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MODULE IV

SYLLABUS

Impacts and assessment: Risk Management and Assessment and Disaster Management cycle. SWOT Analysis- basic concepts, uses, limitations and advantages. Disaster management plan and reports, participation of community in disaster management.

COURSE OUTCOMES

CO 3: Students will be able to analyse the causes behind natural disasters and evaluate their magnitude and impacts.

CO 4: Students will be able to create management plans for hazards and disasters, and understand the roles of agencies involved.

DISASTER RISK MANAGEMENT

The systematic process of using administrative directives, organisations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster is called Disaster Risk Management.

Disaster risk management ultimately aims to decrease risk by reducing exposure to hazard, lessen vulnerabilities and increase capacity, and hence build resilience to disaster. When disaster risks are assessed, the next step is to consider a wide range of options available to prevent the disaster from occurring, protect people, their assets, and the environment, in the event that it occurs. The knowledge gained from the assessment allows individuals and communities to anticipate the types of disaster that are likely to affect them, and to think of ways to reduce the impact, or prevent it altogether.

Disaster management functions are generally consisting of four stages of action:

* The four stages or phases widely accepted are **mitigation, preparedness, response and recovery**.
* Mitigation and preparedness are phases prior to the occurrence of a disaster.
* Response and recovery are post disaster phases.

Disaster Risk Framework
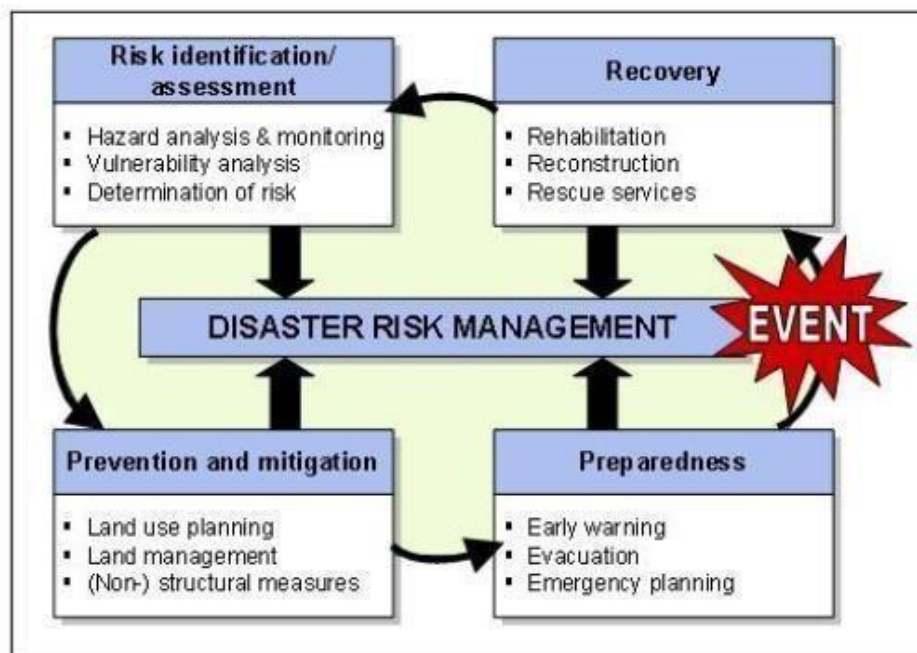
- Risk identification and assessment: This involves determining and analysing the potential, origin, characteristics and behaviour of the hazard – e.g. frequency of occurrence/magnitude of consequences.
- Application of risk reduction measures in mitigation: Planning and implementation of structural interventions (e.g. dams, sea defence) or non-structural measures such as disaster legislation.

Disaster preparedness and emergency management: Activities and measures taken in advance to ensure effective response to the impact of a hazard, including measures related to timely and effective warnings as well as evacuation and emergency planning.

- Recovery/Reconstruction: Decisions and actions taken in the post-disaster phase with a view to restoring the living conditions of the affected population.

The four cornerstones of Disaster Risk Reduction are:

    i)   Community/stakeholder participation

    ii)   Public policy actions

    iii)   Safer construction and urban development

    iv)   Development of a culture of prevention

DISASTER RISK ASSESSMENT:

Disaster Risk: It is the pobability of serious damage, deaths and injuries occuring as a result of a potentially damaging hazard interacting with vulnerable elements such as people and properties.

When Hazard and risk materializes then Disaster occurs
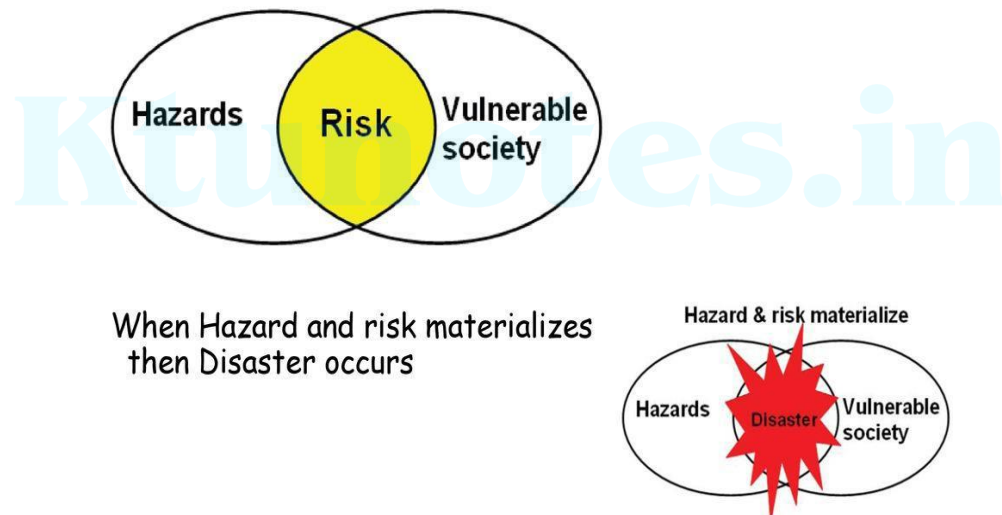
Disaster Risk Assessment: It is a methodology to determine the likelihood and magnitude of damage or other consequences by analyzing potential hazards and evaluating existing conditions of vulnerability that jointly could likely harm exposed people, properties, services, livelihoods and the environment they depend on.

There are two main components for Risk Assessment:

1. Risk analysis: The use of available information to estimate the risk caused by hazards to individuals or populations, property, or the environment. Risk analyses generally contain the following steps: Hazard identification, hazard assessment, elements at risk/exposure, vulnerability assessment and risk estimation.

2. Risk evaluation: This is the stage at which values and judgement enter the decision process by including the importance of the risk and associated social, environmental, and economic consequences, in order to identify a range of alternatives for managing the risk.

Contemporary approaches to risk assessments:

1. Multi-hazard:

The same area may be threatened by different types of hazards. Each of these hazard types has different areas that might be impacted by hazard scenarios. Each of the hazard scenarios also might have different magnitudes. For instance, water depth and velocity in the case of flooding, acceleration and ground displacement in the case of earthquakes. These hazard magnitudes would also have different impacts on the various elements at risk, and therefore require different vulnerability curves.

2. Multi-sectoral:

Hazards will impact different types of elements at risk.

3. Multi-level:

Risk assessment can be carried out at different levels. Depending on the objectives of the risk study, it is possible to differentiate between national, regional, district and local policies, plans and activities to see how they have contributed to increased or reduced risk, their strengths and weaknesses in dealing with risks, and what resources are available at the different levels to reduce risks.

4. Multi-stakeholder:

Risk assessment should involve the relevant stakeholders, which can be individuals, businesses, organizations and authorities.

5. Multi-phase:

Risk assessment should consider actions for response, recovery, mitigation and preparedness.

