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## Acknowledgement

The concept of Disaster Management Cycle integrates isolated attempts on the part of different actors, government and nongovernment, towards vulnerability reduction or disaster mitigation, within the enveloping domain of disaster management, as phases occurring in different time periods in disaster management continuum. This has facilitated a planned approach to disaster management in that post- disaster recovery and pre -disaster mitigation planning are perceived as integrated/related activities.

Disaster Management efforts are geared towards disaster risk management. Disaster Risk Management “implies the systematic process of using administrative decisions, organisation, operational skills, and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impact of natural hazards and related environmental and technological disasters. These comprise all forms all activities including structural and non- structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects to hazards”. There are three key stages of activities in disaster management:

1. Before a disaster: to reduce the potential for human, material, or environmental losses caused by hazards and to ensure that these losses are minimised when disaster strikes
2. During a disaster: to ensure that the needs and provisions of victims are met to alleviate and minimise suffering
3. After a disaster: to achieve rapid and durable recovery. Common perception of disaster management is limited to emergency relief and post- disaster rehabilitation. This is so because these 2 elements are by far and not separate.

Thus, prevention, mitigation and preparedness form **pre-disaster activities** in the Disaster management Cycle and response, comprising relief, recovery and rehabilitation **are post-disaster activities**. Whilst emergency relief and rehabilitation are vital activities, successful disaster management planning must encompass the complete realm of activities and situations that occur before, during and after disasters.

One of the key issues in disaster management planning is the allocation of resources at all stages of the disaster cycle, which optimises the total effectiveness of risk reduction activity and maximises the overall impact of disaster management. This approach has imparted a more holistic perception to disaster management and has served to integrate disaster management with development planning in that most pre disaster activities, involve activities for vulnerability reduction like poverty reduction, employment provision etc. which are also mainstream development concerns.

Another significant consequence/effect of this concept relates to understanding the inherent correlation between disasters and development. Development had proceeded with relative unconcern for environmental issues. The result has been newer vulnerabilities/risks arising as a result of indirect/direct consequences of development strategies. For example, air pollution has been caused due to uncontrolled emission of green house gases, water pollution due to

unregulated working of industrial enterprises as also agriculture, leading to adverse impacts on the environment. The concept of disaster management cycle is expected to impart the much needed long-term perspective / viability to developmental policy since vulnerability reduction would be factored in mainstream planning to reduce costs on response efforts when disasters strike.

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## UNIT IV – Disaster Management

### The disaster management cycle as an approach

In present day practice of disaster management, the social action to cope with disasters could refer to any purposive undertakings before, during and after their occurrence. This is exemplified in the 3prevailing concept that regards disaster management as a cycle with different phases, from preparedness through response, from prevention, mitigation and readiness, through relief, recovery and rehabilitation. The significance of this concept is its ability to promote the holistic approach to disaster management as well as to demonstrate the relationship of disasters and development

### The sustainable development approach

The sustainable development approach has facilitated better understanding of the relationship between disaster, its various phases, environmental degradation, and sustainable development. As disasters cause harm and damage to people, property, infrastructure, economies and the environment, the goals of sustainable development are put to jeopardy. Disaster recovery and rehabilitation efforts require enormous funds that, amidst insufficient contingency funds, are taken out from other development programme that are planned or underway, thereby impeding development efforts. Therefore, it is important that disaster mitigation programmes are made an integral part of developmental programme. At the same time, efforts to enhance the capacities of communities and coping systems at various levels and sectors towards self-reliance and self-sufficiency in managing disasters effectively must be sustained. Understanding and identifying various types of vulnerabilities (human, social, economic, and environmental) as well as the nature of natural hazards are essential components of such efforts.

### The disaster management framework

One of the more important conceptual frameworks the sustainable development approach has engendered is the disaster management framework that allows the development of a wide range of program activities to protect communities, property and the environment against disasters. In this framework, four component approaches constitute the comprehensive and integrated approach to disaster management, namely, the **comprehensive approach, the all-hazards approach, the integrated approach and the prepared community approach.**

**The comprehensive approach to disaster management** entails developing and implementing strategies for different yet complementing aspects of disaster management, i.e. prevention and mitigation, preparedness, response and recovery, in the context of sustainable development.

**The all-hazards approach** concerns developing and implementing disaster management strategies for the full range of probable disasters. This approach has been useful in establishing standard protocols for addressing similar problems in a community, arising from different hazards and emergencies. However, several hazards that cause disasters may require specific response and recovery measures as well as specific prevention programs.

