UNIT 1  DISASTER MANAGEMENT:
PREVENTION, PREPAREDNESS AND
MITIGATION

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1.0 LEARNING OUTCOME

After going through this Unit, you should be able to:
- Provide a comprehensive view of the concept of disaster management
- Explain the significance of disaster prevention
- Discuss the role of preparedness in reducing the effects of disasters; and
- Highlight the concept of disaster mitigation.

1.1 INTRODUCTION

It is observed that globally, there is an increase in the occurrence and adverse impact of disasters, natural as well as man-made. Despite developments in science and technology, there is a sharp rise in catastrophes. In 2002, it has been estimated that the majority of fatalities occurred due to floods and earthquakes all over the world. The entire approach towards management of disasters, which has all along been relief-based, is undergoing transformation. The limitations of this approach are being realised and presently there is emphasis on adopting a developmental approach to disaster management. This involves ensuring readiness on the part of several stakeholders to predict, and where possible, prevent disasters, reduce their impact and cope with its consequences. Disaster management is being looked at in a very comprehensive manner with prevention, preparedness, mitigation and relief built into it to foster sustainable development.

Whether disasters are natural or human-induced, its impact is felt, many a times, for a long time. It is, therefore, essential that any support operation be designed and implemented with a long-term perspective. In the past, we have been at the mercy of nature and fate, but today, we possess the knowledge, capacity and capability to lessen the worst impact of a disaster. In the new culture of disaster management, prevention, preparedness and
mitigation are interconnected as one supplements the other. This Unit provides us with an overall view of the concept of Disaster Management and its main components. Preparedness being the important facet, an understanding of interlinkages between the different elements enables us to comprehend the key aspects of preparedness, which are discussed in detail in the subsequent Units of this Course.

1.2 DISASTER MANAGEMENT: CONCEPTUAL FRAMEWORK

Disasters, which occur globally with regular periodicity, are either natural such as floods, droughts, cyclones and earthquakes or human-induced such as conflicts, riots, environmental and industrial accidents. Irrespective of whether it is an 'act of God' or human-induced, disasters create mass destruction and impede developmental work. The approach towards management of disasters has undergone a radical change over the last few years. The ways of tackling the occurrence of disasters, earlier have been reactive in nature. The course of action basically used to be emergency management and provision of relief and rehabilitation. Efforts are always directed towards bringing back the situation to the normal. But presently, governments all over the world are adopting a holistic approach to disaster management.

The disaster management activity attempts to integrate several interrelated components in an orderly and coordinated manner. This includes activities before or pre-disaster, during and after the occurrence of a disaster. Hence there is a growing realisation universally to operationalise and formulate appropriate legal and institutional frameworks to deal with disasters. Disaster management as an activity involves measures to:

- Reduce the risks associated with disasters through timely measures, short-term and long-term policies;
- Provide required assistance to communities during and after the disasters; and
- Ensure rapid, sustained recovery and rehabilitation after the occurrence of disasters.

Disaster management activity comprises certain key components as indicated in the Figure below:

The above cycle indicates that the activities supplement each other. Prevention aims at impeding the occurrence of a disaster event, while mitigation attempts to prevent some and reduce the effects of certain disasters. Preparedness comprises measures, which equip governments at various levels, organisations, communities and individuals to handle and respond effectively to disaster situations. The phase of response begins after the disaster impact, which is aimed at saving the lives and property, disruption and damage caused by disasters. The recovery encompassing restoration, rehabilitation and reconstruction intends to bring back the people, and the country affected to their proper levels of functioning. The short-term and long-term activities taken up in the aftermath of disasters need to aim at holistic development and bring within their purview, the prevention, mitigation and preparedness aspects of disasters. Developmental plans need to include disaster management as one of the components.

Disaster management, which earlier relied on reactive mechanisms and processes, is now adopting a preventive and mitigation-based approach. It is becoming multi-disciplinary covering wider aspects such as forecasting, warning, search and rescue, evacuation, relief, reconstruction and rehabilitation, education, training and awareness. Disaster management, earlier perceived to be the primary responsibility of the government is getting diversified with the non-governmental organisations, community-based organisations, educational institutions, media, and community playing vital roles in disaster mitigation and prevention.

