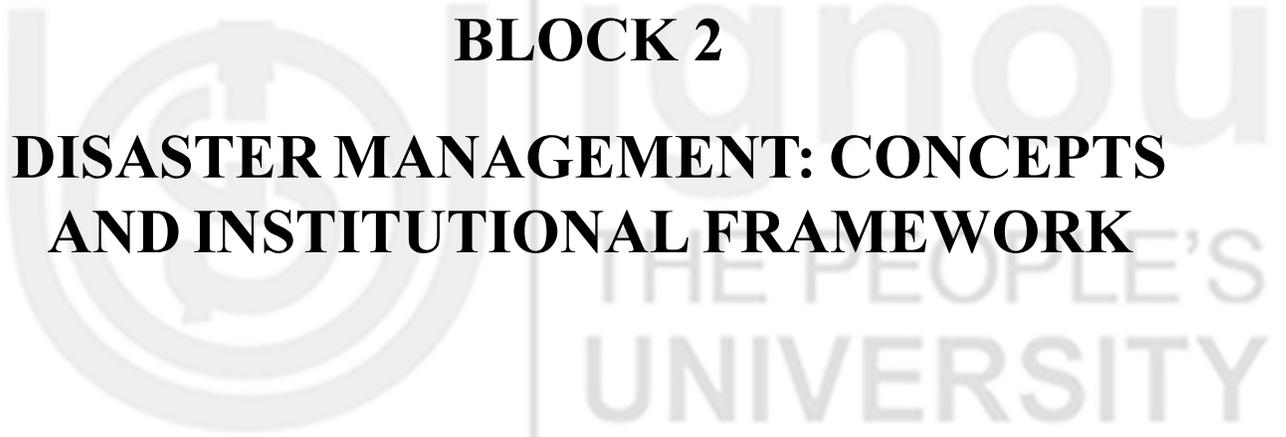


BLOCK 2

DISASTER MANAGEMENT: CONCEPTS AND INSTITUTIONAL FRAMEWORK



UNIT 5 DISASTER MANAGEMENT ACT, POLICY AND INSTITUTIONAL ARRANGEMENTS*

Structure

- 5.0 Objectives
- 5.1 Introduction
- 5.2 Disaster Management Act, 2005
- 5.3 Institutional Framework under the Disaster Management Act
 - 5.3.1 National Disaster Management Authority (NDMA)
 - 5.3.2 National Executive Committee (NEC)
 - 5.3.3 State Disaster Management Authority (SDMA)
 - 5.3.4 District Disaster Management Authority (DDMA)
 - 5.3.5 National Institute of Disaster Management (NIDM)
 - 5.3.6 National Disaster Response Force (NDRF)
- 5.4 Role of Central and State Government
 - 5.4.1 Central Government
 - 5.4.2 State Government
 - 5.4.3 District Administration
 - 5.4.4 Management of Disasters impacting more than one State
- 5.5 Other Important Institutional Arrangements
- 5.6 Disaster Management Policy
 - 5.6.1 National Policy on Disaster Management, 2009
 - 5.6.2 National Disaster Management Plan, 2016
- 5.7 Conclusion
- 5.8 Glossary
- 5.9 References
- 5.10 Answers to Check Your Progress Exercises

5.0 OBJECTIVES

After reading this Unit, you should be able to understand:

- Policies of disaster management in India;
- Acts related to disaster management in India; and
- Institutional structure of disaster management in India.

5.1 INTRODUCTION

Disaster management can be defined as the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in

* Contributed by Dr. Poonam Rautela, Associate Professor, M B Govt. PG College, Haldwani (Uttarakhand).

particular preparedness, response and recovery in order to lessen the impact of disasters. The institutional arrangements for disaster management in India can be understood through the various steps initiated in the country for managing disasters effectively.

5.2 DISASTER MANAGEMENT ACT, 2005

The Disaster Management Act, 2005, (23 December 2005) received the assent of the President of India on 9 January 2006. The Act extends to the whole of India. The Act provides for “the effective management of disasters and for matters connected therewith or incidental thereto”. The Disaster Management Act, enacted in 2005, has a new multidisciplinary focus on disaster prevention and risk reduction and a move away from a relief-centric regime.