**The integrated approach ensures** that all organizations, including government, private and community organizations, are involved in disaster management. There may be some factors that organizations would take into account in determining the extent of their involvement. However, this approach promotes multi-sectoral and intersectoral coordination and reduces duplication and inefficiencies.

**The prepared community concept** concerns the application of all the foregoing approaches at the community or local level. It emphasizes the important roles and responsibilities of the members of the community in establishing disaster management programs and systems, and ensuring self-reliance and self-sufficiency in times of disaster.

**The developmental relief approach**

One important consequence of the development approach is the undertaking of disaster relief within the context of development. This is called the developmental relief approach. It demonstrates the shift from the traditional relief approach, which tends to regard the affected people as helpless victims requiring external assistance, to the developmental relief approach, which regards them instead as active people with capacities despite the effects of the disaster.

## Disaster Management Cycle

In present day practice of disaster management, the social action to cope with disasters could refer to any purposive undertakings before, during and after their occurrence. This is exemplified in the prevailing concept that regards disaster management as a cycle with different phases, from preparedness through response, from prevention, mitigation and readiness, through relief, recovery and rehabilitation. The significance of this concept is its ability to promote the holistic approach to disaster management as well as to demonstrate the relationship of disasters and development.

Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. The Disaster management cycle illustrates the ongoing process by which governments, businesses, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Appropriate actions at all points in the cycle lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters during the next iteration of the cycle. The complete disaster management cycle includes the shaping of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, and infrastructure.

### Goal of Disaster Management

- Reduce or avoid losses from hazards,
- Assure prompt assistance to victims
- Achieve rapid and effective recovery.

The mitigation and preparedness phases occur as disaster management improvements are made in anticipation of a disaster event. Developmental considerations play a key role in contributing to the mitigation and preparation of a community to effectively confront a disaster. As a disaster occurs, disaster management actors, in particular humanitarian organizations, become involved in the immediate response and long-term recovery phases. The four disaster management phases illustrated here do not always, or even generally, occur in isolation or in this precise order. Often phases of the cycle overlap and the length of each phase greatly depends on the severity of the disaster.

- Mitigation - Minimizing the effects of disaster.  
Examples: building codes and zoning; vulnerability analyses; public education.
- Preparedness - Planning how to respond.  
Examples: preparedness plans; emergency exercises/training; warning systems.
- Response - Efforts to minimize the hazards created by a disaster.  
Examples: search and rescue; emergency relief.
- Recovery - Returning the community to normal.  
Examples: temporary housing; grants; medical care.

## Sustainable Development

Developmental considerations contribute to all aspects of the disaster management cycle. One of the main goals of disaster management, and one of its strongest links with development, is the promotion of sustainable livelihoods and their protection and recovery during disasters and emergencies. Where this goal is achieved, people have a greater capacity to deal with disasters and their recovery is more rapid and long lasting. In a development oriented disaster management approach, the objectives are to reduce hazards, prevent disasters, and prepare for emergencies. Therefore, developmental considerations are strongly represented in the mitigation and preparedness phases of the disaster management cycle. Inappropriate development processes can lead to increased vulnerability to disasters and loss of preparedness for emergency situations.

## Mitigation

Mitigation activities actually eliminate or reduce the probability of disaster occurrence, or reduce the effects of unavoidable disasters. Mitigation measures include building codes; vulnerability analyses updates; zoning and land use management; building use regulations and safety codes; preventive health care; and public education.

Mitigation will depend on the incorporation of appropriate measures in national and regional development planning. Its effectiveness will also depend on the availability of information on hazards, emergency risks, and the countermeasures to be taken. The mitigation phase, and indeed the whole disaster management cycle, includes the shaping of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, and infrastructure.

## Preparedness

The goal of emergency preparedness programs is to achieve a satisfactory level of readiness to respond to any emergency situation through programs that strengthen the technical and managerial capacity of governments, organizations, and communities. These measures can be described as logistical readiness to deal with disasters and can be enhanced by having response mechanisms and procedures, rehearsals, developing long-term and short-term strategies, public education and building early warning systems. Preparedness can also take the form of ensuring that strategic reserves of food, equipment, water, medicines and other essentials are maintained in cases of national or local catastrophes.