**Evolving a New Culture of Disaster Management**

The increasing awareness about the consequences of disasters is raising issues about the massive costs of disaster, relevance of disaster reduction, and eliciting participation from different stakeholders. There is a paradigm shift from disaster emergency response to prevention. This has been the result of several significant measures taken globally and by each country during 1990s.

In 1989, the United Nations General Assembly through its resolution, launched the International Decade for Natural Disaster Reduction (IDNDR, 1990-2000). The Decade, it was envisaged, would enable governments to focus on hazard vulnerability and risk assessment, disaster prevention, sustainable development, effective early warning systems, sharing of knowledge and transfer of technology. It emphasised on concerted international action, particularly in developing countries, to handle loss of life, property damage, social and economic disruption caused by natural disasters. This had laid the basis for the shifting of focus from rescue and relief to preparedness and mitigation. The IDNDR envisaged that by the year 2000, all the countries would have had achieved:

- **Comprehensive national assessments** of risks from natural hazards with these assessments taking into account their impact on developmental plans;
- **Mitigation plans** at the national and or local levels, involving long-term prevention, preparedness and community awareness; and
- **Ready access to global, regional, national and local warning systems and widespread dissemination of such warnings.**

In May 1994, a major Conference of the IDNDR programme was held which brought out a plan of action for disaster reduction called the Yokohama Strategy. It made a case for an accelerated implementation of a **Plan of Action** with development of a global culture of prevention as a key component of the integrated approach to disaster reduction. The strategy emphasised on the need to increase awareness on the importance of disaster.
reduction policies, support to states from the international community and evolving an integrated approach to disaster management in all spheres.

The Yokohama Strategy and Plan for Action for a Safer World vehemently propagated a comprehensive prevention, mitigation and preparedness strategy along with developing a culture of prevention, formulating and maintaining preparedness and response plans at the National, State and District levels, adopting a policy of self-reliance in each vulnerable area, and enhancing the capabilities of those involved at all levels through education and training. It also emphasised the necessity of identifying and strengthening the existing centres of excellence to improve disaster prevention, reduction and mitigation capabilities.

The IDNDR was to concentrate on sustained international and multi-disciplinary commitment for disaster prevention through focusing on hazard, vulnerability and risk assessment, disaster prevention and sustainable development, effective early warning, sharing of knowledge and transfer of technology.

The International Strategy for Disaster Risk Reduction (ISDR) formulated by the United Nations in 2000 aims to provide a global framework to foster the resilience of communities to the effects of natural hazards through the implementation of risk management, hazard mitigation and sustainable development.

There have been initiatives globally, towards reducing the impact of disasters through prevention, preparedness and mitigation measures. In this Unit, we shall attempt to discuss the changing nature of the concept of disaster preparedness from being reactive to proactive, with special reference to the recommendations of the High Powered Committee (HPC) set up by the Government of India in August 1999. The Chairman of the Committee was Shri J.C. Pant and it had members drawn from different ministries, various states, NGOs and experts from relevant fields.

This was the first attempt in India towards evolving a systematic, comprehensive and holistic approach to all disasters, natural as well as man-made. The Committee attempted to provide a new conceptual framework of disaster management by focusing on preparedness, prevention, reduction and mitigation. It was felt that prevention is more cost-effective than post-disaster relief and rehabilitation. It submitted its final report in October 2001.

The HPC provided a new culture to the area of disaster management by indicating that there are four key pillars of this activity namely:

a) Culture of Preparedness
b) Culture of Quick Response
c) Culture of Strategic Thinking; and
d) Culture of Prevention.

**Culture of Preparedness**

The Committee expressed that though it is not possible to completely do away with the devastation being caused by natural hazards, the destruction arising out of it can be minimised. It can be done through warning systems, community preparedness measures and other precautionary and mitigatory measures.

**Culture of Quick Response**

Response has been considered a key feature of new culture of disaster management. The principle of quick response by the government by having an appropriate organisational set up and plans at national, state and district levels has been emphasised.
Culture of Strategic Thinking

The HPC emphasised the significance of strategic thinking to handle disasters and appropriate networking of institutions engaged in the pursuit of knowledge. This also includes, having National Disaster Knowledge Network and National Centres of Excellence, which would facilitate handling disaster situations.

