CHAPTER 12

Disaster Management

12.1 Definition of Disaster

India is one of the most disaster-prone countries in the world. Its location and geographical features render it vulnerable to a number of natural hazards including cyclones, droughts, floods, earthquakes, forest fires, landslides and avalanches. A disaster is an event that causes sudden disruption to normal life of a society and causes damage to property and lives, to such an extent that normal social and economic mechanisms available to the society are inadequate to restore normalcy.

According to the United Nations, *'Disaster is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources'.*

It is the result of a combination of a number of factors which include:

- Exposure to natural hazards
- Existing conditions of vulnerability
- Insufficient capacity or measures to cope with potential negative consequences
- Inappropriate management of risks and vulnerabilities

A hazard is a threat, a future source of danger with the potential to cause damage to:

- People: Death, injury, disease and stress
- Property: Damage to property, economic loss, loss of livelihood and status
- Environment: Loss of fauna and flora, pollution, loss of bio-diversity

12.2 Types of Disasters

Disasters can be classified into two types:

- Natural disasters
- Man-made disasters

12.2.1 Natural Disasters

Natural disasters are caused by:

- Floods
- Earthquake
- Tsunami
- Drought
- Cyclone
- Landslide
- Avalanche
- Hurricane
- Volcano eruption
- Cold wave
- Forest Fire

12.2.2 Man-made Disasters

Man-made disasters can be classified as:

- Nuclear disasters
- Chemical disasters
- Biological disasters
- Pandemic emergencies, epidemic
- Fire (Building, coal, forest, oil)
- Pollution (Air, water, industrial)
- Deforestation
- Accidents (Road, rail, sea, air)
- Industrial accidents
- Riots
- Hijacking
- Terrorism

12.3 Phases of Disaster Management

12.3.1 Phase 1: Before the Crisis

Preparedness: This is the period when the potential hazard, risk and vulnerabilities can be assessed and steps can be taken for:

1. Preventing and mitigating the crisis, and
2. Preparing for actual occurrence.

Crisis can also be mitigated through various short term measures which either reduce the scale and intensity of the threat or improve the durability and capacity of the elements at risk. For example, better enforcement of building codes and zoning regulations, proper maintenance of drainage systems, better awareness and public education to reduce the risks of hazards, etc. help in containing the damage.

➤ 12.3.2 Phase 2: During the Crisis

Emergency Response: When a crisis actually occurs, those affected by it require a speedy response to alleviate and minimise suffering and losses. In this phase, certain 'primary activities' become indispensable. These are:

1. Evacuation
2. Search and rescue, followed by
3. Provision of basic needs, such as food, clothing, shelter, medicines and other necessities essential for bringing bring the life of the affected community back to a degree of normalcy

➤ 12.3.3 Phase 3: Post Crisis

1. *Recovery:* This is the stage when efforts are made to achieve early recovery and reduce vulnerability and future risks. It comprises activities that encompass two overlapping phases of rehabilitation and reconstruction.
2. *Rehabilitation:* Includes provision of temporary public utilities and housing as interim measures to assist long term recovery.
3. *Reconstruction:* Includes construction of damaged infrastructure and habitats and enabling sustainable livelihoods.

➤ 12.4 Elements of Disaster Management

We have described above the three phases of disaster management. Figure 12.1 describes the various aspects of the three phases.

➤ 12.4.1 Risk Reduction

Disaster risk reduction strategies have the potential to save thousands of lives by the adoption of simple preventive measures. Lack of coherent disaster reduction strategies and the absence of a 'culture of prevention' are the major causes for increasing casualties due to disasters. Disaster risk reduction (disaster reduction) has been defined as the 'systematic development and application of policies, strategies and practices to minimise vulnerabilities, hazards and the unfolding of disaster impacts throughout a society, in the broad context of sustainable development'.