- The institutional framework under the Act mandated the creation of the National Disaster Management Authority (NDMA) and State Disaster Management Authorities (SDMAs) as the bodies responsible for disaster preparedness and risk reduction at the respective levels.
- The Disaster Management Division of the Ministry of Home Affairs retained responsibility for overall steering of the national disaster response.
- It mandated the concerned Ministries and Departments to draw up their own plans in accordance with the National Plan.
- The Act further contains the provisions for financial mechanisms such as the creation of funds for the response, National Disaster Mitigation Fund and similar funds at the state and district levels.

5.3 INSTITUTIONAL FRAMEWORK UNDER THE DISASTER MANAGEMENT ACT

5.3.1 National Disaster Management Authority (NDMA)

Evolution of NDMA

Emergence of an organisation is always an evolutionary process. NDMA has also gone through the same process. The Government of India (GOI), in recognition of the importance of disaster management as a national priority, set up a High-Powered Committee (HPC) in August 1999 and a National Committee after the Gujarat earthquake, for making recommendations on the preparation of Disaster Management plans and suggesting effective mitigation mechanisms. The Tenth Five-Year Plan document, for the first time, also had a detailed chapter on Disaster Management. The Twelfth Finance Commission was also mandated to review the financial arrangements for Disaster Management.

On 23 December 2005, the Government of India enacted the Disaster Management Act, which envisaged the creation of National Disaster Management Authority (NDMA), headed by the Prime Minister, and State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers, to spearhead and implement a holistic and integrated approach to Disaster Management in India.

National Disaster Management Authority (NDMA) as the apex body for disaster management has the responsibility for laying down policies, plans and guidelines for disaster management and coordinating their enforcement for effective response. The Guidelines have assisted the Central Ministries, Departments and States to

formulate their respective Disaster Management (DM) plans. It can also take other measures, as it may consider necessary, for the prevention, mitigation, preparedness and capacity building, for dealing with a threatening disastrous situation. Central ministries or departments and State Governments are expected to extend necessary cooperation and assistance to NDMA for carrying out their mandate. NDMA has to oversee the provision and application of funds for mitigation and preparedness measures. It has the power to authorise the departments or authorities concerned to make emergency procurement of provisions or materials for rescue and relief in a threatening disaster situation or disaster.

The NDMA is mandated to deal with all types of disasters, natural or man-made. Whereas such other emergencies including those requiring close involvement of the security forces or intelligence agencies such as terrorism, counter-insurgency, law and order situations, serial bomb blasts, hijacking, air accidents, chemical, biological, radiological and nuclear weapon systems, mine disasters, ports and harbour emergencies, forest fires, oilfield fires and oil spills will continue to be handled by the National Crisis Management Committee (NCMC). NDMA may, however, formulate guidelines and facilitate training and preparedness activities in respect of Chemical Biological Radiological Nuclear (CBRN) emergencies. Cross-cutting themes like Medical Preparedness, Psycho-Social Care and Trauma, Community Based Disaster Preparedness, Information and Communication Technology training, Preparedness awareness generation, etc., of natural and man-made disasters in partnership with the stakeholders concerned. Resources available with the DM authorities at all levels, which are capable of discharging emergency support functions, will be made available to the nodal ministries and agencies concerned during times of such disasters (Government of India, 2011).

Functions of NDMA

The major functions of NDMA are as follows:

- i) Lay down policies on disaster management;
- ii) Approve National Plan;
- iii) Approve plans prepared by the Ministries or departments of the Government of India in accordance with the National Plan;
- iv) Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
- v) 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;
- vi) Coordinate the enforcement and implementation of the policy and plan for disaster management;
- vii) Recommend provision of funds for the purpose of mitigation;
- viii) Provide such support to other countries affected by major disasters as may be determined by the central Government;
- ix) Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;
- x) Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

5.3.2 National Executive Committee (NEC)

The National Executive Committee (NEC) is composed of Secretary level officers of the Government of India in the Ministries of Home, Agriculture, Atomic Energy, Defence, Water Resources, Environment and Forests, Finance (Expenditure), Health, Power, Rural Development, Science and Technology, Space, Telecommunication and Urban Development, with the Home Secretary serving as the Chairperson, ex officio. The NEC under section of the Act 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”.