6. Qualitative methods:

This involves qualitative descriptions or characterization of risk in terms of high, moderate and low. These are used when the hazard information does not allow us to express the probability of occurrence, or it is not possible to estimate the magnitude. This approach has widespread application in the profiling of vulnerability using participatory methodologies. Risk matrices can be constructed to show qualitative risk. A risk matrix shows on its y-axis probability of an event occurring, while on the x-axis potential loss. The probability is described categorically as low, medium and high, while the potential loss is also described similarly.
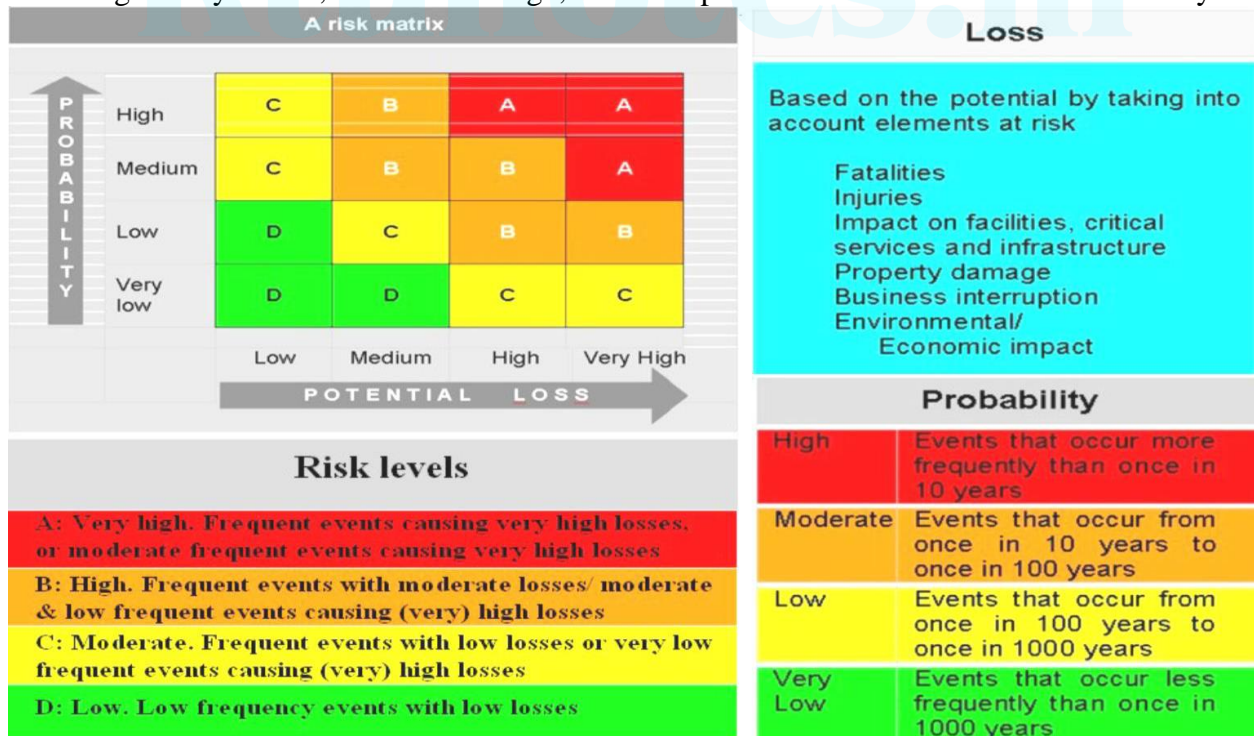
7. Semi-quantitative Methods:

These techniques express risk in terms of risk indices. These are numerical values, often ranging between 0 and 1. They do not have a direct meaning of expected losses; they are merely relative indications of risk. The

main difference between qualitative and semi-quantitative approaches is the assignment of weights under certain criteria which provide numbers as outcome instead of qualitative classes

The semi-quantitative estimation for risk assessment is found useful in the following situations:-

- As an initial screening process to identify hazards and risks
- When the level of risk (pre-assumed) does not justify the time and effort
- Where the possibility of obtaining numerical data is limited

This approach could be adapted to cover large areas.

Semi-quantitative risk can also be conceptualized as:-

Risk = (Hazard) x (Vulnerability / Capacity)

It allows incorporating the multi-dimensional aspects of vulnerability and capacity.

8. Quantitative Methods:

This aims at estimating the spatial and temporal probability of risk and its magnitude. In this method, the combined effects, in terms of losses for all possible scenarios that might occur are calculated.

In this approach, risk is perceived as follows:-

Risk = (Hazard) x (Vulnerability) x (Amount of elements at risk)

The amount of elements at risk are characterized the way in which the risk is presented. The hazard component in the equation actually refers to the probability of occurrence of a hazardous phenomenon with a given intensity within a specified period of time. Vulnerability is limited to physical vulnerability.

Quantitative	Probability	Probabilistic values (0-1) for having a predefined loss over a particular time period	
	Economic risk	Quantification of the expected losses in monetary values over a specific period of time	
		Probable Maximum Loss (PML)	Probable Maximum Loss (PML) The largest loss believed to be possible in a defined return period, such as 1 in 100 years, or 1 in 250 years
		Average Annual Loss (AAL)	Expected loss per year when averaged over a very long period (e.g., 1,000 years). Computationally, AAL is the summation of products of event losses and event occurrence probabilities for all stochastic events in a loss model.
		Loss Exceedance Curve (LEC)	Risk curve plotting the consequences (losses) against the probability for many different events with different return periods.
	Population risk	Quantification of the risk to population	
		Individual risk	The risk of fatality or injury to any identifiable (named) individual who live within the zone impacted by a hazard; or follows a particular pattern of life that might subject him or her to the consequences of a hazard.
		Societal risk	The risk of multiple fatalities or injuries in society as a whole: one where society would have to carry the burden of a hazard causing a number of deaths, injury, financial, environmental, and other losses.

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DISASTER MANAGEMENT CYCLE:

Disaster management is a continuous and integrated process. It involves planning, organizing, coordinating and implementing, and evaluating actions that are required for:

- Preventing threat to the community due to any emergency or disaster
- Mitigation or risk reduction from any likely disaster or its consequences
- Capacity building, including research and knowledge management, to reduce vulnerability
- Preparedness of individuals and communities to cope with any disaster
- Immediate response to any threatening situation or disaster
- Assessing the severity and consequent effects of any disaster
- Undertaking evacuation, rescue and relief
- Ensuring rehabilitation of affected community and reconstruction for them
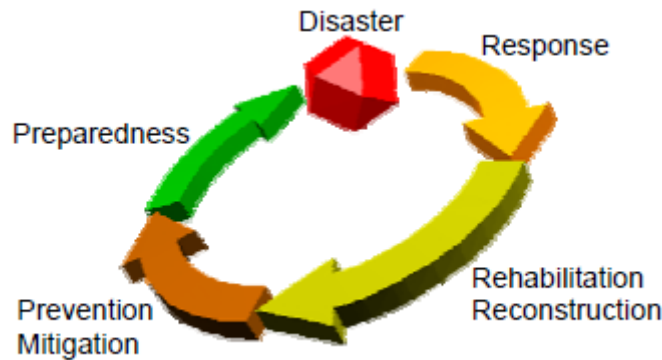
The disaster risk management cycle, shown in Figure, consists of four phases: Prevention/Mitigation and Preparedness in the pre-disaster stage, and Response and Rehabilitation/Reconstruction in post-disaster stage. In the "Prevention/Mitigation" phase, efforts are made to prevent or mitigate damage (*e.g.* construction of dikes and dams against floods). Activities and measures for ensuring an effective response to the impact of hazards are classified as "Preparedness" (*e.g.* emergency drills and public awareness) and are not aimed at averting the occurrence of a disaster. "Response" includes such activities as rescue efforts, first aid, fire fighting and evacuation. In the "Rehabilitation/Reconstruction" phase, considerations of disaster risk reduction should form the foundations for all activities. Examples of measures taken in each phase are listed in Table. Taking appropriate measures based on the concept of disaster risk management in each phase of the disaster risk management cycle can reduce the overall disaster risk.

1. PREVENTION:

Disaster Prevention is defined as those activities taken to prevent a natural phenomenon or potential hazard from having harmful effects on either people or economic assets. Broadly, disaster prevention refers to measures taken to eliminate the root causes that make people vulnerable to disaster.

The Basis of Disaster Prevention:

For disaster prevention to be successful, a priori planning is required. Planning of prevention hinges on two issues:

- hazard identification (identifying the actual threats facing a community)
- Vulnerability assessment (evaluating the risk and capacity of a community to handle the consequences of the disaster).

Once these issues are put in order of priority, emergency managers can determine the appropriate prevention strategies.

Primary prevention is to reduce, avert or avoid the risk of the event occurring, by getting rid of the hazard or vulnerability, e.g. to avoid overcrowding, deforestation, and choked drainage and to provide services.

<u>**Secondary prevention**</u> means to recognize promptly the event and to reduce its effects, e.g. by staying alert to possible displacements of population; by being ready to provide immunisation, food, clean water, sanitation and health care to the affected population.

Hazard Mapping:

A hazard map shows the hazard likely in a region. To prepare a hazard map data is required about the hazards that have happened in the region in the past. This data can be obtained from two sources –

- Recorded history
- Information gathered from community

Recorded history: For the last many decades, records of hazards that have occurred in different regions of the world are available. These are being compiled in many countries for the purpose of disaster mitigation. Such records gives an indication of types of hazards that may occur in that region.

Information gathered from the community: Where records are not available or insufficient, it is necessary to talk to the people living in the region. They may remember the hazards they faced before or have heard about from their elders.

Two objectives of hazard map:-

(i)   To make the people of the region aware of the hazards likely in the region.
(ii)   To help disaster managers and other stakeholders to plan and be prepared for the disaster as and when it occurs

Vulnerability Analysis:

Vulnerability analysis is the process of identifying vulnerable conditions exposed to natural hazards. They provide valuable information.