Culture of Prevention

A culture of prevention, it was felt needs to be installed in all communities and amongst disaster managers. This requires active involvement of all groups of society, national, international organisations, governments and private organisations. Early warnings and conscious developmental planning are the key elements of preventive planning. The new culture that is permeating the disaster management in the present times is based on the premise that hazards both natural and human induced are inevitable, but the disasters that follow can be handled effectively through adequate preventive measures.

1.3 DISASTER PREVENTION

The experience of handling disasters across the globe indicates that the after effects of a disaster are more harmful than the disaster event. Hence there are increasing efforts towards taking preventive measures to lessen the impact of disasters on all sections of the society.

Principles of Disaster Prevention, Preparedness and Mitigation

1) Risk assessment is a required step for the adoption of adequate and successful disaster reduction policies.

2) Disaster prevention and preparedness are of primary importance in reducing the need for disaster relief.

3) Disaster prevention and preparedness should be considered an integral part of the developmental policy and planning at the national, regional, bilateral, multilateral and international levels.

4) Early warning of impending disasters and their effective dissemination using telecommunication are the key factors to successful prevention and preparedness.

5) Prevention measures are most effective when they involve participation at all levels, from the local, community, national to the regional and international levels.

6) Vulnerability can be reduced by the application of proper design and patterns of development focused on target groups through appropriate education and training.

7) The international community accepts the need to share necessary technology to prevent, reduce and mitigate disasters, which should be made freely available and done in a timely manner as an integral part of technical cooperation.

8) Each country bears the primary responsibility of protecting its people, infrastructure and other national assets from the impact of natural disasters. The international community should demonstrate strong political determination required to mobilise and make efficient use of existing resources, including financial, scientific and technological means (High Powered Committee Report, 2001).
Disaster Prevention requires various measures, which any country needs to adopt. This includes:

1) Integrating disaster prevention with national development plans. The culture of disaster prevention needs to be a part of development plans and projects. Measures directed at reducing the occurrence of floods through construction of embankments etc., promoting earthquake resistant structures, watershed management, rainwater harvesting, alternative cropping patterns etc., to manage situations of drought are efforts towards disaster prevention.

2) Formulating a disaster management policy for the whole country, providing for a legal framework for the management of all types of disasters in a comprehensive manner. This facilitates the proper implementation of preventive measures at all levels by the concerned organisations.

3) Making the community aware, educated and their capacities built to manage disasters. A community leadership is to be built, to make them self reliant and resilient to cope with disasters.

4) Involving educational, training institutions, corporate sectors, and non-governmental organisations (NGOs) in eliciting public participation, generating awareness amongst all concerned stakeholders.

5) Strengthening of existing infrastructure such as buildings, communication system, water supply, sanitation facilities etc. The High Powered Committee (2001) has outlined the following proactive measures to bring in the culture of prevention. Some of them include:

i) Proactive measures for disaster preparedness and mitigation should be administrative, financial, legislative and techno-legal.

ii) Capacity building in disaster management has to be at policy, institutional and individual levels.

iii) Raising and recruitment of professionals to build up expertise for mitigation and management.

iv) Enforcement of protection and prevention measures.

v) Generating a proper understanding of risk among different stakeholders, training and confidence building among professionals and masons with appropriate development planning strategies.

vi) Rehabilitation to be viewed as a long-term phased activity. Mid-term rehabilitation vision is focused on reconstruction of infrastructure and livelihoods, while long-term programmes are geared towards addressing the issues of prevention, mitigation and preparedness.

The Tenth Five Year Plan (2002-2007) outlined the need for preventive planning, which is intrinsically linked to disaster prevention. Some of the steps in the regard are:

a) Introduction of a comprehensive process of vulnerability analysis and objective risk assessment.
b) Building a robust and sound information database which is comprehensive including land use, demography, and infrastructure developed at the national, state, and local levels along with current information on climate, weather, and man-made structures. In addition, resource inventories of governmental and non-governmental systems including personnel and equipment help in efficient mobilisation and optimisation of resources.

c) Creating state-of-the-art infrastructure is important. The entire disaster mitigation game plan must necessarily be anchored to frontline research and developed in a holistic mode.

d) Establishing linkages between all knowledge-based institutions is vital. A National Disaster Knowledge Network tuned to the felt needs of a multitude of users like disaster managers, decision makers, community, etc., must be developed as the network of networks to cover natural, man-made, and biological disasters in all their varied dimensions.