5.3.3 State Disaster Management Authority (SDMA)

All State Governments are mandated under Section 14 of the Act to establish a State Disaster Management Authority (SDMA) in their States. The SDMA consists of the Chief Minister of the State as the Chairperson, and not more than eight members appointed by the Chief Minister. State Executive Committee is responsible (Section 22) for drawing up the State Disaster Management Plan (SDMP), and implementing the National Plan. The SDMA is mandated under section 28 to ensure that all the departments of the State prepare disaster management plans as prescribed by the National and State Authorities.

5.3.4 District Disaster Management Authority (DDMA)

The Chairperson of District Disaster Management Authority (DDMA) is the Collector or District Magistrate or Deputy Commissioner of the district. The elected representative of the area is an ex officio co-Chairperson.

5.3.5 National Institute of Disaster Management (NIDM)

In 1995, the International Decade for Natural Disaster Reduction (IDNDR), with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction, prompted the Indian Institute of Public Administration (IIPA) under the Ministry of Agriculture and Cooperation, the then nodal ministry for disaster management in India to establish a National Centre for National Centre for Disaster management (NCDM). With the transfer of the subject of disaster management to the Ministry of Home Affairs on 16th October 2003, NCDM was later upgraded as the National Institute of Disaster management (NIDM). The Institute was inaugurated by the Home Minister of India on August 11, 2004.

The Disaster Management Act of 2005 granted statutory status to NIDM. The Act holds the institute responsible for “planning, promoting training and research in the area of disaster management, documentation and development of national level information base relating to disaster management, policy formulation, developing prevention mechanisms and promoting mitigation measures”.

The NIDM has been mandated by the Government of India (NDMA – as per DM Act 2005, guidelines for NIDM) to be a deemed University and institute of excellence of higher learning and capacity building. UGC has worked out with NIDM and developed a model curriculum for strengthening disaster management in higher education and research. Most Central Universities have envisaged Centre for Disaster Management under their School of Environmental Studies. A core group is being formed with UGC-NIDM to promote the subject at Academic Staff Colleges as well.

5.3.6 National Disaster Response Force (NDRF)

The National Disaster Response Force (NDRF) is a specialised force constituted “for the purpose of specialist response to a threatening disaster situation or disaster” under the Disaster Management Act, 2005: section 44–45. When ‘calamities of severe nature’ occur, the Central Government is responsible for providing aid and assistance to the affected state, including deployment of Armed Forces, the Central Paramilitary Forces, National Disaster Response Force (NDRF), at the State’s request, as well as communication, air and other assets, as are available and needed. National Disaster Response Force (NDRF) is under the National Disaster Management Authority (NDMA). The head of the NDRF is designated as Director General. The Director General of NDRF is IPS officer on deputation from Indian police organisations. Director General wears the uniform and badges of rank of an army three-star general. In the Kashmir-floods of September 2014, NDRF played a vital role in rescuing the armed forces and tourists, for which NDRF was awarded by the Government of India.

The NDRF is a top-heavy organisation which in addition to the Director General has several Inspector Generals (IG) and Deputy IGs. National Disaster Response Force (NDRF) is a force of 12 battalions, organised on para-military lines, and manned by persons on deputation from the Indian para-military forces: three Border Security Force (BSF), three Central Reserve Police Force (CRPF), two Central Industrial Security Force (CISF), two Indo-Tibetan Border Police (ITBP) and two *Sashastra Seema Bal* (SSB). The total strength of each battalion is approximately 1,149 persons. Each battalion is capable of providing 18 self-contained specialist search and rescue teams of 45 personnel each including engineers, technicians, electricians, dog squads and medical/paramedics (Eapen, 2016).