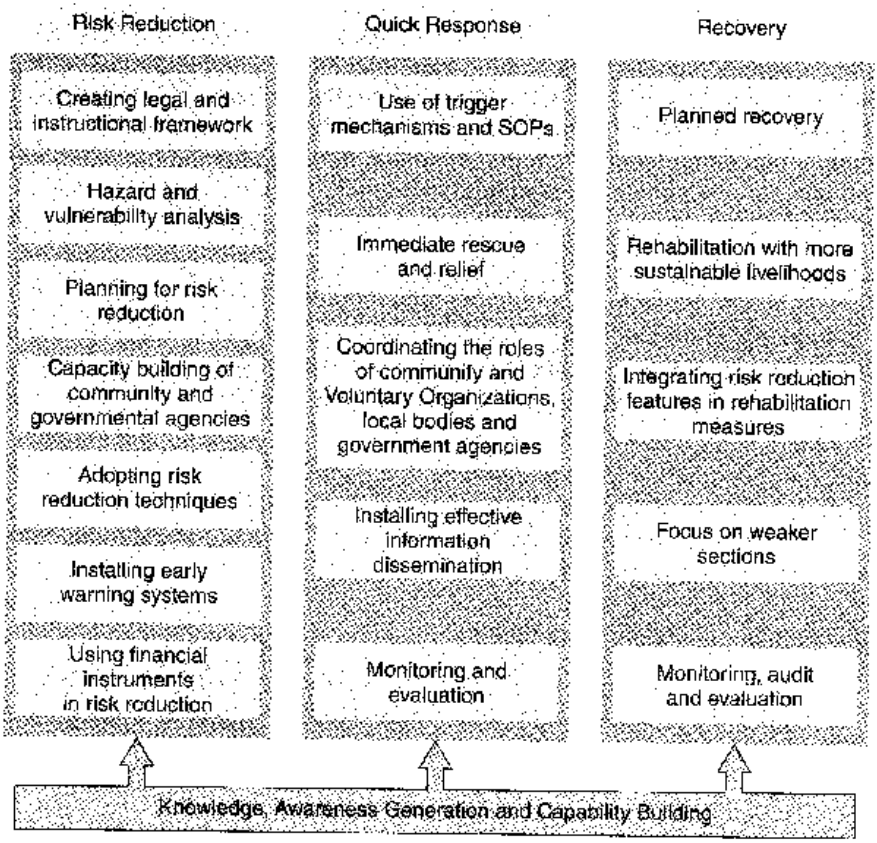

Fig. 12.1 *Elements of Disaster Management*

Disaster reduction strategies include appraisal of likelihood and intensity of hazards and analysis of vulnerabilities thereof to the community. Building of institutional capabilities and community preparedness is the next step. Crucial to all these efforts, however, is the existence of a 'safety culture' in societies. Inputs like education, training and capacity building play a very significant role. It needs to be understood that such preparedness cannot be a 'one time' effort, but is a continuous process.

Knowledge plays an important role in disaster reduction. The traditional knowledge available with the community has to be used along with knowledge acquired through research and past experiences.

The disaster risk reduction framework is composed of the following fields of action:

1. Policies towards risk management
2. Assessment of risk, including hazard analysis and vulnerability
3. Generating risk awareness with the help of mass media and social media
4. Preparation of plans for risk mitigation
5. Implementation of the plan

6. Early warning systems with the help of latest technology relating to data capture transmission, analysis and even dissemination
7. Use of knowledge
8. Information: Effective disaster risk management depends on the informed participation of all stakeholders. The exchange of information and easily accessible communication practices play key roles. Data is crucial for ongoing research, national planning, monitoring hazards and assessing risks. The widespread and consistent availability of current and accurate data is fundamental to all aspects of disaster risk reduction.

Mitigation

Mitigation involves:

- Measures aimed at reducing the impact of disasters
- Efforts to prevent hazards from developing into disasters altogether
- Differs from the other phases because it focuses on long-term measures for reducing or eliminating risk
- It embraces actions taken in advance of a disaster to reduce its effects on a community

Significance of Mitigation A number of special programmes are in operation for mitigating the impact of natural disasters and local communities have developed their own indigenous coping mechanisms. In the event of an emergency, the mobilisation of community action supported by NGOs add strength to the national disaster management capacity.

Despite initiating various disaster mitigation measures, there has been little improvement. Accordingly, India has taken initiatives for linking disaster mitigation with development plans, promoting the application of effective communication systems and information technology, insurance, extensive public awareness and education campaigns (particularly in rural areas), involving the private sector and strengthening institutional mechanisms and international community cooperation.

➤ 12.4.2 Quick Response

Quick response can save lives, protect property and lessen disruptions caused by crises. This calls for a total and effective response, which must subsume the coordinated response of the entire governmental system as also the civil society. The response should not only incorporate traditional coping mechanisms, which have evolved over the centuries but also involve meticulous planning and coordination. Cumulative experience with crisis management over the years points to an urgent need for putting in place a holistic and effective response mechanism which is professional, result-oriented, innovative and people-centric. Quick response entails the following:

- This phase includes mobilisation of 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.
- It entails restoring physical facilities, rehabilitation of affected families/ populations, restoration of lost livelihoods and reconstruction efforts.
- Retrospectively, it brings to light the flaws in Policy and Planning with respect to infrastructure, its location, social scheme, etc.

Significance

The significance of quick response can be stated as under:

- It has immediate mitigation impact and losses can be minimised to a greater degree. According to the estimate of the insurance industry, natural disasters represent 85% insured catastrophe.
- Thousands of lives lost and millions of people are left weakened each year due to reluctance on part of donors to invest in measures that reduce the impact of disasters. (*World Disaster Report 2002*)
- Long term resilience of vulnerable communities

Issues

The issues involved are:

- Coordination among the concerned actors involved (government, civil society and international donor organisation). Recent example is the case of Uttarakhand floods (June 2013) where international organisations found it hard to immediately get government approval to start work.
- Institutionalisation of disaster response structure at local level.