During the preparedness phase, governments, organizations, and individuals develop plans to save lives, minimize disaster damage, and enhance disaster response operations. Preparedness measures include preparedness plans; emergency exercises/training; warning systems; emergency communications systems; evacuations plans and training; resource inventories; emergency personnel/contact lists; mutual aid agreements; and public information/education. As with mitigations efforts, preparedness actions depend on the incorporation of appropriate measures in national and regional development plans. In addition, their effectiveness 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 organizations and the general public are able to make use of this information.

## Humanitarian Action

During a disaster, humanitarian agencies are often called upon to deal with immediate response and recovery. To be able to respond effectively, these agencies must have experienced leaders, trained personnel, adequate transport and logistic support, appropriate communications, and guidelines for working in emergencies. If the necessary preparations have not been made, the humanitarian agencies will not be able to meet the immediate needs of the people.

## Response

The aim of emergency response is to provide immediate assistance to maintain life, improve health and support the morale of the affected population. Such assistance may range from providing specific but limited aid, such as assisting refugees with transport, temporary shelter, and food, to establishing semi-permanent settlement in camps and other locations. It also may involve initial repairs to damaged infrastructure. The focus in the response phase is on meeting the basic needs of the people until more permanent and sustainable solutions can be found. Humanitarian organizations are often strongly present in this phase of the disaster management cycle.

## Recovery

As the emergency is brought under control, the affected population is capable of undertaking a growing number of activities aimed at restoring their lives and the infrastructure that supports them. There is no distinct point at which immediate relief changes into recovery and then into long-term sustainable development. There will be many opportunities during the recovery period to enhance prevention and increase preparedness, thus reducing vulnerability. Ideally, there should be a smooth transition from recovery to on-going development.

Recovery activities continue until all systems return to normal or better. Recovery measures, both short and long term, include returning vital life-support systems to minimum operating standards; temporary housing; public information; health and safety education; reconstruction; counseling programs; and economic impact studies. Information resources and services include data collection related to rebuilding, and documentation of lessons learned.

### References

- Environmental health in emergencies and disasters: A practical guide. WHO, 2002.
- Disaster Help, US Department of Homeland Security.
- Green Paper on Disaster Management, Department of Provincial and Local Government, South Africa.

## Disaster Management Cycle Framework



### More reading materials on the same chapter

**Mitigation:** Measures that prevent or reduce the impact of disasters.

**Preparedness:** Planning, training, & educational activities for things that can't be mitigated.



**Response:** The immediate aftermath of a disaster, when business is not as usual.

**Recovery:** The long-term aftermath of a disaster, when restoration efforts are in addition to regular services.

Management (or disaster management) is the discipline dealing of with and avoiding risks. It is a discipline that involves preparing, supporting, and rebuilding society when natural or human-made disasters occur.

In general, any Emergency management is the continuous process by which all individuals, groups, and communities manage hazards in an effort to avoid or ameliorate the impact of disasters resulting from the hazards.

Actions taken depend in part on perceptions of risk of those exposed. Effective emergency management integration of emergency plans at all levels of government and non-government involvement. Activities at group, community) affect the other levels. It is common to place the responsibility for governmental emergency services with the institutions for civil defence or within the conventional structure of the emergency services. emergency management is sometimes referred to as business continuity management.

## Mitigation

Mitigation efforts attempt to prevent hazards from developing into disasters altogether, or to reduce the effects of disasters when they occur. The mitigation phase differs from the other phases because it focuses on long-term measures for reducing or eliminating risk Personal mitigation is mainly about knowing and avoiding unnecessary risks. This includes an assessment of possible risks to personal/family health and to personal property.

An example of personal non-structural mitigation would be to avoid buying property that is exposed to hazards, e.g. in a flood plain, in areas of subsidence or landslides. Homeowners may not be aware of their home being exposed to a hazard until it strikes. Real estate agents may not come forward with such information. However, specialists can be hired to conduct risk Assessment surveys. Insurance covering the most prominent identified risks are a common measure.

Personal structural mitigation in earthquake prone areas include installation of an Earthquake Valve to instantly shut off the natural gas supply to your property, seismic retrofits of property and the securing of items inside the building to enhance household seismic safety such as the mounting of furniture, refrigerators, water heaters and breakables to the walls, and the addition of cabinet latches. In flood prone areas houses can be built on poles, like in much of southern Asia. In areas prone to prolonged electricity black-outs a generator would be an example of an optimal structural mitigation measure. The construction of storm cellars and fallout shelters are further examples of personal mitigative actions.