5.4 ROLE OF CENTRAL AND STATE GOVERNMENTS

5.4.1 Central Government

In accordance with the provisions of the Disaster Management Act, 2005, the Central Government will take all such measures, as it deems necessary or expedient, for the purpose of disaster management and will coordinate actions of all agencies. The Central Ministries and Departments will take into consideration the recommendations of the State Governments while deciding upon the various pre-disaster requirements and for deciding upon the measures for the prevention and mitigation of disasters. It will ensure that the Central Ministries and departments integrate measures for the prevention and mitigation of disasters into their developmental plans and projects, make appropriate allocation of funds for pre-disaster requirements and take necessary measures for preparedness and to effectively respond to any disaster situation or disaster. It will have the power to issue directions to NEC, State Governments/SDMAs, SECs or any of their officers or employees, to facilitate or assist in disaster management, and these bodies and officials will be bound to comply with such directions. The Central Government will extend cooperation and assistance to the State Governments as required by them or otherwise deemed appropriate by it. It will take measures for the deployment of the Armed Forces for disaster management if required. The role of the Armed Forces will be governed by the instructions laid out in Instructions on Aid to Civil Authorities 1970. The Central Government will also facilitate coordination with the UN agency for disaster

management. Ministry of External Affairs, in co-ordination with MHA, will facilitate external co-ordination and cooperation.

i) Role of Central Ministries and Departments

As disaster management is a multi-disciplinary process, all Central Ministries and departments will have a key role in the field of disaster management. The Secretaries of the Nodal Ministries and Departments of Government of India, that is, the Ministries 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 will continue to function as nodal agencies for specific disasters based on their core competencies or as assigned to them.

ii) National Crisis Management Committee (NCMC)

NCMC, comprising high level officials of the Government of India headed by the Cabinet Secretary, will continue to deal with major crises which have serious ramifications. It will be supported by the Crisis Management Groups (CMG) of the Central Nodal Ministries and assisted by NEC as may be necessary. The Secretary, NDMA, will be a permanent invitee to this Committee.

5.4.2 State Governments

The primary responsibility for disaster management rests with the States. The institutional mechanisms put in place at the Centre, State and District levels will help the States manage disasters in an effective manner. The Disaster Management Act, 2005, mandates the State Governments, inter alia, to take measures for preparation of state disaster management plans, integration of measures for prevention of disasters or mitigation into state development plans, allocation of funds, establishment of early warning systems and to assist the Central Government and other agencies in various aspects of disaster management.

5.4.3 District Administration

At the District level, DDMA will act as the planning, coordinating and implementing body for disaster management and will take all measures for the purposes of disaster management in the respective Districts in accordance with the Guidelines laid down by NDMA and the concerned SDMA.

5.4.4 Management of Disasters impacting more than one State

At times, the impact of disasters occurring in one State may spread over to the areas of neighbouring states. Similarly, preventive measures in respect of certain disasters, such as floods, etc., may be required to be taken in one State, though the impact of their occurrence may affect another. The administrative hierarchy of the country is organised into the National, State and District level administrations. This presents some difficulties in case of disasters impacting more than one state. Management of such situations call for a coordinated approach which can respond to a range of issues quite different from those that normally present themselves, before, during and after the event. NDMA will encourage identification of such situations and promote the establishment of mechanisms on the lines of Mutual Aid Agreements, for coordinated strategies, to be dealt by the States, Central Ministries and Departments and other agencies concerned (Eapen, 2016).

5.5 OTHER IMPORTANT INSTITUTIONAL ARRANGEMENTS

i) **Armed Forces**

Traditionally, the Armed Forces are called upon to assist the civil administration only when the situation is beyond their coping capacity. In practice, however, the Armed Forces are immediate responders in all serious disaster situations. As a result of their training, vast experience, risk taking mentality, swiftness and enormous resources at their disposal, the Armed Forces have historically played a major role in emergency support functions. These include emergency communications, search and rescue operations, health and medical facilities, transportation, airlift, helicopter lift, movement of relief material, emergency response to neighbouring countries, etc. The Armed Forces do give training to trainers, and disaster management managers, especially in Chemical Biological Radiological and Nuclear (CBRN) aspects, helicopter-insertion, high-altitude rescue, watermanship and training of paramedics. At the National level, the Chief of the Integrated Defence Staff to the Chairman, Chiefs of Staff Committee, is a member of the NEC.