Generally, the prevention measures tend to be large due to the varied nature of disasters. Prevention along with appropriate preparedness and mitigation measures shall prove effective. Now we shall be discussing in brief the latter two aspects.

1.4 DISASTER PREPAREDNESS

Disaster preparedness is an effective way of lessening the impact of disasters, which occur on a small as well as large-scale. It acts as an effective link between emergency response, and rehabilitation. Disasters as we all are aware comprise certain elements such as the event, vulnerability of people and destruction. It exposes the vulnerability of individuals and communities wherein their lives are threatened and destruction caused to the community’s property, infrastructure, etc. This brings out the significance of developing disaster preparedness mechanisms and processes to neutralise and reduce the vulnerability of people and minimise loss of lives and property.

The United Nations Disaster Relief Office (UNDRO) defines Disaster Preparedness as “(a series of) measures designed to organise and facilitate timely and effective rescue, relief and rehabilitation operations in cases of disaster. Measures of preparedness include among others, setting up disaster relief machinery, formulation of emergency relief plans, training of specific groups (and vulnerable communities) to undertake rescue and relief, stock piling supplies and earmarking funds for relief operations”.

The concept of disaster preparedness is presently gaining increasing recognition, as it is being realised that investing in disaster preparedness can save lives and property and reduce relief assistance costs. Hence, preventing and preparing for disasters is important. This implies taking actions that tend to minimise the adverse effects of hazard, which can be taken up individually as well as collectively. The preparedness activity is not limited only to short-term measures, which are taken during a warning period before the onset of a disaster event. Its activities extend to, during and post-disaster situations. The more effectively the activities are carried out in advance, the more readily will it be possible to take required action during the emergency phase and reconstruction, rehabilitation and recovery phases.

The World Health Organisation in its Report of the Regional Meeting on Health aspects of Disaster Preparedness (2005) indicated that India is among the five countries in the
South Asian region that meet many of the criteria for disaster preparedness and has a legal framework in place (The Hindu, 2005). The Disaster Management Act 2005 enacted by Parliament provides a framework for the effective management of disaster and for matters connected with it.

Preparedness involves different set of activities before, during and after the disaster:

**Preparedness Activities before the onset of Disaster**
- Formulation of disaster preparedness plans at national, state, local and community levels.
- Generation and disseminating information through mass media about the potential hazards, their frequency of occurrence and associated risks.
- Installation of appropriate forecasting and warning systems.
- Strengthening of physical infrastructure.
- Evacuation of people to safer areas.

**Preparedness Activities during the Eventuality**
- Provision of food, shelter, medical and first aid services.
- Security arrangements to prevent occurrence of untoward incidents.

**Post-disaster Preparedness Activities**
- Rescue operations for affected.
- Proper relief distribution including food, clothes and medicines.
- Restoration of communication system.
- Damage assessment and immediate financial assistance.

There is presently a paradigm shift towards strengthening preparedness at various levels. This includes the government organisations at all levels, educational institutions, non-governmental organisations, community-based organisations, media and community. Disaster preparedness needs to pay attention to a number of variables including economic, social, political, technological and psychological. The preparedness strategy aims at:

- Developing, strengthening and making accessible to people, early warning systems and making them alert and responsive to emergencies;
- Reducing the vulnerability of households and communities in disaster-prone areas and improving their ability to cope with disaster effects;
- Strengthening institutional mechanisms and capacities of the government at various levels, NGOs, communities and other institutions in disaster preparedness and post-disaster response; and
- Establishing networks and linkages between public and private organisations, NGOs, community-based organisations, community and other key stakeholders to foster improved coordination of preparedness efforts.

Disaster preparedness is a multifaceted activity; it involves preparation and operationalisation
of preparedness plans, community-based preparedness plans, and appropriate use of information technology, remote sensing, disaster mapping, Geographical Information System (GIS) and other mitigation strategies. We shall be discussing all these aspects in detail in the subsequent Units of this Course.