Physical Vulnerabilities Analysis:

- Buildings: The vulnerabilities of buildings are based on the location of the site, the design, materials used for construction, construction techniques used, and its proximity with other buildings
- Infrastructure: In considering infrastructure, three broad groups are to be considered—they include transportation systems like roads, railways, bridges, airports, etc., utilities like water supply, sewage and power supply; and communication network.
- Other critical facilities: Critical facilities are vital to the functioning of the societies during times of disaster and are considered as lifelines. Examples include hospitals and other essential services; emergency services; communications systems; buildings and structures with cultural importance; and certain structures such as dams that are essential to the long-term sustainability of the economy.

Social Vulnerability Analysis:

- Certain groups of people like single parent families, pregnant or lactating women, mentally and physically handicapped people, children and the elderly require special attention and focus.
- Certain other groups like migrants, people residing at remote areas also require special attention. Risk perceptions for these groups have to be assessed, and the required awareness programs have to be initiated.

Economic Vulnerability Analysis:

- Direct losses potential: Direct losses could include damage or destruction of physical and social infrastructure and the likely cost incurred to repair or replace it. It could also include costs related to the damages to crops and other means of production.
- Indirect losses potential: Indirect losses include the impact due to loss of production, employment, income generating activities, and the likely inflation in the society. While direct cost is easy to calculate, assessment of indirect costs is difficult.

2. MITIGATION:

Mitigation refers to all the measures taken to reduce the risk from disasters. This can be done through many actions that are aimed at increasing the capacity and resilience of the individuals and community. A number

of steps like hazard mapping, vulnerability analysis, building codes for structural mitigation, alternative economic models to prevent economic vulnerability, etc. are required.

Personal mitigation is a key to national preparedness. Individuals and families are trained to avoid unnecessary risks.

The objectives of mitigation are to:

- Reduce the risk due to natural and man-made disasters
    - Take steps like hazard mapping and vulnerability analysis for risk management
    - Prepare and enforce structural mitigation measures like building regulations and their implementation
    - Reduce risk by exercising control over development
    - Help vulnerable populations putting in place measures for crop planning, urban planning and land use regulations.

Primary Objectives of Disaster Mitigation:

The primary objectives of disaster mitigation are two fold, namely **hazard likelihood reduction and risk consequence reduction.**

- Hazard likelihood reduction: This objective is only appropriate for a few natural hazards, as it is not possible to reduce the occurrence of many hazards. However, the likelihood of floods occurrence can be reduced by mitigation measures such as sea defence walls.
- Risk consequence reduction: This is a reduction in the impact of a hazard, via a reduction in exposure and/or vulnerability. It involves ensuring that the population, structures, or other systems are able to withstand such an event with as few negative consequences as possible.
- In reducing both hazard likelihood and risk consequence, the primary aim is to decrease risk of death and injury to the population. The secondary aims are to decrease damage and economic losses inflicted on public sector infrastructure and to reduce private sector losses.

Mitigation measures for buildings:

Mitigation measures for buildings are essentially aimed at preventing damage and fatalities due to earthquakes. These are generally referred to as structural and non-structural mitigation measures.

• **Structural Mitigation:**

This refers to any physical construction to reduce or avoid possible impacts of hazards, which includes engineering measures and construction of hazard resistant and protective structures and infrastructure. Structural mitigation essentially means ensuring that houses, offices and other commercial buildings can withstand the likely disaster.

The concept of structural mitigation also includes those structures which have not collapsed but suffered minor damage during an early disaster. Structural retrofitting is done in buildings to resist against future disasters.

While in big cities, buildings are designed and constructed according to building regulations like the Building Code of India, the concept of such resistant buildings should also penetrate in rural areas.

• **Non-Structural Mitigation:**

This refers to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts.

Mitigation Infrastructure:

The major aspects of infrastructure are communication and transport.

- During a disaster, we will generally not know what kind of damage will be caused to the infrastructure and what will be available.

- Generally, one uses the road network and transport vehicles for evacuating people, transporting relief material, medical (ambulance) services etc., which are crucial in a disaster situation.
- Many times, after a disaster, such road network may be damaged by landslides or flooding making relief work difficult.
- Alternative road networks or means of transportation must be designed as a mitigation strategy for making transportation possible.

Control over Development Activities:

The government should have policies and practices in place for:

• <u>Land use for various purposes:</u> using the hazard mapping and vulnerability analysis.

- <u>Agricultural crop patterns</u>: Crop patterns must be studied and farmers advised to grow the kinds of crops that can withstand the impact of a disaster
- <u>Alternate income schemes</u> must be made available for people in case they lose their livelihood, including insurance schemes and similar means.
- <u>Critical infrastructure</u> must be ensured to save the heavy economic loss due to disasters.
- <u>Water resource management schemes</u> must be implemented to save water and to avoid flooding.
- Building houses in flood-plains must be avoided and commercial buildings on hill slopes must be avoided. Constructing houses is highly risky and must be approved based on thorough geological studies only.

i) Construction of dams and embankments is necessary to irrigate land, for power generation and also to provide drinking water to the population.

- Dams and embankments also help to reduce the severity of floods. They are constructed at huge cost for the benefit of many.
- However, there is also a negative aspect of such infrastructure. A dam displaces thousands of people from the habitat that they have been living in for many years. They lose their homes as many villages are likely to be drowned due to the water body created by the dam. These people also lose their livelihood.
- The massive water body also drowns many square kilometres of forest area, destroying the flora and fauna of the region.

ii)   Land Use:

The pressure of population and economic development has altered the land use pattern over the years. It is easy to monitor land use with modern technology like remote sensing.

Some points of concern are:

- Construction near river banks has become very common. It is reported that one reason for the heavy flooding in Tamil Nadu in 2015 is the encroachment near river banks.
- Deforestation has been another major area of concern. Cutting of trees for various purposes like buildings on hill slopes has caused major landslides. This is also an ecological disaster because trees protect us from pollution.
- Construction of many buildings for housing and other purposes prevents natural flow of rainwater. With insufficient storm water drains, this acts as a trigger for floods in most cities in India. When we construct buildings it is imperative that we take care of means to drain rain water safely from such areas.

Mitigation of Man-Made Disasters:

- Hazardous industrial units must be located away from city limits and dense human habitat. Sufficient infrastructure and facilities must be provided so that the industries do not suffer due to their remote location.
- All industries must have safety audits conducted for their premises and processes. This must be made mandatory and government agencies must also check such audit reports.
- Fire is a major hazard in all the cities. Fire prevention measures must be implemented in all industries and public places like cinema halls, auditoriums etc. Installation of fire and smoke alarms, water for extinguishing fires and other measures put in place must be checked frequently. Fire drills must be conducted regularly.
- Design of transportation infrastructure like roads and railways must take into account strict safety measures for their functioning. Considering the enormous numbers of road accidents and fatalities, it must be ensured that stringent road use control is enforced for the safety of vehicle drivers and pedestrians.
- Education and awareness about man-made hazards and the way people can contribute to the safety of human beings and infrastructure must be mandatory. This is the simplest way to prevent man-made disasters.

3. PREPAREDNESS

Disaster preparedness encompasses the knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Preparedness is the second phase of the disaster management cycle. This basically indicates the measures required for facing disasters that are likely to occur in the region. If mitigation measures as outlined earlier are taken, the community is better prepared to cope with disasters.

The objectives of preparedness are to:

- Ensure public awareness and preparedness for disasters
- Prepare and be ready to implement a disaster management plan
- Ensure standard procedures for evacuation and immediate relief
- Prepare sheltering plans and ensure physical availability of shelters
- Have plans for warehousing of relief materials and logistics of operation
- Ensure availability of healthcare services by identifying teams, and availability of medicines and other essential materials

Disaster preparedness can be studied under three specific categories:

- **Target-Oriented Preparedness**: Preparedness plans may be target specific, for instance, we may require different types of planning for the vulnerable groups of women, children, elderly and disabled.
- **Task-Oriented Preparedness:** Specific groups jointly develop activities based on one of the community's plans to evaluate the community's capability to activate the preparedness plan in a real emergency. Eventually, these tasks enable the development of plan revisions, employee training and material resources to support readiness.
- **Disaster-Oriented Preparedness:** This addresses the likelihood of occurrence of a specific disaster. Emphasis is placed on structural and non-structural mechanisms.

The effectiveness of the various types of preparedness depends on the availability of information on hazards, emergency risks and the countermeasures to be taken, and on the degree to which government agencies, non-governmental organisations and the general public are able to make use of this information.

DISASTER MANAGEMENT PLAN:

The first step in disaster preparedness is the making of a disaster management plan that honestly represents what the local government and communities are capable of doing to cope with a disaster. In USA, such a plan is called an EOP or Emergency Operational Plan.