## Preparedness

In the preparedness phase, emergency managers develop plans of action for when the disaster strikes. Common preparedness measures include:

- The Communication plans with easily understood terminology and chain of command
- Development and practice of multi-agency coordination and incident command
- Proper maintenance and training of emergency services
- Development and exercise of emergency population warning methods combined with emergency shelters and evacuation plans
- Stockpiling, inventory, and maintenance of supplies and equipment

An efficient preparedness measure is an emergency operations centre (EOC) combined with a practiced region-wide doctrine for managing emergencies. Another preparedness measure is to develop a volunteer response capability among civilian populations. Since, volunteer response is not always as predictable and plan-able as professional response; volunteers are often deployed on the periphery of an emergency unless they are a proven and established volunteer organization with standards and



training.

On the contrary to mitigation activities which are aimed at preventing a disaster from occurring, personal preparedness are targeted on preparing activities to be taken when a disaster occurs, i.e. planning. Preparedness measures can take many forms. Examples include the construction of shelters, warning devices, back-up life-line services (e.g. power, water, sewage), and rehearsing an evacuation plan. Two simple measures prepare you for either sitting out the event or evacuating. For evacuation, a disaster supplies kit should be prepared and for sheltering purposes a stockpile of supplies.

## Response

The response phase includes the mobilization of the necessary emergency services and first responders in the disaster area. This is likely to include a first wave of core emergency services, such as fire-fighters, police and ambulance crews. They may be supported by a number of secondary emergency services, such as specialist rescue teams.

We work in all Phases of Disaster management and through our supported teams we respond in moments after a disaster hits as well as the other phases to try to reduce the chance of it happening in the first place or to reduce the impact of a disaster. We can respond worldwide to LEDCs (Less Economically Developed Countries) as well as MEDCs (More Economically Developed Countries).

In addition volunteers and other non-governmental organizations (NGOs) such as the local Red Cross branch or St. John Ambulance may provide immediate practical assistance, from first aid provision to providing tea and coffee. A well rehearsed emergency plan developed as part of the preparedness phase enables efficient coordination of rescue efforts. Emergency plan rehearsal is essential to achieve optimal output with limited resources. In the response phase, medical assets will be used in accordance with the appropriate triage of the affected victims.

## Survival Law Of 3s

Sometimes it is useful to remember the survival law of 3's is significant if you consider the survival profile of the person and the situation and add that to the other important factors in a survival situation. This works in a displaced wilderness scenario or a disaster, such as earthquakes in an urban or austere / mountainous environment.

The survival law of 3s is often quoted as:

1. Air 3 Minutes without air
  2. Water 3 days without water
  3. Food 3 weeks without food
- Shelter Finding shelter is important to keep warm or cool and protected.(Some say 3 hours without shelter in harsh areas)
  - Health Proper healthy living, nutrition, activity, medical, etc., is needed.
  - Company / Moral: Some add - 3 months without company.

Where required, search and rescue efforts commence at a very early stage. Depending on injuries sustained by the victim, outside temperature, and victim access to air and water, their location, etc., the vast majority of those severely affected by a disaster may die within 72 hours after impact. Within a week of a major incident SAR Teams often leave and the incident enters a 'Recovery phase'. Medical response obviously has obvious important applications in the 'Direct Impact' phase and the 'Indirect Impact' phase – as a secondary result of the incident. (Like disease, infection and post trauma treatment.)

Individuals often feel compelled to volunteer directly after a disaster. Volunteers can be both a help and a hindrance to emergency management and other relief agencies. A spontaneous, unaffiliated volunteer can actually harm the effectiveness of coordinated agencies – some earning the term 'disaster tourists'

running into an event with preparation, coordination or even informing anyone – of their whereabouts and intentions. However trained and prepared volunteers under the direction of an organizing agency, such as mobile SAR Disaster Teams, can provide many benefits to the troubling effects of a disaster.

The response phase of an emergency may commence with a search and rescue phase. However in all cases the focus will be on fulfilling the basic needs of the affected population on a humanitarian basis. This assistance may be provided by national and/or international agencies and organisations. Effective coordination of disaster assistance is often crucial particularly when many organisations respond and Local Emergency Management Agency (LEMA) capacity may be over-stretched and diminished by the disaster itself.