Preparedness needs to be supplemented by certain other measures, which are outlined below:

**Advance Planning**

Earthquakes and other disasters are a phenomenon, which cannot be prevented altogether but a certain amount of advance planning can mitigate related sufferings. What precautions are necessary is a difficult question, which needs research, analysis and documentation. We must initiate action on it to avoid miseries and sorrows following the disaster. In the aftermath of Bhuj earthquake, it was commented that the earthquake did raise numerous questions about the quality of the country's development and disaster preparedness, the nature of its urban planning, the character of its housing construction, etc. For the moment, however, there is no getting away from the fact that earthquakes will continue to be part of our lives, perched as we are on a vast land plate floating on an ocean of molten rock: according to informed estimates, 57 per cent of the country is prone to earthquakes. The tremors of the earthquake were felt as far away as Tamil Nadu and Delhi. Incidentally, an earthquake hit Kutch in 1819 and the Sindree Fort that once guarded its coastline had collapsed under its assault. Yet, we seem to have learnt almost nothing from the past. While it is true that earthquakes cannot be predicted, the fact remains that while the 1993 Latur earthquake left over 10,000 dead, the one that had visited Los Angeles some 22 years earlier was far more severe but killed 55. One of the reasons for the heavy death toll in India is its high population density. But it is also true that the country has not internalised any of the lessons it has learnt from encounters with death on a mass scale *(`Indian Express`, 2001).

What do we mean by a disaster? There is no simple answer. *First of all, a natural phenomenon can be merely an impressive event in one region and a fearful catastrophe in another. Cyclones of comparable violence will not have the same effect if they hit Florida as they would if they hit the Bay of Bengal. In the first case, no lives at all may be lost and the material damage will be quickly repaired, since the United States is wealthy enough to cope.*

In the *second* case, most houses will be carried away, cultivated field will be flooded and the crops totally lost. The inhabitants of Florida will get away with a fright; those of the Bay of Bengal will be rendered homeless, threatened by famine, disease and the loss of livelihood. Hence, preparedness is very essential. *Preparedness requires* advance planning for human resources, material and money during crisis such as disasters needs good management.

**Need for Effective Administration**

Administration is the heart of development. Any systematic effort towards earthquake management must be preceded by, or coupled with efforts, to make the functioning of governmental machinery more effective. Administration is essential both for developed and developing countries. No system of government can survive without a good system of administration. It can be found in the poetic couplet: "For forms of government, let fools contest, whatever administered best, is the best".
The failures of earthquake management in Gujarat confirm our views about the need of an effective and efficient administration. S.R. Chirmade (1988) has rightly said that "the worldwide commitment of new nations and low-income countries to achieve, virtually within a short span of time, higher levels of economic and social development has given a new dimension to traditional concepts of public administration. The formulation and implementation of strategies and programmes for the modernisation of a nation, without doubt, present the greatest single challenge to public administration. Public administration is the process by which objectives are defined, plans and policies formulated, institutions created and managed, human energies mobilised, resources utilised and changes effected."

**Meticulous Preparedness by Streamlining Administration**

Public administration, through social and economic changes, has to attempt societal transformation either through direct involvement or regulation of other instruments of development. So it has to serve the process of the transformation of the society in both developed and developing countries. No attention was paid to administration of earthquake in Gujarat resulting in loss of thousands of lives.

Ghose (2001) suggests that "we cannot stop such disasters. What is needed is to learn from failures and make the administrative system perfect for future to take care of all mistakes and faults in advance." He has pointed out that "we will continue to live in the shadow of peril, and we will never know when it will come, whether it will come at all, and if it does, what shape it will take. But life must continue; shops must open, business and offices must engage in whatever activity they are there to do, trains must run, power units function (in the manner in which they're used to.) In short, it has to be business as usual. Even in Gujarat, when the dead have been cremated or buried, when they have come to some kind of terms with grief and devastation, the business of living will continue. What we would call everyday living will, of necessity, be resumed, as time passes".

**Prompt and Effective administration for Effective Preparedness**

It is time for a system to be put in place which, firstly and most importantly, is under the direct control of one person, is capable of quick ordered reaction to a calamity, has access to information on the location of material and equipment, is able to mobilise personnel, and which is, by law, the overriding authority in a crisis, with the legal backing to issue instructions to all agencies of government, civic bodies, and of private agencies which have to be carried out immediately. Its relations with the armed forces will need to be worked out in clear, unambiguous terms.