The objectives of this plan are:

- Identify agencies for the DM operations and their functions
- Identify individual(s) to command the operations
- Identify individuals from different agencies, and their functions
- Identify the method of coordination between different agencies, government and private
- Identify the mechanism for resources management, needs and availability of resources
- Detail out the likely emergencies for the area, both man-made and natural
- Ensure flexibility in the plan to be able to modify it according to experiences gained

The DMP Report should generally contain information such as:

- Objectives: How it helps citizens to cope with disasters
- Disaster scenarios: Contains information about actual and likely disasters; how the public will be informed and any unusual situations that may arise
- Organisation and control: The existing disaster management structure, the person or official in command, the roles of other officials and their functions
- Coordination and inter-relationships: Roles of government agencies, private agencies and   other social groups and how they will interact to optimise the efforts.
- Resources and logistics: The resources available and to be procured from outside and procurement times, warehousing and distribution
- Health and medical care: From first aid to treating injuries, dealing with dead bodies etc. are to be dealt with. Preventive medical services and healthcare services must be detailed out, identifying the available infrastructure, and warehousing of medical supplies and their distribution.
- Public information: Mentions the methods of early warning to the public and continuous flow of information as the event unfolds.
- Communication: Communication channels between the central control and other government and private agencies must be known to everyone. This must find a place in the plan as this is a crucial element in disaster management.
- Updating of plan: The updating of plan is also required based upon the experiences gained by operating the plan in a disaster situation. Certain assumptions made in the planning may not be correct and these can all be corrected by keeping the plan flexible and easily changeable.

Early Warning systems:

Wherever practicable, people must be made aware of a possible disaster in advance. This will give them time to prepare themselves for leaving their homes for safer areas. Many natural phenomena are predictable. It is possible to issue early warnings to the people likely to be affected by the event.

Objectives:

- To inform the public about likely risks
- To forecast in advance and communicate to all concerned about impending disasters

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- To ensure speedy actions in communication and response
- Capacity and resilience building in the community for the expected risks
- Early warning, however, is not restricted to warning about impending disasters alone. The early warning system should ideally consist of:
- Hazard and vulnerability analysis for a region; this will give a comprehensive idea about the risks the population is likely to be subjected to
- Continuous monitoring for early detection of impending disasters and issuing the necessary alerts to the public
- Developing a communication system and flow of communication such that public and, disaster responders are immediately informed of the developing situation
- Making efforts for capacity building for the identified risks in the community

Evacuation Plans:

In many instances like a cyclone (which is quite predictable now-a-days), a major task before the disaster strikes will be to evacuate people from the areas that the cyclone will affect. There will be a storm surge in sea level and people living in low-lying areas will have to be taken to higher reaches. Accompanying heavy rains can flood many areas which need to be identified. An evacuation plan must be prepared and people must know and should be informed of such plans in advance. Many people would be unwilling to leave their homes and belongings and shift to temporary shelters. The security of their homes and belongings is an issue that they should be assured of.

Sheltering Plans:

A basic need of displaced persons is a place to live in and be safe. A disaster management plan would have identified dedicated shelters or buildings like schools that can be used to accommodate people displaced from their homes. Such temporary shelters must be sufficient to lodge the many thousands who may need them. The shelters and sheltering plans will vary according to the disaster.

- In earthquakes, tents in open areas may be more appropriate unless one can find safe buildings.
- In floods, buildings at higher levels are to be found for sheltering people.
- In the case of earthquakes for example, due to aftershocks after the main tremor, people may be afraid of living inside buildings. Even if a building stands, it may still be not safe for living. Temporary shelters in open spaces may have to be built in large numbers in such situations.

Inventory of resources:

- An inventory must be made of all the resources available for disaster management.
- The inventory includes material resources, equipment, trained personnel, etc.
- Such inventories help to plan actions and deployment of resources and the roles of different people.
- Providing resources for disaster management is essentially the responsibility of the government.
- Many private individuals, corporate bodies and others make contributions in terms of money and materials.
- There must a central agency that must evaluate the requirements and tell the donors what the affected people need.

Resources are of many types:

- Money, space, equipment for many purposes
- Trained and dedicated human resource, defence forces
- Local agencies like police force, firemen and community volunteers
- Private agencies in terms of expertise, human resource and material
- Medical services including human resource, equipment, hospitals, medical supplies

- Central control room, human resource
- Facilities for use of modern technological tools like GPS, GIS and remote sensing

Warehousing:

To cope with a disaster, we will need large quantities of material resources like food items, water, medical supplies, etc. It may not be possible to procure them in large quantities at short notice. Some quantity of such materials needed in an emergency must always be available.

In a disaster situation, with so much of media attention and help from across the world, the availability of such materials is not generally a problem, since so much of international help comes in.

The channelling of such materials to those in need is an issue. Many concepts of supply chain management are applicable here.

Relief materials for different uses come from many sources. They have to be received, stored and dispatched to different end user-points in remote locations.This needs careful planning. Proper storage of food items, medicines etc., is important so that they do not get spoilt during storage and transportation. Containers for storage, vehicles for transportation and packaging of relief material all should be covered under the plan.

The distribution network must be carefully planned so that relief reaches the needy in time and there is no delay due to bottlenecks in any aspect of distribution.

Logistics:

The Oxford Advanced Learners' Dictionary defines logistics as "the practical organisation that is needed to make a complicated plan successful, when a lot of people and equipment is involved."

The term probably came originally from military science, relating to procurement, maintenance and transportation of material, people and facilities.

Logistics is very important in disaster management because the response to a disaster invariably involves moving many people, relief materials, medical supplies quickly and efficiently to remote places.

Without a logistics plan such a complex operation cannot be completed. A logistics plan also has to be flexible as the disaster situation may change the assumptions on which the plan is based.

A logistics plan should invariably cover the following aspects:

- All the usable routes to reach the region affected including road network, rail lines, water transport systems and ports.
- Alternative routes in case of road blocks due to landslides/ avalanches, flooding etc.
- Deployable vehicles in terms of aircrafts, helicopters, buses, goods carriers and ships and boats. Existence of GPS in the vehicles is a must for easy location.
- Quantum of supplies in terms of food items, water containers, medical supplies and equipment, camping equipment, clothes and other items as may be required.
- A plan for distribution of relief materials to remote locations.
- A plan for transporting personnel and equipment for relief and rescue work
- Route maps of all transport systems in hard and soft copy formats.

Communication:

A very critical element in disaster preparedness is communication. Many communication systems and modes are available today like landline phones, fax, text messaging services, wireless phones, satellite phones, internet-based communication systems and so on. Many of these communication systems may not be functional once the disaster strikes. Having alternate modes of communication is necessary. Another aspect of communication in disaster management can be called information management.

The protocols of communication must be established clearly. Otherwise, there is likely to be miscommunication, rumors and people not acting as per plan. The following points are important with respect to communication in disaster management.

- ▪ Ensure that a standard operating procedure (SOP) is available and it contains a section on communication.
- ▪ Make an inventory of the modes of communication and equipment available for communication.
- ▪ An information flow chart must be available for key individuals who are supposed to receive and send communication.
- ▪ Communication protocol must be available and known to all important people.
- ▪ Ensure that key persons have a back-up communication facility in case of failure of one or two modes of communication.
- • Warning about an impending disaster and its consequences must be made known through mass media and the information must be repeated a number of times.
- • Mass media, like the newspapers and radio and television, have great reach and must be used for giving correct information. Media briefings should be arranged frequently and who will brief the media also should be decided upon.
- • Ensure 24x7 availability of emergency and toll-free numbers during the emergency period. Such centres should get correct information which needs to be updated frequently so that people can get such information speedily.

Education and Training of Personnel:

Many activities associated with disaster management require special skills. People need to be trained to undertake such activities. Government officials who are going to be involved with disaster management activities need to be trained for dealing with disaster situations as per need.

Many of them may not be aware of concepts like hazard maps, risks, vulnerability, disaster management cycle, etc. They need to get familiar with such terms and phases of disaster management. Another important element of training may be the use IT tools and various kinds of software. Participants must also be familiar with concepts in remote-sensing, GPS and GIS to better appreciate the use of such tools.

A dedicated force like the disaster response team has to be developed by selecting the right people and training them in the special job that they have to perform, the tools and equipment they would use and the various methods of search and rescue.

Many of them may also be trained in simple first aid of medical service. People at the community level who volunteer to be part of the response team should also be trained in some aspects of search and rescue and to help the response force in their functions. Also depending upon their responsibilities and involvement, people must be familiar with the disaster management plan for the region and the standard operating procedures.

Public Awareness Program:

Public awareness must be created through multiple modes and methods. Some of these could be:

- • Attractively designed and attention-catching publicity materials to be displayed in several localities to create awareness about hazards and risks.
- • Volunteer groups must be encouraged to stage street corner shows and plays to highlight and inform public about disasters and standard procedures to save themselves.
- • Discussions in mass media like radio and television can be effective in creating public awareness.
- • Conducting mock drills frequently for the disaster can also increase awareness.
- • Informal training programmes can be conducted to increase awareness about disasters.