On an individual or personal level, your decision / response can take the shape either of a home confinement or an evacuation. In a home confinement scenario a you and your family should be prepared to fend for yourselves in their home for several days without any form of outside support.

In an evacuation scenario, you and the family evacuates by a vehicle with the maximum amount of supplies, including a tent for shelter. The scenario could also include equipment for evacuation on foot with at least three days of supplies and rain-tight bedding a tarpaulin and a bedroll of blankets, would be the minimum.

## Recovery

The aim of the recovery phase is to restore the affected area to its previous state. It differs from the response phase in its focus; recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed. Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re-employment, and the repair of other essential infrastructure.

An important aspect of effective recovery efforts is taking advantage of a 'window of opportunity' for the implementation of mitigative measures that might otherwise be unpopular. Citizens of the affected area are more likely to accept more mitigative changes when a recent disaster is in fresh memory. The recovery phase starts when the immediate threat to human life has subsided. In the reconstruction it is recommended to reconsider the location or construction material of the property.

In long term disasters the most extreme home confinement scenarios like war, famine and severe epidemics last up to a year. In this situation the recovery will take place inside the home.

Planners for these events usually buy bulk foods and appropriate storage and preparation equipment, and eat the food as part of normal life. A simple balanced diet can be constructed from vitamin pills, whole-meal wheat, beans, dried milk, corn, and cooking oil. One should add vegetables, fruits, spices and meats, both prepared and fresh-gardened, when possible.

## 4 R's Of Rescue, Relief, Rehabilitation And Reconstruction

The standard time frame of rescue, relief and rehabilitation are usually defined as approximately 7 days, 3 months and 5 years respectively. (This is an approximate rule.)

The rescue operation starts with the local residents, immediately after the earthquake / disaster. It is usually supported by the trained and skilled staffs from the (Urban) Search and Rescue (SAR) departments of the governments. These activities can be complemented by the non-government organizations (NGO).

International Relief Teams arrive in the later stage, usually after 24 hours, depending on the accessibility, and political relation with the country.

## Rescue Phase

Rescue phase usually lasts for the first 48 to 72 hours after a disaster when the rate of survival of

trapped victims is high. Rescue operations continue for much longer duration, however, after the first 2 to 3 day, the resources allocated for rescue are comparatively low since other priorities take over. Initially Rescue may be 'self-rescue' or the rescue by bystanders or witnesses.

## **Relief Phase**

Relief phase followed immediately after the Rescue phase. During the relief phase, the focus is to provide basic necessities to victims of the earthquake and to restore social equilibrium. Detailed assessment of human and other losses is also usually carried out during the relief phase, which helps in optimal allocation of resources.

Relief phase may last between 1 to 3 months depending on the severity of the earthquake and the resources of the government. Community, supported by government is usually the central point. Added resources of the NGOs and the international organization substantiate this effort.

## **Rehabilitation / Reconstruction Phase Aims**

Rehabilitation/reconstruction phase aims to restore the communities to the pre-earthquake status. During this phase, the social and other infrastructure is restored and economy revitalised. The rehabilitation/reconstruction phase typically starts at the end of relief phase and may last for several years.

The short term plans of the recovery process are clearance of debris, building housing units, restoration of the lifelines and infrastructures, while the long-term objective is to build a safer and sustainable livelihood. Past experiences show that the efforts are sustainable only with community / government partnership, while NGOs and international organizations role is reduced after a certain period.

The Disaster Management Cycle: Therefore, disaster management can be divided in several phases, (depending on the perspective and definition of each phase).

## **Community Managed Disaster Risk Reduction**

Community Managed Disaster Risk reduction (CMDRR) is a process of bringing people together within the same community to enable them to collectively address a common disaster risk and to collectively pursue common disaster risk reduction measures. CMDRR is a process that mobilizes a group of people in a systematic way towards achieving a safe and resilient community/group. Its end view is a dynamic community that equalizes power relations, binds the group cohesively in the process of making decisions, deals with conflicts, resolves issues, and manages individual and collective tasks through addressing and bouncing back from hazard events. As long as disaster risks are not being reduced, achieving poverty reduction, social equity improvement, and sustainable development are in serious jeopardy. The Disaster Risk Reduction Formula for CMDRR offers a simple and clear and a kind of 'mathematical' equation on how to determine the disaster risk. This formula translates into three areas of community managed DRR activities

