specially taken care during any disaster. The team needs to ensure hygiene in and around the shelter place. Women are generally active members of the shelter team because they are well familiar with house management, and are able to manage shelters during emergency. The team leader or any other team member should have the keys of the safe shelters so that prior to the disaster they will clean up the place and make available the necessary materials like water, food, medicines, bleaching powder, lantern, firewood, etc. required for the evacuees during disaster period.

Water & Sanitation Team: Members of this team ensures availability of safe drinking water and the cleanliness of the village so that there is no danger of epidemics even after the event. They will make arrangements for storing drinking water and water for cooking and other chores.

Medical & First Aid Team: This specialized task force is responsible for preparing and updating the list of vulnerable population like old and ailing people, children, pregnant ladies, etc. They also have to procure the necessary medicines before the hazard season and conduct a routine check-up of the ailing people in the village. They have to collect health related information and make the community aware of the health measures to be taken up. Women and existing health practitioners of the village are the members of this team. This team would receive periodic training from the local medical (local health center) personnel.

Relief and Coordination Team: This team maintains the list of all household members so that they can arrange or procure sufficient quantity of food materials for each category of community people. They are also responsible for the distribution of relief materials. And in the post disaster phase they will make arrangements for getting relief materials from the Block office. They should have the list of shops/ wholesale dealerships where food grains are available for use during the time of emergency.

Carcasses Disposal Team: This task force is responsible for the clearing of carcasses (if any) after the disaster. They are exposed to different types of carcasses disposal methods. The team should put in all their efforts to check spread of epidemics by disposing of the carcasses at the earliest and in the right manner.

Trauma Counselling Team: The existing relief system does not have any provision for treatment of mental health, which enhances suicidal cases after any major disaster. It has been commonly seen that most of the community members are traumatized due to loss of family members and assets.

After the large scale damages, it becomes difficult for some of the victims to get back to normalcy. In such a situation, the counselling team is responsible for counselling the victims to ease them of their trauma. 9. Damage Assessment Team: With things getting better after the disaster, the damage assessment team carries out an assessment of the damaged houses, livelihood assets and crops etc. Usually a Govt. functionary from the state Revenue Department carries out such assessments after an appropriate period. During this exercise, the damage assessment team helps him/her in making a timely and useful assessment.

Mock Drill: Mock drill is an integral part of the village CBDP plan because it is a preparedness drill to keep the community alert. Keeping this in view, mock drills are organized in all villages to activate the DMTs and modification of the DM plan based on the gaps identified during such exercises. Basically this is a counterfeit exercise, which if practiced several times, would help in improving the cohesiveness of the community during an emergency

INFORMATION OF GSDMA (Gujarat State Disaster Management Authority)

After the catastrophic Earthquake of January 26, 2001, the Government of Gujarat immediately set up the Gujarat State Disaster Management Authority (GSDMA) as a registered State Society for effectively managing the natural disasters. GSDMA's immediate mandate was to undertake a massive 'Gujarat Earthquake Reconstruction Programme' with a long term objective of making concentrated efforts on disaster preparedness and mitigation.

Consequently, the State passed Gujarat State Disaster Management Act – 2003 and GSDMA was constituted effective from September 01, 2003 in terms of Government of Gujarat Notification No. DMA-1003-1488-B dated August 29, 2003 under the provision of section – 6 of the Act for promoting an integrated and co-ordinated system of disaster management including prevention or mitigation of disaster by the State, Stakeholders, Local Authority, and community. The Gujarat State Disaster Management Act – 2003 provides:

- **Section 14:**

  The Authority shall act as a athenaeum of information concerning disasters and disaster management, and shall –

  (a) Establish an institute;

- **Section 16 (1) (c):**

  The Authority shall promote or cause to be promoted awareness and preparedness and advise and train the community, and stakeholders with a view to increasing capacity of the community and stakeholders to deal with possible disasters by –

  (c) Promoting disaster management capacity-building and training programmes amongst communities and other stakeholders.

The Governing Body of GSDMA decided to establish Gujarat Institute of Disaster Management (GIDM) in its meeting dated 12.03.2002. The GIDM was established in the year 2004. The NDM Cell of SPIPA that was providing Disaster Management Training to Government Officers in the State has also integrated in the GIDM since 1st April, 2004 vide Govt. of Gujarat Resolution (GAD R&R Division) No. NDM-102004-488-81 dated 9th April, 2004. Further the Gujarat Govt. in Revenue Department vide its Resolution No. NDM-102005-488-PU-NI declared the erstwhile "Disaster Management Cell" as "Gujarat Institute of Disaster Management".

The World Bank combined the project of establishing Gujarat Institute of Disaster Management as part of Phase-II of the Gujarat Emergency Earthquake Reconstruction Project (GEERP). It was for the first time that the international funding agency included the establishment of a premier permanent institute which deals with training related to disaster management in any such reconstruction projects.

The Government of Gujarat allocated land for building the Institute at Village Raisan near Koba-Gandhinagar and the construction work has been completed. The Authority has also made yearly provision of Rs. 10.00 Crores in the State budget of the year 2012-13 and subsequent years under the head 101 Natural Calamities – Asst. to Disaster Management Authority – Gujarat Institute of Disaster Management (GIDM). Presently funds are available with GSDMA.

The Gujarat Institute of Disaster Management (GIDM) is registered as an autonomous body on 10.07.2012 under the provisions of the Societies Registration Act, 1860 and Bombay Public Trust Act, 1950 to allow and function "GIDM" as an autonomous body to carryout various functions for implementation of Disaster Related Programmes on training and capacity building of the stakeholders.