➤ 12.4.3 Recovery

Recovery is an important phase which involves:

- In the long-term aftermath of a disaster, when restoration efforts are in addition to regular services, it involves implementation of actions to promote sustainable redevelopment (reconstruction, rehabilitation).
- 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.
- The recovery phase starts when the immediate threat to human life has subsided. In the reconstruction, it is desirable to reconsider the location or construction material of the property.
- Community resilience is a key factor in disaster recovery.
- This phase encompasses three overlapping phases of 3Rs
  Relief: It is the period immediately after the disaster when steps are taken to meet the need of survivors.
  Rehabilitation: These are activities undertaken to support the victims' return to normalcy and reintegration in regular community function.

It encompasses provision of temporary employment and restoration of livelihood.

Reconstruction: It is an attempt to return communities to improved pre-disaster functioning.

12.5 Disaster Response in India

Over the centuries, local communities have developed their own indigenous survival mechanisms. This rich storehouse of knowledge is a part of our country's legacy. The *Arthashastra* (a treatise on public administration by Chanakya in the 4th century BC), devoted a section to mitigation measures to combat famines. The community is usually the first responder in case of a disaster. Field level response on behalf of the government in rural areas is provided by the nearest police station and the revenue functionary (patwari/patel/talati/karnam etc); in urban areas the response is articulated by agencies like the civic authorities, the fire brigade and the local police station. At present, panchayats do not have the capacity to react institutionally in any effective manner to such situations and it is the district administration which retains the basic responsibility of handling crises situations, with the Collector playing a pivotal role.

India is fraught with challenges and unique opportunities for low cost, disaster mitigation interventions that would add value to the existing work carried out by government organisations, NGOs and donors. Devolution and decentralisation have created new challenges for the sector, generating renewed scope for action at the grass-roots level where disaster preparedness and planning decisions are most effective. There is a vast pool of experienced organisational, technical and scientific resources and disaster related information and knowledge within the region.

India has integrated administrative machinery for disaster management at the National, State, District and Sub-District levels. The Central Government supplements the State relief efforts by initiating supportive action. An elaborate procedural mechanism and the allocation of resources to facilitate emergency management operations is outlined in relief manuals and codes backed by the Contingency Action Plan (CAP). The CAP facilitates the relief operations, procedures and focal roles of central ministries and departments. The Crisis Management Group headed by the Cabinet Secretary and consisting of nodal ministries (particularly the Ministry of Home Affairs and Agriculture) oversee response coordination, carry out an assessment and make recommendations for assistance.

State Governments have the responsibility for undertaking rescue and relief measures in the event of a natural calamity through the State Relief Commissioner, Relief and Rehabilitation Department or the Department of Revenue. District Coordination and Review Committee headed by the Collector involves the participation of related agencies, departments and NGOs.

➤ 12.5.1 Legal Framework

The Government enacted the National Disaster Management Act (NDMA) 2005 on December 26, 2005 to provide for institutional mechanism for drawing up and monitoring the implementation of disaster management plans, ensuring measures by various wings of the government for preventing and mitigating effects of disaster and for undertaking a holistic, coordinated and prompt response to any disaster situation. The Act provides for setting up of a National Disaster Management Authority (NDMA) under the chairmanship of the Prime Minister, State Disaster Management Authorities (SDMAs) under the chairmanship of Chief Ministers and District Disaster Management Authorities (DDMAs) under the chairmanship of District Magistrates. The Act further provides for constitution of National Executive Committee (NEC), National Institute of Disaster Management (NIDM) and National Disaster Response Force (NDRF). It also provides for the concerned ministries and departments to draw up department-wise plans in accordance with the National Disaster Management Plan. In addition, the Act contains provision for constitution of National Disaster Response Fund and National Disaster Mitigation Fund and similar funds at the state and the district levels. The Act also provides for specific roles to local bodies, including Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs) in disaster management. The NDMA, NEC and NIDM have since been constituted in accordance with the provisions of the Act to discharge the powers and functions envisaged for them under the Act.

At the district level, the DM Act 2005 provides for the constitution of District Disaster Management Authorities under the chairmanship of the District Magistrate/ Collector while the elected representative of the local authority would be the co-chairperson. In those districts where Zilla Parishads exist, the chairman would be the ex-officio co-chairperson of the District Disaster Management Authority. The district authority shall act as the planning, coordinating and implementing body for disaster management in the district and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the national and state authorities.

The concept of disaster management plan at different levels has received a new orientation with the passage of the National Disaster Management Act. Earlier such plans were being prepared at the district level only. Under the UNDP-DRM programme, such plans are being prepared at the village level as well.