Sengupta (2001) painfully remarks that "while the bureaucracy in Bhuj and Gandhinagar – and let us not forget New Delhi – twiddles its thumbs, making false claims and utterly hollow promises, reality tells a dark tale of a democracy where the political class has proved its cold insensitivity and professional inefficiency even in the face of such a disaster. There is a lesson for the people of India after this catastrophe: the hallucinatory patriotic euphoria of India being a nuclear power and a potential superpower in the new millennium is a lot of hogwash. When it comes to the mighty Indian State, it is nothing but a clueless paper tiger, a dumb, monolith. It is nowhere in sight when it comes to coping with mass tragedy as we now see in the dead cities and villages of Kutch."

For citizens, in this ravaged society, the government does not exist. These comments by those who have actually seen the events happening cause pain and agony in everybody's mind and raise many questions. What have we achieved after more than fifty years of
independence? Our own elected government is making a fool of the people. They have different priorities except the people who are suffering in misery in this dark time of their life.

There will always be damage, deaths, grief and terror. That no one can prevent. But it can be minimised, to the extent that an effective government can, with a system that responds quickly, has access to what is needed, gets it there, mobilises personnel and — very importantly — makes as much information available as possible. In addition, there is a need for effective communication, coordination, control as well as effective leadership.

1.5 DISASTER MITIGATION

Mitigation refers to actions taken in advance to reduce or eliminate the risks arising out of disasters. Mitigation involves taking short-term as well as long-term measures, to reduce the community’s, location’s, property’s vulnerability to damage. It is concerned with prevention of occurrence of disasters, reduction of risks, consequences associated with them, and dispersal of risks. The preparedness, response and recovery phases of disaster management are concerned with occurrence of specific events, while mitigation activities in general relate to events that may occur in the future.

The significance of mitigation arises from the notion that adequate investment in mitigation activities reduces the amount to be spent on emergency, assistance, repair, reconstruction and rehabilitation following a disaster. Also mitigation ensures socio-economic continuity in a community as it lessens the disruption causing to lives, property, communication, transportation systems, and social and economic infrastructure. In a way, carefully planned mitigation activities facilitate the process of sustainable development, strengthening the economic and social well being of the community.

Mitigation aims at:

- Pre-disaster preparedness and prevention measures that help the community recover from disaster impact.
- Reduction of hazards faced by the community.
- Creation of awareness of risks at the community level.
- Encourage participation of community to lessen the risks.
- Protection and conservation of natural resources.
- Risk and vulnerability assessment to gauge the risks that the community faces and working out methods of reducing the risks.
- Formulation of effective disaster mitigation programme with the involvement of government, community, non-governmental organisations, private sector, and international organisations. For instance, for an effective tsunami warning system, the 36 countries of the Indian Ocean will need to share with each other vital information so that adequate time is made available for countries to alert their respective coastal population and take necessary action.

Carter (1991) identifies the following principles as providing a valuable guide to mitigation:

1) Initiation: This includes introducing disaster mitigation activities within three diverse contexts of reconstruction, new investment and existing environment.
2) Management: Mitigation measures are complex and interdependent and they involve widespread responsibility. This requires effective leadership and coordination, incentives, spread of safety measures through diverse activities and integrated with preparedness, relief and reconstruction.

3) Prioritisation: Where resources are limited, priority should be given to the protection of key social groups, critical services and vital economic sectors.

4) Monitoring and Evaluation: Mitigation measures need to be continually monitored and evaluated so as to respond to changing patterns of hazards, vulnerability and resources.

5) Institutionalisation: Mitigation measures should be sustainable and political commitment is vital to the initiation and maintenance of mitigation.

Approaches to Mitigation

There are broadly speaking, two approaches to mitigation – structural and non-structural:

Structural Approach

This refers to structural measures resorted to tackle the disaster threats. This applies to both engineered and non-engineered structures. Engineered structures include infrastructure, and buildings built as per necessary structural safety standards, advice of architects, engineers, with mitigation practices incorporated in their structures. Engineered structures are built according to structural specifications, site layout and planning, suitable material etc. For example in India, the National Building Organisation (NBO) has developed the National Building Code. The Bureau of Indian Standards also has published codes for the construction of earthquake-resistant buildings.