- Discussions on safety procedures during disasters, among the local community, should be encouraged.
- Information about disasters and related procedures must be included in school curricula.
        The objectives are:-
- Community level disaster management groups must be trained and prepared to deal with disasters.
- Knowledge is power; an informed community is better prepared to deal with disasters.
- Confidence level of the community will increase.

4. RESPONSE:

Response is the stage immediately after a disaster. The objectives of the response phase are to:-
   • provide immediate relief to reduce the suffering of the affected people
   • Conduct search operations and rescue those stranded
   • Provide food, water and accommodation in temporary shelters to displaced people
   • Provide medical services as may be needed to people injured
   • Take measures to prevent unhygienic conditions that can cause diseases, and their spread. Disaster response preparedness is the pre-disaster activities that are undertaken to minimise loss of life, injury and property damage in a disaster, and to ensure that rescue, relief, rehabilitation and other services can be provided following a disaster. Preparedness for the first and immediate response is referred to as "emergency preparedness"

Factors that determine the Nature of Disaster Response:

Disaster response is determined by the nature of the disaster event which is mostly characterised by:

- The type of disaster: Disaster manifests in many forms, its onset may provide long warning, short warning, or no warning at all. The relative anticipation of the disaster event thus, would influence the effectiveness of activating preparedness plans, mobilisation, and application or response effort.

- The ability to take pre-impact actions: Responses to disaster are operationalized in three main phases namely the "pre, during and post-disaster" situation. Disaster early warning systems may provide timely warnings for anticipating impending disaster. Pre-impact responses (such as evacuation, shelter, and other protective measures) may be carried out if time and conditions are favourable.

- The severity and magnitude of disaster: The severity and size of the problem determines the response required. Particular effects could be seen in the ability of responses to cope with the problem; the urgency of response action and the priorities which are applied in terms of the scale of potential effects of no appropriate response as well as the requirements for external assistance.

- The capability of sustained operations:The capability of sustained operation is an essential ingredient of effective response. This is influenced by factors such as resource capability, management capability, community self-reliance, and availability of international assistance. It is important that these issues are clearly addressed in preparedness planning and response action plans.

- Identification of likely response requirements: Knowing the likely response required to address specific disaster is important and ought to be identified in the preparedness planning stage of the disaster management cycle.

   Requirement for Effective Response:

   Information and resources are two essential requirements for effective response without which plans and efforts at responding will not yield the anticipated results.

   • **Information:**

   An early warning system provides vital information for effective response operation despite the unpredictability of some disaster events. An effective warning system must be robust to transmit

warnings as early as practicable. Information gained from these systems could help in the planning and decision-making as well as inform the general public.

- **Resources:**

Resources form an essential component of disaster response. The need for disaster management organisations to be resource ready cannot be over emphasised considering the untimely occurrence of disasters, which most often is on short notice. The ability to mobilise the needed resources on short notice is most often hampered by many factors. Its effect on systems gives little room for procrastination of actions.

Disaster management requires a carefully drawn response plan which is often prepared in anticipation of emergency and activated in times of urgency. The response plan as a component of the disaster management plan includes ways of managing human and financial resources, response to supplies availability and communication procedures. This involves identifying, strengthening, and organising resources and capacities for timely and effective response to a potential disaster.

Disaster Response Planning:

In disaster response planning, roles and responsibilities are defined, policies and procedures are developed and generic tools for responses are identified and developed. The response plan is developed based on assumptions of risks and hazards and does not address specific disaster scenarios - as is the case for contingency plans. Plans thus, must be monitored, evaluated and adapted to the specific situation in times of disaster.

Rationale of Disaster:

Responses are mainly directed at:

- limiting casualties
- alleviating hardship and suffering
- restoring essential life support and community systems
- mitigating further damage and loss
- providing the foundation for subsequent recovery.

Disaster Responses:

Search and Rescue:

Typically, in many disasters, this is the first step in response.

- ✓ As an example, in an earthquake, many people get buried under debris of their homes or other buildings. Some people may be alive under a collapsed building. Some of these people may survive if they are rescued and given medical help.
- ✓ Some people may be dead and it is necessary to remove those dead bodies as rotting bodies can become a health hazard.
- ✓ Specialised teams are involved in search and rescue. While the local community can also help, we need trained response forces having the necessary equipment to do the job.Depending upon the geographical spread of the affected area, it may take time to reach the affected people.
- ✓ The transportation network may be damaged. In such situations, aerial search and location of affected people will be required. The local community can be trained for some of these activities.
- ✓ The survivors will be the first responders in disasters. They can help many other people so that they survive.
- ✓ If a proper disaster management plan and operating procedures are laid out, the search and rescue work can take place fast.

Medical Care/ First Aid:

An immediate requirement when rescue efforts are going on is medical help.

- Some people may have minor injuries that need first aid immediately. Some others may have serious injuries requiring hospitalisation.
- Many others may need heavy medication and surgical procedures to save their lives. All this requires well-planned and organised medical services.
- On-field care and ambulance services must be available.
- Many remote areas may not have facilities and equipment available locally. The patients will have to be shifted to nearby towns for healthcare.
- Also, the dead bodies recovered should be taken care of, till they are identified and disposed by relatives. It will also be necessary to monitor the health of survivors, particularly the children and the elderly.
- The need for first aid and emergency medical care arise in most disasters and response in this direction is of essence. First aid is the provision of initial care for an illness or injury. It is usually performed by non-expert, but trained personnel to a sick or injured person until definitive medical treatment can be accessed. Emergency medical care is immediate paramedic attention to severe wounds and the rapid transportation of the ill or injured to a health facility.

Relief Aid:

This relates to any provision of assistance during an emergency that is meant to attend to a person's immediate requirements for survival or recovery. It may include food, clothing, housing, medical care, necessary social services and security when a person is faced with circumstances beyond her or his control. Relief aid must be targeted at the most vulnerable first: Vulnerable children or orphans, female or child headed households, pregnant or lactating women, sick or elderly populations.

Humanitarian Relief:

The Humanitarian Charter provided 4 principles that must be followed in responding to emergencies based on the right to live in dignity, the right to receive humanitarian assistance, and the right to protection and security The principles are:

- ✓ avoid exposing people to further harm as a result of your actions
- ✓ ensure people have access to impartial assistance
- ✓ protect people from physical and psychological harm due to violence and coercion
- ✓ enable access to remedies and recovery from abuse

Damage Assessment:

During the response phase, many government and private agencies will be at many sites where damage has occurred.

- ✓ Loss of life and damage to private and public property has to be assessed.
- ✓ There may be damage to buildings, roads, and water supply and sanitation facilities. Such damage will have to be assessed and work started on priority on some aspects like water and sanitation for the health of the public.
- ✓ People can live in temporary shelters for some days, but they would like to go back to their homes as early as possible. Reconstruction efforts should start as early as possible.

Coordination

Coordination is key to successful disaster response, and is essential in ensuring timely and appropriate scaling-up of resources. Good coordination is crucial for combining resources effectively and efficiently, in order to reach the disaster-affected more rapidly. It contributes to better cooperation, reduces the level of duplication and helps to ensure a well-organized operation.

Coordination activities can take place at different levels and in different forms

During the response phase, with multiple agencies offering their help, coordination of efforts is a key factor. Setting up of a control room and identifying the person in command, is a first step in coordination.

For coordination of the response efforts, the following points are important:-

- ✓ <u>Unified command</u>: A person, most suitably a government official, should be identified as the person commanding the whole operation. He or she may allocate duties to others in case the geographical spread of the area is large.
- ✓ <u>Control room</u>: The control room should be safe from the impact of the disaster. The control room should be manned 24 hours of the day with a good communication set-up to communicate with people at different locations. Key persons in command must be notified of all developments at frequent intervals as agreed upon.
- ✓ <u>Communication network</u>: Communication network during disaster is of critical importance. Fail-safe communication set-up must be available all 24 hours. Normally satellite phones and internet facilities are used to have enough speed in the communication system. Failure in communication facilities becomes a serious handicap in response efforts.
- ✓ <u>Information to media</u>: Media briefing should be done daily so that correct information goes to the world at large. Rumours can cause immense miscommunication and confusion, resulting in hardship and suffering to people.

Psychological Support:

Disasters come with grieving moments as many may lose not only properties but also dear ones with negative psychological outcomes. Impacts on psychosocial well-being can be both short term and long term. Psychological services play a crucial role in responding to crises that involve large populations, as they cater for the needs of the majority of the affected population. They help in the recovery process and reduce the development of mental health problems. Psychosocial support activities include identifying and referring individuals requiring specialised support through professional mental health services.