The planning process has been carried down to the sub-divisional, block and village levels. Each village in multi-hazard prone district will have a Disaster Management Plan. The Disaster Management Committee which draws up the plans consists of elected representatives at the village level, local authorities, government functionaries, including doctors/paramedics of primary health centres located in the village, primary school teachers, etc. The plan encompasses prevention, mitigation and preparedness measures. The Disaster Management Teams at the village level will consist of members of youth organisations like Nehru Yuvak Kendra and other non-governmental organisations as well as

able bodied volunteers from the village. The teams are provided basic training in evacuation, search and rescue, first aid trauma counselling, etc. The disaster management committee will review the disaster management plan at least once in a year. It would also generate awareness among the people in the village about the dos and don'ts for specific hazards depending on the vulnerability of the village. A large number of village level disaster management committees and disaster management teams have already been constituted.

Long-term planning and preparedness for disaster mitigation form the process of planned development in India. Science and technology inputs constitute its basic thrust, manifested in development of forecasting and warning systems, disaster resistant construction technologies and appropriate cropping systems. India has elaborate cyclone detection and tracking systems, flood forecasting and warning systems.

➤ 12.5.2 National Disaster Management Act, 2005

The Act encompasses the following:

1. The Act calls for the establishment of National Disaster Management Authority (NDMA), with the Prime Minister of India as chairperson.
2. The Act under Section 8 enjoins the Central Government to constitute a National Executive Committee (NEC) to assist the National Authority. The NEC is composed of Secretary level officers of the Government of India in the Ministries of Home, Agriculture, Atomic Energy, Defence, Drinking Water Supply, Environment and Forests, Finance (expenditure), Health, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development and Water Resources, with the Home Secretary serving as the Chairperson, ex-officio. The Chief of the Integrated Defence Staff of the Chiefs of Staff Committee is an ex-officio member of the NEC. The NEC is responsible for the preparation of the National Disaster Management Plan for the whole country and to ensure that it is 'reviewed and updated annually'.
3. All State Governments are mandated under Section 14 of the Act to establish a State Disaster Management Authority (SDMA). The SDMA consists of the Chief Minister of the State, who is the Chairperson, and no more than eight members appointed by the Chief Minister. State Executive Committee is responsible for drawing up the state disaster management plan and implementing the National Plan. The SDMA is mandated to ensure that all the departments of the State prepare disaster management plans as prescribed by the national and state authorities.
4. The Act directs to establish District Disaster Management Authority (DDMA). The Chairperson of DDMA will be the Collector or the District Magistrate or the Deputy Commissioner of the district. The elected representative of the area is member of the DDMA as an ex-officio Chairperson.
5. The Act provides for constituting a National Disaster Response Force 'for the purpose of specialist response to a threatening disaster situation

or disaster' under the Director General to be appointed by the Central Government.

The implementation of the National Disaster Management Act 2005 has been slow, and slack. In 2013, the Supreme Court, in response to a PIL, issued notices to the Governments of Uttarakhand, Tamil Nadu, Orissa, Andhra Pradesh, Gujarat, Rajasthan, Maharashtra and the Central Government for alleged failure to implement the National Disaster Management Act 2005.

The Act has been criticised for marginalising non-governmental organisations (NGOs), elected local representatives, local communities and civic groups; and for fostering a hierarchical, bureaucratic, command and control, 'top down' approach that gives the central, state and district authorities sweeping powers.

12.6 Institutions for Disaster Management

12.6.1 National Disaster Management Authority (NDMA)

The National Disaster Management Authority (NDMA) is an independent, autonomous and constitutionally-established disaster preparedness federal institution and is responsible to deal with the whole spectrum of disaster management and preparedness in the country.

The NDMA formulates and enforces national disaster policies at federal and provisional levels and collaborates closely with various government ministries, military forces and United Nations based organisations to jointly coordinate efforts to conduct disaster management, search and rescue, and a wide range of humanitarian operations in the country and abroad. The NDMA aims to develop sustainable operational capacity and professional competence to undertake its humanitarian operations at its full capacity.

NDMA has been constituted with the Prime Minister of India as its Chairman, a Vice-Chairman with the status of Cabinet Minister, and eight members with the status of Ministers of State. Each of the members has a well-defined functional domain covering various states as also disaster specific areas of focus and concern. To carry out the mandated functions, NDMA has evolved a lean and professional organisation which is IT-enabled and knowledge-based. Skills and expertise of the specialists are extensively used to address all disaster related issues. A functional and operational infrastructure has been built which is appropriate for disaster management involving uncertainties coupled with desired plans of action.

NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for disaster management to ensure timely and effective response to disasters. Towards this, it has the following responsibilities:

- Lay down policies on disaster management
- Approve the National Plan
- Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan
- Lay down guidelines to be followed by the State Authorities in drawing up the State Plan

- Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster, or the mitigation of its effects in their development plans and projects
- Coordinate the enforcement and implementation of the policy and plan for disaster management
- Recommend provision of funds for the purpose of mitigation
- Provide such support to other countries affected by major disasters as may be determined by the Central Government
- Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situations or disasters as it may consider necessary
- Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management

➤ 12.6.2 The National Institute of Disaster Management (NIDM)

The NIDM was constituted under the Disaster Management Act 2005. The National Institute of Disaster Management (NIDM) is a premier national organisation working for human resource development at the national level in the area of disaster mitigation and management. It is an autonomous body under the Ministry of Home Affairs. It has been entrusted with the nodal national responsibility for human resource development, capacity building, training, research, documentation and policy advocacy in the field of disaster management. Its objectives are:

(i) To undertake quality research
(ii) To work as a national resource centre
(iii) To professionalise disaster management
(iv) To promote training
(v) To build partnerships with stakeholders and other institutions
(vi) To link learning and action

➤ 12.7 Role of Various Governments and Other Agencies in Disaster Management

➤ 12.7.1 Role of the Union Government

Although the State Government concerned has the primary responsibility for crisis management, the Union Government plays a key supportive role in terms of physical and financial resources and providing complementary measures, such as early warning and co-ordination of efforts of all union ministries, departments and organisations. At the apex level, a Cabinet Committee on Natural Calamities reviews the crisis situation. A high level committee of ministers under the chairmanship of Minister of Agriculture deals with the issue of financial support to be provided to the State Governments from the National Disaster Response Fund, if the funds available with the State

Governments under State Disaster Response Fund are not adequate. Matters relating to nuclear, biological and chemical emergencies are looked after by the Cabinet Committee on Security.

➤ 12.7.2 National Crisis Management Committee

The Cabinet Secretary, as the highest executive officer, heads the National Crisis Management Committee (NCMC). Secretaries of ministries and departments concerned and heads of other organisations are members of NCMC, which reviews and monitors crisis situations on a regular basis and gives directions to the Crisis Management Group, as deemed necessary. The NCMC can give directions to any ministry, department or organisation for specific action needed for meeting the crisis situation.

As disaster management is a multi-disciplinary process, all Central Ministries and Departments have a key role in the field of disaster management. In view of the highly technical and specific nature of certain disaster events such as aviation disasters, rail accidents, chemical disasters and biological disasters etc; the ministries dealing with that particular subject have the nodal responsibility for handling that particular type of disaster, as shown-

Nodal Ministries/Department for Disaster Management at the National Level

Droughts	Ministry of Agriculture
Epidemics and Biological Disasters	Ministry of Health
Chemical or Industrial Chemical disasters	Ministry of Environment & Forest
Nuclear Accidents	Department of Atomic Energy
Railway Accidents	Ministry of Railways
Air Accidents	Ministry of Civil Aviation
Natural Disasters except Drought & Epidemics and Civil Strife	Ministry of Home Affairs

The Secretaries of the Nodal Ministries and Departments of GOI, i.e. the Ministry of Home Affairs (MHA), Agriculture, Civil Aviation, Environment and Forests, Health, Atomic Energy, Space, Earth Sciences, Water Resources, Mines, Railways etc. are all members of the NEC and function as nodal agencies for specific disasters based on their core competencies or as assigned to them. The coordination between various nodal ministries / departments is done by National Executive Committee (NEC), which is headed by Home Secretary. The NEC has to prepare the national plan for disaster management based on the National Disaster Management Policy.

➤ 12.7.3 Crisis Management Group

The Crisis Management Group (CMG) consists of nodal officers from various concerned ministries. Apart from CMG, the National Executive Committee headed by the Home Secretary performs the statutory coordination and

functions as per the DM Act, 2005

The CMG's functions are to review annual contingency plans formulated by various ministries, departments and organisations in their respective sectors, measures required for dealing with natural disasters, coordinate the activities of the Union Ministries and State Governments in relation to disaster preparedness and relief, and to obtain information from the nodal officers on all these issues. In the event of a disaster, the CMG meets frequently to review relief operations and extends all possible assistance required by the affected states to overcome the situation. The Resident Commissioner of the affected state is also associated with such meetings.

➤ 12.7.4 Funding Mechanism

Each state has a corpus of funds, called State Disaster Response Fund, administered by a state level committee headed by the Chief Secretary of the State Government. The size of the corpus is determined with reference to the expenditure normally incurred by the state on relief and rehabilitation over the past ten years. In case the funds under State Disaster Response Fund are not sufficient to meet the specific requirements, State Governments can seek assistance from the National Disaster Response Fund—a fund created at Central Government level. Both these funds, as the names suggest, are meant for relief and rehabilitation and do not cover either mitigation or reconstruction works, which have to be funded separately by the State or Union Government.

➤ 12.7.5 Role of State Government

In India, the basic responsibility to undertake rescue, relief and rehabilitation measures in the event of natural disasters rests with the state government. Since the very beginning, the entire structure of crisis administration in the state governments had been oriented towards post disaster relief and rehabilitation. Most of the states have Relief Commissioners who are in charge of the relief and rehabilitation measures. Most of the states have switched over to a Disaster Management Department with the required linkages with the various development and regulatory departments concerned with prevention, mitigation and preparedness.