Non-engineered structures are those buildings, and infrastructure built with local know-how, not in accordance with prescribed specifications. These are generally constructed as per the convenience of local community, in a traditional manner. These include houses lying on steep slopes, which can be subject to landslides. Hence these are prone to hazards.

Non-structural Approach

This encompasses:

Appropriate Administrative/Regulatory Framework

This is required to ensure adherence to mitigation measures. This includes planning and zoning, application of building codes, hazard-resistant design and construction. Institutionalising clarity regarding a proper legislative framework with administrative arrangements is necessary which can go a long way to guide future developmental activities.

Public Education, Training and Awareness

Mitigation needs appropriate dissemination of information to the people with a view to educating them about potential hazards and ways of reducing them. This involves training of government officials, elected representatives, local government members, community-based organisations, youth, children and different sectors of community.
The quality of intervention in disaster situations depends a lot on the inter-departmental coordination and teamwork. This activity involves mock drills, exercises, awareness campaigns, simulation exercises, carrying out worst scenario analysis (projecting what worse could happen in order to sharpen emergency response preparedness) etc. Mitigation activities need to be supplemented by training and education programmes.

Community Participation in Disaster Mitigation

Any mitigation policy and activity need to be accompanied by community participation. The communities are the first to respond when disaster strikes. Since they are familiar with the local area vulnerabilities, available resources, facilities, demography, the community needs to be assisted with disaster mitigation plans.

Incentives

The continued sustainability of any preparedness or mitigation activity depends on effective incentives to ensure effective implementation. For instance, there is need for incentives for retrofitting of structures, adherence to building codes, construction of structures and buildings outside the hazardous and disaster-prone areas, disaster insurance, adherence to hazard resistance measures, constituting vulnerability relief fund at local levels etc.

Disaster mitigation is an ongoing and continuous activity. It requires cooperation and networking amongst several stakeholders. Effective mitigation needs strengthening the capacities of communities along with the administrative machinery. As we have discussed, all the key activities of disaster management are interlinked and the entire process needs to be strengthened to ensure sustainable development.

The central government recently announced that the Disaster Management and Mitigation Policy will be in place by the end of 2005. The policy will ensure that structures are developed from top to bottom and greater stress will be laid on the involvement of district administration, panchayati raj, municipalities and nagar palikas so that these bodies are directly held responsible for managing and mitigating disasters, and turning them into development opportunities (The Hindu, 2005).

1.6 TOWARDS EFFECTIVE DISASTER MANAGEMENT

Managing disasters has to take into cognisance certain key aspects. These include:

Citizens' Participation

Public Administration and citizens have to work in unison, as the existence of one without the other is not possible in a civilised society. The harmonious relationship depends upon the sincerity, earnestness and cooperation between the two. There is a need to:

- Encourage people's participation – a sine qua non for development and modernisation.
- Kindle the potential energy of the citizens into kinetic energy to accelerate development.
- Supplement the efforts of the government in the conduct of its affairs.

- Strengthen the values of democracy in the minds and spirit of the people.
- Enlist respect in the Constitution, which is rooted in people's sovereignty.
- Develop bonds of friendship and goodwill between citizens and administration, and vice versa.
Avoid social unrest, tensions, violence and other social upheavals, which have become the order of the day.

Administration is not something different from people and their needs; rather it is the means by which these needs are met and the administrator who thinks of organisation as something apart from the community will fail to recognise significant problems of the citizens and the administration will not be in a position to deliver the goods. This is required for handling situations of crisis such as disasters. Hence community’s role in facing this is being emphasised, about which we shall be discussing in the succeeding Units.