Standard Operating Procedures (SOPs):

In making disaster plans operational, there is the need to develop SOPs which could guide the team in effective operation. SOPs are the set of standard procedures that "operationalize" the disaster response and/or contingency/ plans. In other words, SOPs specify the way in which individuals or units will carry out their functions under the plan (such as, mobilisation of response team, deployment of assessment team process assessments, etc.). The SOPs set out what should be done, how it should be done, who is responsible for implementing what, and specifies available resources.

SOPs take cognisance of four stages of preparation and procedures:

- ✓ during normal times
- ✓ alert/warning
- ✓ during disaster
- ✓ rehabilitation

<u>During Normal Times:</u>

The state institution mandated to respond to disaster ought to:

1. Formulate and distribute disaster preparedness plans, and conduct drills in all areas
2. Produce maps of Wards/Village Tracts showing areas most vulnerable to storms, floods and other natural disasters
3. Make a list of vehicles and motor boats that can be used for emergency work

4. Compile a list of departments, non-governmental organisations (NGOs), and members of People's Strength that will take part in relief operations in the predisaster, disaster and post- disaster periods and designate representatives for contact
5. Obtain beforehand the required relief and aid supplies
6. Form the necessary disaster preparedness committees and organisations
7. Create shelters and safe locations for use during disasters depending on local conditions
8. Conduct educational talks on natural disasters and rehearse periodically for the local community depending on local conditions
9. Coordinate with departments concerned to form Security services, Auxiliary Fire Brigades, communication agencies and Red Cross Societies
10. Provide organising and training activities

Alert/Warning Stage:

In the situation of impending danger, efficient warning systems would activate the needed alert. The following actions would be necessary in such stage of disaster.

1. Emphasise the dissemination of news obtained through early warning systems to the community
2. Assign duties to administrative bodies and NGOs to fly warning flags as part of the disaster preparedness programme in the vulnerable areas of the Ward/Village Tract
3. Alert and mobilise members of the Security services, Auxiliary Fire Brigade, communication agencies, the Red Cross, Youth, members of People's Strength and NGOs
4. Make the necessary arrangements to evacuate the public to safe locations (shelters) in a timely manner
5. Increase security sentries as required
6. Ensure that all levels of supervisors have all teams ready for assigned duties
7. Keep the office operational 24 hours a day in the emergency period

During Disaster Stage:

In the event of a disaster, the issues to consider are:

1. Alert the community in areas the natural disaster is likely to strike
2. Safeguard the road and water transport routes, keep relief and medical teams at the ready and arrange transport to affected areas at short notice
3. Evacuate the community from vulnerable areas to safe locations or designated shelters as quickly as possible
4. Operate relief camps and supervisory centres at designated shelters as quickly as possible
5. Ensure that administrative personnel and NGOs in areas vulnerable to storms give disaster warnings door to door as a matter of urgency
6. Keep available relief and aid supplies at the ready to launch relief operations quickly and effectively
7. Evacuate the public remaining in the area to designated safe locations
8. Make arrangements to evacuate movable property including cattle to designated locations
9. Ensure the well-disciplined implementation of orders received from the coordinating agencies and sub- committees with the help of members of the Security services, Fire Brigade, Red Cross Youth members, and members of People's Strength, social organisations and NGOs.

Rehabilitation Stage:

The rehabilitation stage is the post disaster phase where affected population restart their lives in a much difficult situation considering the impact of their losses. The SOPs for the rehabilitation stage are:

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1. Conduct field inspections in affected areas as soon as possible and provide the necessary assistance and support
2. Submit immediate preliminary reports with population figures, death and injury figures of cattle and animals, data on socio-economic losses, and carry out further systematic data collection
3. Make arrangements to provide health care and social protection to disaster victims
4. Clear collapsed buildings and trees as quickly as possible
5. Prioritise the restoration of transportation, electricity and water supply and telephone and telegraph services as soon as possible
6. Make arrangements as quickly as possible to reclaim contaminated wells and ponds for access to clean water and dig new wells for drinking water
7. Make arrangements to bury/cremate the remains of disaster casualties and animal carcasses
8. Manage and systematically utilise disaster funds and supplies, as well as cash and supplies donated by well-wishers, social organisations and NGOs
9. Support the local population for the resumption and recovery of economic activities to previous conditions

5. RECOVERY:

The immediate goal of the recovery phase is to bring the affected area back to normalcy as quickly as possible.The objectives of recovery phase are:
- To take care of the displaced persons till they are able to return to their houses
- To assess the damage to infrastructure and estimate the cost of reconstruction
- To obtain funding and start the reconstruction of infrastructure and houses for the displaced persons
- To undertake economic rehabilitation of people who have lost their livelihood
- To ensure that essential services like water, sanitation and power supply are available to people The recovery process can be very long and may take years to accomplish.

The responsibility for reconstruction is with the government or local administration and they must prioritise and undertake reconstruction work for the good of the public at large.
- During reconstruction, it is recommended to consider the basic causes for the extensive damage to life and property and build that in the new design for reconstruction.
- By this time, most of the NGOs and other volunteers will leave as the initial response phase gets over.
- Enormous amounts of funding will be required to reconstruct the damaged infrastructure, including private houses.

Assessment of Damage:

This may include:
- Number of collapsed houses, damaged houses and public buildings
- Damage to road and rail network
- Damage to water supply system and sanitation systems
- Power supply systems and lines and equipment damaged
- Damage to communication network
- Environmental damage, loss of animals, trees, damage to water bodies
- The costs will include:
- Rebuilding of collapsed houses and public buildings
- Compensation to people for the damages
- Retro-fitting of partially damaged buildings

- Cost of removing debris, reconstruction of roads, railway, power and communication network; re-laying of water and sanitation systems
- Cost of supporting people with food and shelter till they are able to move into their own houses.
- Cost of economic rehabilitation
- Cost of restoring the damage to the environment

Reconstruction:

- The reconstruction of public utilities and services take priority as they have an impact on a large number of people.
- Water supply system, sanitation system and power supply lines must be set right so that people have these services at the earliest.
- Attention will then have to go to communication and transportation networks which are again vital for many services.
- With international help, both in terms of money and expertise, these can be set right fast.
- It also must be ensured that people get healthcare free of charge during this period.
- Many will need long term healthcare depending upon the disaster and injury.
- Reconstruction work may go on for years. People will have to be compensated suitably during this period by way of monitory assistance.

Economic Rehabilitation:

A disaster may bring to halt many economic activities like manufacturing, trade and agriculture on which many people depend for their livelihood. As the restarting of many economic activities may take a long time, people need to be provided alternative sources of income.

- Creating a data base of people with their skill sets may help to assign jobs suitable to them for their economic rehabilitation.
- They can be employed in the reconstruction activities to give them a source of income.
- Many actions can be taken to reduce the suffering of people due to loss of livelihood.
- Provide economic support to people for minimum standard of living
- Give easy loans and aid to take up some economic activity
- Provide employment in the reconstruction activities
- Create a data base of skill sets of people
- Provide employment in government sectors
- Provide support and facilities to industry to restart operations and so on
- Adopting alternative crop pattern and practices to reduce losses

Relief:

Disasters in most cases take away many essential subsistence needs and livelihood, making coping difficult for victims/communities affected. The victims end up needing help. It is defined as the provision of assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. Relief can be of an immediate, short term, or protracted duration

Relief, as a disaster management process, provides timely essential needs such as basic household items, shelter, food, water and sanitation, or health items. Relief activities provide goods and services to disaster-affected populations in the form of supplies, vouchers or cash transfers, so as to enable those populations to cover their essential needs. Relief measures differ, depending upon the nature of disaster.

Relief, globally, is guided by fundamental principles which disaster organisations and NGOs engaging in disaster relief response ought to apply. The principles require that:

- Response to disasters must have humanitarian imperative

- Aid is provided based on needs alone and must be done without discrimination of any kind (race, creed or nationality of the recipients)
- Aid will not be used to further a particular political or religious standpoint
- Aid agencies do not to act as instruments of government foreign policy
- That culture and custom are respected in response and relief activities
- Disaster response is built on local capacities

Disaster Phase	Earthquake	Flood	Storm (cyclone, typhoon, hurricane)	Landslide
Prevention/ Mitigation	- Seismic design - Retrofitting of vulnerable buildings - Installation of seismic isolation/ seismic response control systems	- Construction of dike - Building of dam - Forestation - Construction of flood control basins/ reservoirs	- Construction of tide wall - Establishment of forests to protect against storms	- Construction of erosion control dams - Construction of retaining walls
Preparedness	- Construction and operation of earthquake observation systems	- Construction and operation of meteorological observation systems	- Construction of shelter - Construction and operation of meteorological observation systems	- Construction and operation of meteorological observation systems
	- Preparation of hazard maps - Food & material stockpiling - Emergency drills - Construction of early warning systems - Preparation of emergency kits			
Response	- Rescue efforts - First aid treatment - Fire fighting - Monitoring of secondary disaster - Construction of temporary housing - Establishment of tent villages			
Rehabilitation/ Reconstruction	- Disaster resistant reconstruction - Appropriate land use planning - Livelihood support - Industrial rehabilitation planning			

Example of Measures in Each Disaster Risk Management Phase

SWOT ANALYSIS

- SWOT analysis (or SWOT matrix) is a strategic planning and strategic management technique used to help a person or organization identify Strengths, Weaknesses, Opportunities, and Threats related to business competition or project planning.
- It is sometimes called situational assessment or situational analysis.
- It is intended to identify the internal and external factors that are favorable and unfavorable to achieving the objectives of the venture or project.
- Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage.
- SWOT has been described as a tried-and-true tool of strategic analysis, but has also been criticized for its limitations, and alternatives have been developed.
- Results of the assessment are often presented in the form of a matrix, or simply as paragraphs.