Every state has a Crisis Management Committee under the chairpersonship of the Chief Secretary, consisting of secretaries in charge of concerned departments, which reviews crisis situations on a day-to-day basis at the time of crisis, coordinates the activities of all departments and provides decision support system to the district administration. At the ministers' level, a Cabinet Committee on Natural Calamities under the chairpersonship of the Chief Minister takes stock of situations and is responsible for all important policy decisions.

➤ 12.7.6 Role of District Administration

The District Magistrate/Collector has the responsibility for overall management of disasters in the district. He has the authority to mobilise the response

machinery and has been given financial powers to draw money under the provisions of the General Financial Rules/Treasury Codes. All departments of the State Government, including the police, fire services, public works, irrigation etc., work in a coordinated manner under the leadership of the Collector during a disaster, except in metropolitan areas where the municipal body plays a major role. The District Collector also enjoys the authority to request for assistance from the Armed Forces if circumstances so demand. NGOs have also been effective in providing relief, rescue and rehabilitation in recent times.

➤ 12.7.7 Role of Local Self-Governments

Local self-governments, both rural and urban, have emerged as important tiers of governance, after the 73rd and 74th Amendments to the Constitution. For the people, they are also the nearest units of administration and are among the first responders to any crisis besides being closely knit with the communities. These units can thus play an important role in crisis management under the overall leadership of the District Administration.

➤ 12.7.8 Role of Public/NGO/Civil Society/Media

The local community is usually the first responder in case of a disaster. Local community also carries traditional knowledge and relevant counter measures regarding disaster management. So the role of local community must be utilised with the help of NGOs and media. They should be encouraged to play an active role in all three phases of disaster management. District administration should also focus on capacity building, participation and empowerment of these stakeholders in disaster management. Mobilisation of community action supported by local NGOs, along with government machinery is a must for quick, efficient and effective response. For this, healthy coordination must exist between local administration and local community/NGOs. Local NGOs and civil society must work on developing a deep culture of safety and prevention in society.

NGOs, civil society and media also play an active role as pressure groups in a democracy so that any laxity on part of the government can be traced and fixed. So, the public and the NGOs should keep a close vigil over the functioning of the government regarding disaster management and render their services as a watchdog.

➤ 12.8 What is Needed?

We cannot prevent natural hazards, which are endemic to our geology, geography, climate, social and cultural settings, but we can certainly strive to manage crisis more efficiently so that hazards do not degenerate into disasters. With a coherent and meaningful crisis management strategy in place, it is quite possible to visualize our country, despite its manifold hazards, as a place that will eventually be free of all disasters. In the realm of crisis management,

announcing a policy, or promulgating a law, or creating an institution is a relatively easy task; the challenge lies in implementing policies to achieve the desired outcomes. Crisis management, a governance issue that is both vital and complex, is at the core of India's administrative system. The system requires innovative thinking and fundamental changes in order to quicken the emergency responses of the administration and increase the effectiveness of the machinery to meet the crisis situation and enhance crisis preparedness. To that end, it is necessary that the apparatus of crisis management should perform and deliver. What is needed is ushering in a new paradigm in the quality and efficacy of our institutional capacity and delivery mechanisms while, at the same time, ensuring that they are embedded in both the structures of authority and the mechanisms of accountability.

Our aim should not only be having more efficient systems of governance but also innovative ways of capacity building and empowerment of all stakeholders at all levels, including panchayats and the community, strategic applications of science and technology, realisation of a sound emergency communication network, building safe homes and infrastructure, and learning from research and development, as also from the experiences of handling crisis situations in the past. Each of these tasks is a challenge and calls for careful strategy of planning and implementation coupled with coordinated efforts of a variety of players, both within and outside the governmental structure. Our target should be establishing the synergy and convergence of advances in the technological and knowledge era with our rich socio-cultural practices and indigenous coping mechanisms. Systematic preparedness, early warning, quick response and sustainable recovery have been the cornerstones of approach to disaster management.

➤ 12.8.1 Institutional Support of Science and Technology Institutions for Disaster Management

Disaster management depends heavily upon the inputs from various science and technology institutions. Indeed, major improvements in disaster management efforts may be attributed to developments in science and technology. As crisis management is multidisciplinary in nature, the relevant research is carried out in several sector-wise research and development organisations. The 2nd Administrative Reforms Committee has recommended that The National Disaster Management Authority, assisted by NIDM, may facilitate a common platform between the science and technology organisations and the users of relevant technologies. Such mechanisms may be made operational both at the Union and State levels.

➤ 12.8.2 Professionalisation of Disaster Management

Institutional development for disaster management in the country has clearly suffered on account of paucity of professionally qualified personnel. While civil servants and other senior personnel in organisations like the police, armed forces and municipal bodies have provided a leadership role and their leadership will continue to be required, it is time that special attention is paid

to the long-felt need to professionalise disaster management in the country.

The best practices in disaster management are the strategies and methods perfected by several developed countries and India can take advantage from exposure to these practices. It is, therefore, desirable that the possibility of bilateral agreements with foreign governments for exchange of experiences and learning from their documentation and research efforts be fully explored.