Concern for People

Administration has to be responsive towards people. However during and post-Gujarat earthquake it was observed that the politico-administrative leadership never realised their obligations to the people. They remained dumb spectators to the crisis situation. Inder Malhotra (2001) is very critical of Indian bureaucracy and political elite in handling Gujarat earthquake situation. He clearly states that official media informed the country, in a tone that had a touch of crowing about it, that the Cabinet Crisis Management Committee (CMC) - consisting of top bureaucrats and technocrats - met at 3 p.m. Instead of being pleased about it, all concerned ought to be ashamed. The worthy members of the committee ought to have quietly left the parade and buckled down to their primary responsibility without losing a single second. The deplorable delay on their part only underscores that no lessons were learnt from the similar dithering at the time of the hijacking of the IC-814, which occurred in December 2002.

It is seen that structures are in place but those holding positions of power, become at times insensitive to the needs of people especially in a crisis.

Prompt and Fast Action

Viedma (1978) states that the 1976 earthquake in Guatemala provided a striking example of the unequal effects of a natural phenomenon. Generally speaking, homes in the wealthy suburbs stayed up, and the householders suffered little more than the loss of a favourite vase. Homes in the poorer quarters mostly crashed down at the first shock. The result was that those people who were not killed outright lost all their possessions. Drainage channels were destroyed in some places, due to which waste water mingled with domestic water supplies and contaminated them. In a short span of time, an already impoverished population found itself defenseless against the twin threat of hunger and disease.

The reasons underlying this unfair situation are obvious. The rich suburbs had been sited in the safest zones and were built of quakeproof materials. The poorest houses were often constructed by their owners’ hands from adobe – bricks of dry mud – which are quite incapable of withstanding sudden shocks; they were also unplanned and therefore tended to be built in the most precarious places. People made their homes wherever a site was available reasonably close to the basic building materials – and no doubt the same sort of houses will have been rebuilt on exactly the same spot since there is nowhere else to go. So a natural phenomenon may not be a disaster in itself, but only in the effect it has on people. Throughout the developing countries, 95 per cent of such events leave victims behind them, and all of them have dire consequences for the national economy. There is a distinct geographic correlation between disaster-prone regions and the countries that are still in the process of development.
It may well be asked how a disaster can be avoided. One particularly good example comes from China that too thirty years ago; when on 4 February 1975, the entire population of the town of Haicheng – some 100,000 people – were evacuated in matter of hours before it was utterly destroyed by an extremely violent earthquake. More than one million people live in the affected area, yet the number of victims did not exceed 200. This remarkable feat came about thanks to an extremely well organised early warning system and a highly developed civic spirit. Seismic stations registered abnormalities, observers had noticed, unusual behaviour among animals, and after an earlier false alarm the population had already been evacuated once. But the townsfolk were quite ready to repeat the exercise when danger loomed again on the morning of 4 February. Teams of volunteers took charge of helping the sick and handicapped and checked every house to make sure that nobody was left in the town. This example teaches us that prevention is genuinely possible.

1.7 CONCLUSION

Management of disasters through appropriate prevention, preparedness and mitigation measures is gaining significance. The fatalistic approach to disasters is giving way to application of rational and scientific techniques for their reduction. Efforts are on to reduce the physical, economic and social vulnerability of communities to disasters. Realising the costs associated in rescue and relief activities in the aftermath of disasters, the government, non-governmental organisations, and communities are attempting to address the significant facets of disaster management. This Unit attempted to discuss these aspects.

1.8 KEY CONCEPTS

Rainwater Harvesting : It is the process of collecting water that is running away, from rooftops, driveways, and other surfaces and utilising it for other purposes. The intercepted water is used for toilet flushing, vehicle washing, plant watering, garden and lawn irrigation. There are simple to complex rainwater harvesting methods. For example any container that can hold rainwater dripping from rooftops can be used as a rainwater harvesting system.

Watershed Management: The analysis, protection, development, operation or maintenance of land, vegetation and water resources of a drainage basin for the conservation of all its resources for the benefit of its residents (www.streamnet.org)

1.9 REFERENCES AND FURTHER READING


The Hindu, 15 September, 2005.
The Hindu, 28 December, 2005.

1.10 ACTIVITIES

1) On the basis of a general assessment of the vulnerability of area in which you reside, list the essentials needed for its management.

2) Approach any one government department/agency, a private organisation, a person residing in your area, talk to them and observe their reactions and elicit their views towards disaster management. Write a brief report on this and submit to the Academic Counsellor.

3) Explain briefly how vulnerability and development are linked.