- **Strengths:** characteristics of the business or project that give it an advantage over others
- **Weaknesses:** characteristics that place the business or project at a disadvantage relative to others
- **Opportunities:** elements in the environment that the business or project could exploit to its advantage
- **Threats:** elements in the environment that could cause trouble for the business or project

Internal and external factors

- Strengths and weaknesses are usually considered internal, while opportunities and threats are usually considered external.
- Internal factors are viewed as strengths or weaknesses depending upon their effect on the organization's objectives.
- What may represent strengths with respect to one objective may be weaknesses (distractions, competition) for another objective.
- External factors include macroeconomics, technological change, legislation, and sociocultural changes.

Aim of Swot Analysis

- To help decision makers share and compare ideas.

- To bring a clearer common purpose and understanding of factors for success.
- To organize the important factors linked to success and failure in the business world.
- To help individual or organization to understand their strengths and weaknesses.
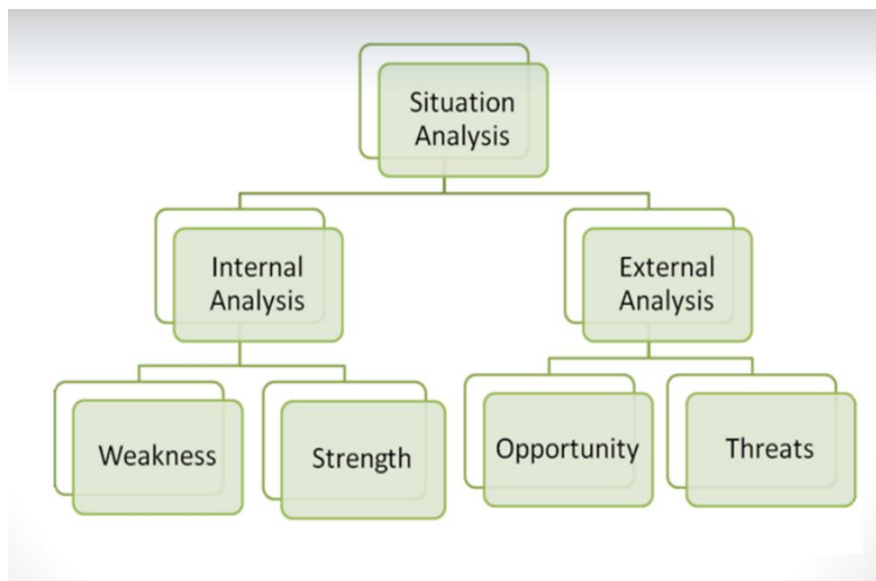- It promotes strategic thinking

**Who needs SWOT Analysis?**

How to conduct SWOT Analysis?
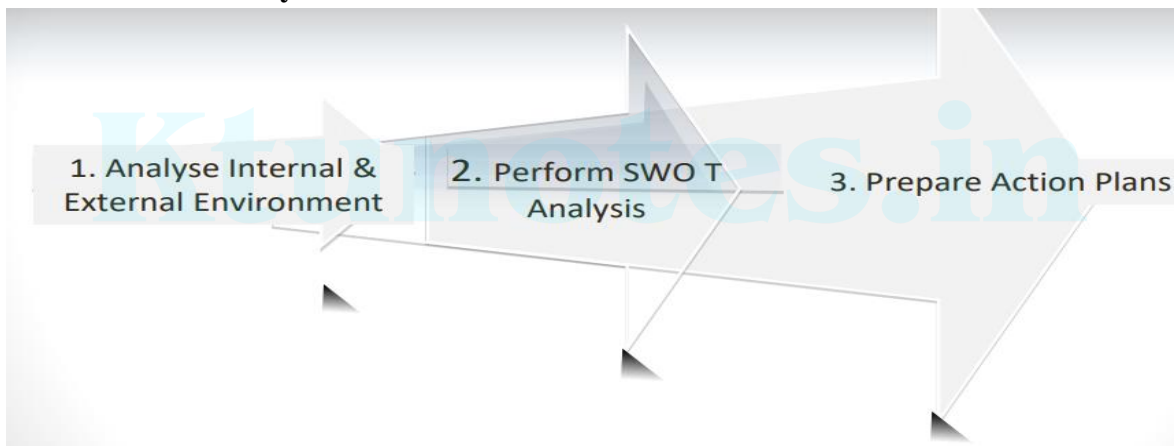
1. Analyse Internal & External Environment

- SO strategies—use a firm's internal strengths to take advantage of external opportunities. (LEVERAGE)
- WO strategies—are aimed at improving internal weaknesses by taking advantage of external opportunities. (CONSTRAINTS)
- ST strategies—use a firm's strengths to avoid or reduce the impact of external threats. (VULNERABILITIES)
- WT strategies —are defensive tactics directed at reducing internal weaknesses and avoiding external threats. (PROBLEMS)
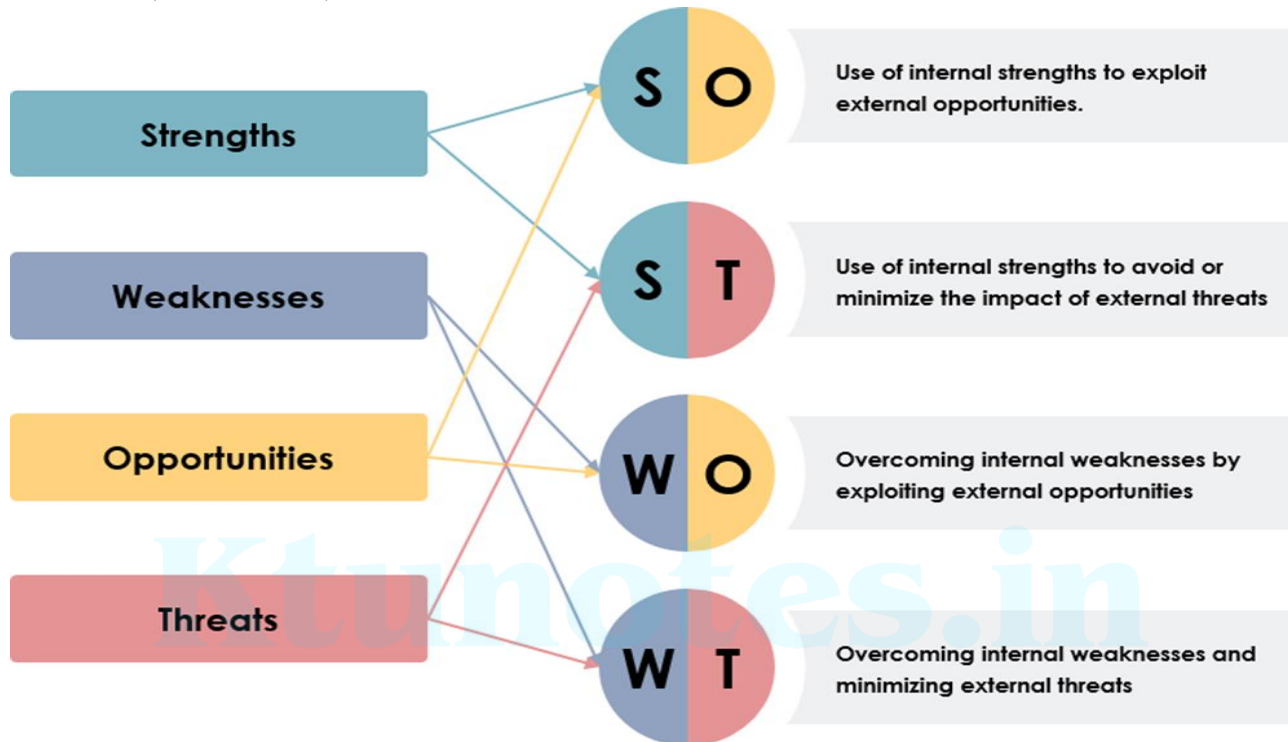
2. Perform SWOT Analysis & Document

- Establish the objectives - Purpose of conducting a SWOT may be wide / narrow, general / specific.
- Select contributors - Expert opinion may be required for SWOT
- Allocate research & information gathering tasks - Background preparation can be carried out in two stages – Exploratory and Detailed.
- Create a workshop environment - Encourage an atmosphere conducive to the free flow of information.
- Evaluate listed ideas against Objectives – With the lists compiled, sort and group facts and ideas in relation to the objectives.
- List Strengths, Weaknesses, Opportunities, & threats
- Carry your findings forward - Make sure that the SWOT analysis is used in subsequent planning. Revisit your findings at suitable time intervals.