➤ 12.8.3 Use of Mass Media and Social Media

Mass media plays a very important role in spreading awareness about disasters. Immediately after a major disaster in any part of the world, the curiosity and apprehension among the communities about their own risk is at its maximum. This is an opportune time to carry out public awareness campaigns and use media to focus on generating awareness about the risk the community is exposed to. This could best be achieved through a healthy partnership between the media and the disaster management machinery.

An important input in such awareness generation programmes could be the lessons that have been learnt from disasters in the past or from those in other areas. For this purpose, the details of all such disasters need to be properly documented and kept in the public domain. The District Disaster Management Authorities, the State Disaster Management Authorities and the NDMA should have these details along with the lessons learnt, on their respective websites.

➤ 12.8.4 Building Community Resilience

The community is also a repository of knowledge and skills which have evolved traditionally and these need to be integrated in the risk reduction process. It is necessary to educate the community about the entire disaster risk reduction and even to impart skills and assign specific roles to the members of the community, so that the first response from the community is a well coordinated one.

➤ 12.8.5 Focus on District Disaster Management Plan

The District Administration should discuss the hazard, risk and vulnerability profile of the district. The Administration should know the vulnerability map of the district, historical profile of various disasters that have happened in the past, their impact on the district and how the district was able to cope up. What is the preparedness of the district now? Would the district be able to handle the disaster if it is hit now? What is the present capacity of preparedness of the district administration or DDMA for search and rescue, relief distribution, logistics, ensuring life-line services, providing security and safety to the people, law and order situation, resource mobilisation, etc.? The administration needs to know the answers for all these questions. This would give an idea of the capacity of the district and also give direction to start planning. The administration or DDMA then consolidates the risks of the district and take the level forward.

12.9 Key Issues

12.9.1 The Uttarakhand Tragedy and the Lessons Learnt

Heavy rainfall over three days, 16-18 June 2013, along with a few cloudbursts caused the melting of Chorabari Glacier at the height of 3,800 metres and eruption of the river Mandakini which led to heavy floods and massive landslides along with heavy boulders near Kedarnath and few other areas of Uttarakhand, including Badrinath and Uttarkashi. It was the worst natural disaster in our country since the 2004 tsunami. The devastation in its wake has been huge but the largest impact has been at the temple town of Kedarnath. It is the downstream region along the Mandakini river. In the midst of the annual pilgrimage season, tens of thousands of people were present at the time of the incident. As a result, nearly four to six thousand people were feared killed and about a hundred thousand pilgrims and tourists were trapped in the valley for days because of damaged and blocked roads. The death toll, however, as per official records, is said to be nearly four thousand only. Entire villages and settlements, such as Gaurikund and the market town of Ram Bada, a transition point to Kedarnath, have been obliterated, while the market town of Sonprayag suffered heavy damage and loss of lives.

The Army, Air Force, Indo-Tiberan Border Police (ITBP), Border Security Force, National Disaster Response Force (NDRF), Public Works Department and local administration worked together for quick rescue operations. Several thousand soldiers were deployed for the rescue missions. Helicopters were used to rescue people, but due to rough terrain, heavy fog and rainfall, manoeuvring them was a challenge. The armed forces and paramilitary troops evacuated nearly one lakh people from the flood ravaged area. Operation Rahat was the name given to the Air Force's rescue operations. Operation Suryahope was the name given to the Army's rescue operations.

Unprecedented destruction by the rainfall witnessed in Uttarakhand was attributed to unscientific developmental activities undertaken in recent decades, contributing to high level of loss of property and lives. Roads constructed in haphazard style, new resorts and hotels built on fragile river banks and more than 70 hydro-electric projects in the watersheds of the state led to a 'disaster waiting to happen' situation. The tunnels built and blasts undertaken for the 70 hydro-electric projects contributed to the ecological imbalance in the state, with flows of river water restricted and the streamside development activity contributing to a higher number of landslides and more flooding. Existing infrastructure has been totally demolished. It has left border villages disconnected which certainly adds to our strategic concerns.

According to a 'Performance Audit of Disaster Preparedness in India', published by the Comptroller and Auditor General of India (CAG: Report No 5 of 2013), the following shortcomings of Uttarakhand were not only published but were taken up with the State Government as well, as a follow up. The main shortcomings pin-pointed by the CAG were:

1. In the state, the frequency and intensity of various disasters had not been identified.

2. State Disaster Management Authority (SDMA), headed by the Chief Minister, although constituted in October 2007, had not formulated any rules, regulations, policies and guidelines. State Executive Committee (SEC) was formed in January 2008 but 'never met since its creation' (this highlights the laxity and indifference). District Disaster Management Authority (DDMA) was constituted in Nainital in December 2007. Since inception, DDMA met only twice (April and May 2011). Thus, the state authorities were virtually non-functional.
3. The State Disaster Management Plan was under preparation and actionable programmes were not prepared for various disasters.
4. We noticed irregularities in the management of State Disaster Response Fund. These included non-investment of funds which resulted in potential loss of interest of Rs 9.96 crore during 2007-2012. There were delays ranging from 80 days to 184 days in the release of the Centre's share of funds during 2007-11 and no funds were released in 2011-12 as the state government did not submit utilisation certificates and annual report of natural calamity.
5. No plan was prepared in the state for early warning. The communication system was inadequate. This resulted in delayed information to vulnerable population.
6. Hazard Safety Cell of the state government had so far identified 7374 buildings in three cities out of which 1,109 buildings were found to be vulnerable to moderate earthquake. These buildings needed to be retrofitted, but no such measures were taken.
7. Geological Survey of India in June 2008 identified only 101 villages as vulnerable out of 233 disaster affected villages. No measures were taken by the State Government for their rehabilitation, despite a lapse of four years after their identification.
8. The State Government did not sanction any post for the State Disaster Management Authority which affected the establishment of the Management Information System. In the District Emergency Operation Centre (DEOC) at the district level, there was an acute shortage of manpower. In 13 districts, only 66 posts (56%) were filled against sanctioned manpower of 117 (9 posts each in 13 districts), and
9. It was also noticed that no master trainers were trained to impart training to the staff at the district, block and village levels engaged in the prevention and mitigation of disaster management. Medical personnel were also not trained in hospital preparedness for emergencies or mass casualty incident management.

The serious lapses that have been reported are a sad reflection of the state of affairs. It also shows that a lot of commitment, dedication and foresight is required in a state like Uttarakhand which is prone to almost all kinds of disasters except the threats from coastal areas and high seas.

Even more striking has been the realisation about how precious little has gone in the name of creating awareness and preparing all sections of the society for an eventuality like the June 2013 Uttarakhand disaster.

Besides preparedness, the response during crisis was also too slow. The Uttarakhand Government could not gauge the scale of tragedy in the initial two days. The state government did not have adequate evacuation capabilities. The evacuation work was mainly carried out by the Army, Air Force, Indo-Tibetan Border Police (ITBP), Border Security Force and National Disaster Response Force (NDRF). Search and rescue work also started very late.

Rehabilitation and reconstruction process was also very slow. It was mainly due to two reasons (a) roads and electricity lines were badly damaged so connectivity, communication and electricity services were totally disrupted, and (b) rain did not stop for a few days and so medical aid and food items were not supplied adequately as government machinery was waiting for the rain to stop. Even after October, rehabilitation work was not as per the desired pace.

Role of BSF in Rehabilitation Work

The BSF had adopted 12 villages for rehabilitation work. BSF made temporary bridges like foot bridges, rope bridges, Jhoola Pul (suspension bridge) on mountaineering patterns for connectivity. It helped in medical aid supply and ration supply for community kitchen. BSF jawans conducted rehabilitation work despite rains and heavy odds.

➤ 12.9.2 Was the Uttarakhand Tragedy Natural or Man-made?

Undoubtedly, it was a natural disaster which caught the administration and the local people by surprise. But many man-made mistakes compounded the problem. The major ones are given below:

1. **No control over the number of tourists and pilgrims reaching Kedarnath.** At the time of the tragedy it is believed that there were almost 5-10 times more people than the capacity of roads and towns.
2. **Unlimited construction on fragile river beds.** River beds are meant for rivers but due to unregulated developmental activities, haphazard constructions took place near river beds to cater to increasing number of tourists. This went on without any proper planning and norms of construction.
3. **Ecological imbalance.** The entire ecology of the region could have been disturbed due to rampant construction of roads, tunnels, dams and use of blast technology for construction.

Perhaps if we had been careful about the above factors, the scale of the tragedy could have been minimised.

➤ 12.9.3 Social and Emotional Problems Associated with Disasters

While dealing with disasters, we need to be particularly responsive to the emotional and social problems that people experience due to a disaster. Almost 10 per cent of the people affected by the tsunami – potentially half a million people – had mental health problems so severe that they required professional treatment. Psychosocial care deals with a broad range of emotional and social

problems and helps in restoring social cohesion as well as independence and dignity of individuals and groups. It prevents pathologic developments and further social dislocations. Normalisation of emotional reaction is an important task in psychosocial care for the survivors of disasters. Emotional reactions such as guilt, fear, shock, grief, vigilance, numbness, intrusive memories, and despair are responses of people experiencing unforeseen disasters beyond their coping capacity. Emotional reactions are normal responses to an abnormal situation. Nearly 90 percent of survivors of a disaster experience these emotional reactions immediately after the disaster. Psychosocial care is essential for all these people.

Probable Questions Based on this Chapter

1. What are the main phases of disaster management?
2. How can disaster risk be reduced in advance?
3. Write a short note on National Disaster Management Act (NDM Act) 2005.
4. What is the role of National Disaster Management Authority in disaster management?
5. How can district administration play a significant role in disaster management?