Since April 1, 2004, Gujarat Institute of Disaster Management was functioning in the campus of the Sardar Patel Institute of Public Administration (SPIPA), Ahmedabad but under the administrative control of GSDMA. In August 2012, Gujarat Institute of Disaster Management shifted to its newly constructed building at Raisan, Gandhinagar. The Institute has trained PRI members, Government Officials, people from NGOs etc. by conducting training programmes in different aspects of Disaster Management.

Social Work intervention in Disaster Management

Social Work intervention can be visible in all stages of Disaster Management like in Pre-disaster Phase, during Disaster Phase and Post Disaster Phase. Many NGOs and social workers involved in providing social services cooperate with governments to help the victims of disaster. Besides all these government sector and educational institutes, many NGOs play very important role in the area of disaster preparedness and mitigation. They are emerging one of the most effective means of achieving an

effective communication link between the Disaster Management Agencies and the affected community. At present many are working at advocacy level as well as at the grass root level. They can be of help not only in preparedness but also in relief, rescue and rehabilitation measures.

- Collection and transmission of information concerning natural calamity and relief
- Keeping in contact with Government of the states affected by the causality
- Interaction with various other Central Ministries and Departments
- Maintaining records with regard to action points and contact points in the Central Ministries and the State government.

Social workers have their own roles in each stage of disaster management cycle. From preparedness plans to recovery plans, social workers take responsibilities for helping victims, implement the recovery projects, reorganize resources and empower to local communities in disaster management. Social workers are also work for vulnerable groups at the time of disasters. Social worker works with individuals, families, groups, organizations and communities in disasters to provide basic and useful social services for those who need assistants

Indeed Disaster Management must base on the collaboration among government, NGOs, and social workers.

Social Work Intervention:

Awareness Campaign: An extensive awareness campaign is needed to support the community in preparation of the disaster management plans. These campaigns are carried out through various means like rallies, street plays, competitions in schools, distribution of IEC materials, wall paintings on do's and don'ts for various hazards. To motivate villagers to carry forward these plans for a safer living, meetings with key persons of a village such as the health worker, village head, school teachers, elected representatives and members of the youth clubs and women also very much important.

Training of Gram Panchayat Block Members: In several states of India Gram Panchayat is the intermediary administrative unit between block and village level, which has a vital link for disaster management activities. Gram Panchayat Disaster

Management Committee is responsible to supervise and guide the community in this process. Similarly block is the administrative unit that executes all developmental programmes in the rural areas, and has a very good linkage with the upper level of administration. Therefore, both levels of functionaries are very important to make sure risk reduction as a part of the development programme. The district level master trainers are responsible to train the functionaries of GP and blocks before initiation of the activities at the village level.

Identification of Village Volunteers and Training: One of the major objective of CBDP process is to develop a cadre of trained human resources at community level to carry out all disaster management and mitigation initiatives. An innovative method is used in this programme to train at least two persons as disaster management volunteers who, after being trained are supporting the community in development of the village disaster management plan. These volunteers are selected by the representatives of local self-government" block functionaries and CBOs. Most of the volunteers are from local youth clubs, women self-help groups or from CBOs and belong to the same community.

Training of PRI Members: The three tier Panchayati Raj system (peoples' representatives) existing in India has venture responsibilities of elected local government officials at various levels. To mainstream CBDP, it is suggested to involve PRIs in the process to address the vulnerability reduction initiatives through the developmental programme because they are responsible for the local area's development. All PRIs are oriented by the master trainers on disaster risk management initiatives and encouraged to be involved to reduce the disaster impact. These oriented PRIs would help the trained volunteers and local community on disaster preparedness and management. They are vital players in the disaster reduction programme and help to sustain the same.

Sensitization Meeting at Village Community Level: Village sensitization meetings are arranged with help of the delegates of local self-govt., trained volunteers, local NGOs etc. for the implementation of disaster preparedness and mitigation initiatives. In some villages the communities are ready for disaster management planning and other activities in one meeting or in some places they require more efforts.

Specialized Training of DMTs: Each of the DMTs include groups of women and men volunteers and are assigned with a specific task to discharge. Specialized training is provided on search and rescue, first aid, trauma counselling and water & sanitation teams for skills up gradation. All DMTs are linked with existing govt., service providers for continuous all required training. Some of the- training institutions have been strengthened for regular training of DMTs at various levels.

Women Participation in Community Based Disaster Preparedness: Women, children and old age people are the most affected groups in any emergency situation and need special attention and support. While preparing the preparedness and response plan of a village, importance is laid on the vulnerability of women and children. It gives equal opportunity to women groups to participate in the preparedness and mitigation initiatives of the village. Women are encouraged to be the members of shelter management, search & rescue and first aid and water and sanitation DMTs. Special trainings such as swimming, first aid etc. are organized to enhance the skills of women DMTs to perform their duties better during the time of an emergency. In formation of DMCs/DMTs, efforts are being given to ensure 30 percent membership for women to improve the local level planning and response process. This would also provide equal opportunities to show their capability, sincerity and dedication.

Other aspects of Social work Intervention: The following activities are envisaged by the social worker:

1. Strengthen people's ability to understand flood warning messages and use them in combination with their own assessments through traditional methods.
2. Undertake programme to enhance awareness, preparedness, and coping strategies of flood affected people.
3. Provide assistance for improving the flood responses by the local people.
4. Prepare a manual using guidelines provided by the national flood response strategies that are available in each country and knowledge generated through local surveys and consultations.
5. Identify specific non-structural measures beyond the ability of the local community, which have to be provided by the government and NGOs / CBOs in each location to help reduce flood vulnerability.

6. Facilitate confidence building and dialogue amongst individual professionals, and institutions dealing with the issues involved in flood management.
7. Identify effective modalities of managing floods through effective regional cooperation as well as specific activities to accelerate such co-operation