3. Prepare Action Plan

Once the SWOT analysis has been completed, mark each point with:

- ✓ Things that must be addressed immediately
- ✓ Things that can be handled now
- ✓ Things that should be researched further
- ✓ Things that should be planned for the future

Advantages of SWOT

In social work practice framework is beneficial because it helps organizations decide whether or not an objective is obtainable and therefore enables organizations to set achievable goals, objectives, and steps to further the social change or community development effort.

- In organisation it enables organizers to take visions and produce practical and efficient outcomes in order to effect long-lasting change, and it helps organizations gather meaningful information in order to maximize their potential.
- In the individual to know yourself more by focusing and answer objectively to get a less emotional and more realistic analysis.

Limitations of SWOT

- SWOT can be misused as a technique, as it can be quickly designed without critical thought leading to a misrepresentation of SWOT, within an organization's internal and external surroundings.
- Development of a swot analysis simply to defend previously decided goals and objectives. Leads to:-
  - ✓ Limitations on brainstorming possibilities and "real" identification of barriers.
  - ✓ Also places the organization's interest above the well being of the community.
- The design of a swot analysis by one or two community workers is limiting to the realities of the forces specifically external factors, and devalues the possible contributions of community members.
- SWOT analysis is intended as a starting point for discussion and cannot, in itself, show managers how to achieve a competitive advantage, particularly in a rapidly changing environment

COMMUNITY PARTICIPATION IN DISASTER MANAGEMENT

- The National Policy on Disaster Management, while highlighting the role of Community Participation, has emphasized to encourage the efforts of States/Union Territories in this regard. It is further mentioned that Community plans will be dovetailed into the Panchayat, Block and District plans.
- The National Disaster Management Authority (NDMA) has implemented a Scheme of Aapda Mitra on pilot basis to train 6000 community volunteers (200 per district) in 30 flood prone districts of 25 States/UTs in disaster response with a focus on flood, so that they can respond to the community's immediate needs in the aftermath of a disaster. More than 5500 volunteers have been trained under the pilot scheme.
- Based on the success of the pilot scheme, and request from the States/UTs, Government of India has approved the Up-Scaling of Aapda Mitra Scheme, covering 350 districts prone to flood, landslide, cyclone and earthquake to train 1,00,000 community volunteers in disaster response.
- Apart from this, the National Disaster Response Force (NDRF) conducts community awareness programmes for the capacity building of community in disaster management. In the year 2021, NDRF has trained 1380 community volunteers in disaster management.
- NDRF is also conducting School Safety Programme (SSP) and imparting basic training to school children as well as teachers to evacuate themselves during an earthquake. During 2021, NDRF has conducted 81 SSPs covering 18,057 beneficiaries.
- To inform, educate and to make the people aware, NDMA runs awareness generation campaigns through electronic and print media, including social media, on various disasters, from time to time. These campaigns include Do's & Don'ts, Audio-Visual films, messages containing preparedness before, during and after disaster events.

Community Awareness And Participation

Community Awareness: There will be more effective participation if the community is aware about its vulnerability and the risk involved in various types of disasters in that area or State. Awareness is one of the most important aspects of disaster preparedness. People can be made aware by formal and informal methods for different aspects of disasters. Government, NGOs, Media, Technical Institutions, etc., can create the desired awareness in the area of disaster mitigation and preparedness. An alert community will take active part in any disaster reduction/mitigation programme and will provide more inputs in terms of local knowledge and available resources. They win be ready to accept all initiatives taken by Government, NGOs, or other external agencies and participate in the programme in case they are also involved in decision making at all stages of the project.

Community Participation: There may be many definitions of community participation, but three concepts are commonly used in most of the development programmes. These are:

1) Participation as Community Contribution:

- Most of the time, this type of , participation is found in development programmes. Communities provide free or partly free labour and other resources to the programmes ("Shramdaan" or "dhandaan") but no part in planning and decision making. Even if they are consulted through participatory approach or direct discussion, their suggestion are either not incorporated in the final programme or are modified according to the ideas of local administration or donor agency. In most of the reconstruction and rehabilitation projects, this approach is being followed very often. It is noted that this type of-community participation is perceived by local people as cheap or free labour option by the project authorities.

**2) Participation as by the project Authorities:**

- This type of participation is to build up community leadership and organization. This could include formation of local committees, Task forces, Youth clubs, small cooperatives or associations to work in disaster preparedness, mitigation and relief. In India, Panchayats may be considered as effective community organizations. The Panchayats are having elected members of all sections of the society. There is representation of women, and weaker section of the society which are highly vulnerable to any type of disaster

3) Participation as Community Decision Making:

- In this type of community participation, community takes decision at all stages, from project formulation, funding to implementation. Technical staff and funding agencies are assigned only advisory or regulatory roles. This form of participation is a means of empowering local people to make their own decisions concerning their disaster preparedness, mitigation or relief and rehabilitation programmes. In other words, it is handling over control of programmes to the beneficiaries, which external agencies adopting a supporting as compared to a controlling role.

Interaction of Community with Various Organizations Involved in Disaster Management

- In disaster management, community participation has more significance as all the programmes, short term or long term are for the benefit of the community. Therefore, there is a need for continuous interaction between community, local administration and other agencies involved from the initiation of the programme/ project up to its implementation and monitoring. This interaction can be visualized as shown in Figure
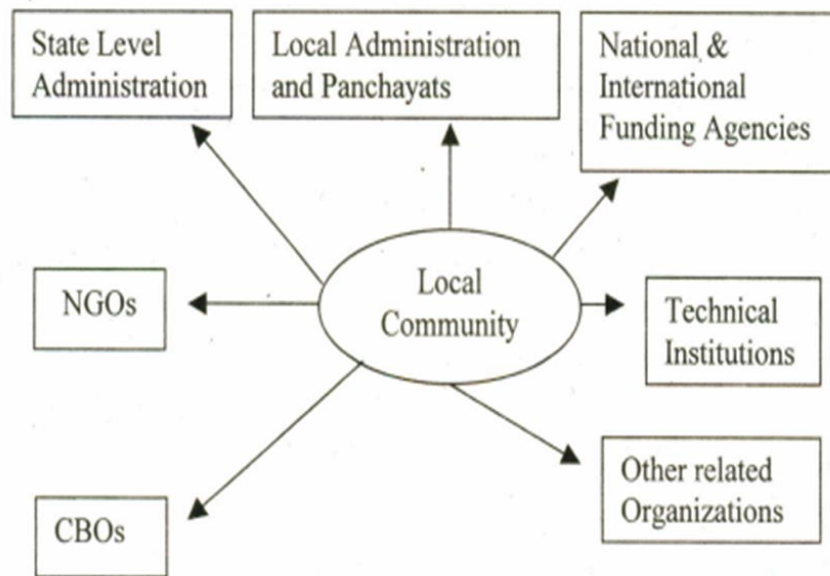
Importance and Need of community Participation

A disaster management project is likely to fail if the goals and methods did not fit the needs and capacities of the intended beneficiaries,. There is a need for radical changes in the attitude of programme implementation authorities as well as funding agencies. Recently; World Bank and other donor agencies have moved towards procedures which allow target communities to be involved in programme planning, implementation, monitoring and evaluation in many human settlements projects and disaster management programmes,. This concept is shown in Figure.

Benefits of Community Participation

There are many practical **benefits or advantages** in having community participation in disaster reduction or rehabilitation programme. The more important benefits are discussed below:

1) Cost Reduction

If Community is involved in planning, implementation and monitoring, cost of project is reduced considerably. Otherwise, a big sum will have to go to outside /. agencies.

2) Efficiency

As project is of direct benefit to the community, participation of local people allows for more efficient use of programme resources.

3) No Misunderstanding with Administration

If people are working with administration; there is understanding and transparency and therefore less problems due to misunderstandings between implementation agencies (Government or Non-Government Organizations) and the community.

4) Socio-Cultural acceptability

The community involvement will solve one of the important problems of most of the projects, i.e., socio-cultural Acceptability of these projects by the local people, as the implementation agency is from outside and not having knowledge of local social structure, culture, tradition and economy of the area.

5). Self-reliance and Self-dependence

Community participation provides people with the opportunity to take control over their own lives and feel self-reliant. Otherwise for even small mitigation measures, community will be dependent on outside agency or on Government. Community Participation and Awareness

6) Coverage

More people will be benefited by the project, if there is community participation.

7) Sustainability

In community participation, people have a sense of involvement and ownership in the programme. The project will sustain for long as community will do the follow-up, maintenance and make all efforts for its sustainance.