ii) **Central Armed Police Forces (CAPFs)**

The CAPFs which are also the Armed Forces of the Union but under the Ministry of Home Affairs also play a key role in disaster response. The NDRF is a deputation force made out of CAPFs. Each CAPF pools personnel and officers from their share. Besides this, CAPFs over a period of time develop their own capabilities and respond to any disasters which may occur in their area of deployment. As the CAPFs are spread all over India, the resource potential and nationwide presence make their mobilisation much faster. Moreover, they are directly under Union Ministry of Home Affairs, the nodal ministry for disaster management.

iii) **State Police, Fire Services and Home Guards**

The State Police Forces, the Fire and Emergency Services and Home Guards are crucial and the immediate responders to any incident/disasters. The Police have only limited training in multi-hazard rescue operation. However, Fire Service is better off and adequately trained in emergency response. Home Guard volunteers also will be a force multiplier, if they can be trained in disaster preparedness, emergency response, community mobilisation, etc.

iv) **Civil Defence (CD) and Home Guards**

The Civil Defence (CD) and the Home Guards can be assigned the responsibility of community preparedness and public awareness in urban area. A culture of voluntarily reporting to duty stations in the event of any disaster, reactivating CD set up in every District can pay dividends in disaster response as the neighbouring community is always the first responder in any disaster. The proposal to make CD District centric and be involved in disaster response has already been approved by the Government of India. However, no visible efforts have been seen from State Governments to organise them properly.

v) **Local Elected Bodies**

The DM Act, 2005, has defined the roles of Notified Area Committees (NACs), Municipalities, Municipal Corporations, Municipal Councils and Panchayat Raj Institutions (PRIs) under section 41 (1) (2). These bodies are supposed to ensure

**Disaster Management:
Concepts and Institutional
Framework**

that their officials and employees are trained in disaster management and resources relating to disaster management. These bodies are also required to carry out relief activities in the affected areas in accordance with State and District disaster management Plans. The SDMAs/DDMAs are to assign the specific roles and responsibilities to local bodies in their Disaster Management Plan and suitably integrate them with Integrated Response System (IRS).

vi) Community Participation in Disaster Response

The community based organisations such as NGOs, Self-Help Groups (SHGs), Youth Organisations, Volunteers of National Cadet Corps (NCC), National Service Scheme (NSS), Nehru Yuva Kendra Sangathan (NYKS), and workers of different projects funded by Government of India like National Rural Health Mission (NRHM), Integrated Child Development Services (ICDS), etc., normally volunteer their services in the aftermath of any disaster. Potential of these youth based organisations can be optimised by giving them special training on disaster management.

vii) International Cooperation

Disasters are not limited by geographical boundaries. Major disasters may often simultaneously affect several countries. It should be the endeavour of each nation to develop close cooperation and coordination at the International level in disaster management. Here diplomacy plays a vital role (Eapen, 2016).

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Explain the salient features of Disaster Management Act, 2005.

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2) Discuss the role of SDMA and DDMA.

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3) Write a note on National Disaster Response Force (NDRF).

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5.6 DISASTER MANAGEMENT POLICY

5.6.1 National Policy on Disaster Management (NPDM), 2009

The National Policy Framework has been prepared after due deliberation and keeping in view the National Vision to build a safe and disaster-resilient India by developing a holistic, proactive, multi-disaster and technology-driven strategy for disaster management. It was understood that this could be achieved through a culture of prevention, mitigation and preparedness to put in place a prompt and efficient response during disasters. The entire process centre-staged the community and provide momentum and sustenance through the collective efforts of all government agencies and Non-Governmental Organisations (NGOs).

In order to translate this vision into policy and plans, the NDMA has adopted a mission-mode approach involving a number of initiatives with the help of various institutions operating at the national, state and local levels. Central ministries, States and other stakeholders have been involved in the participatory and consultative process of evolving policies and guidelines.

This Policy aims at:

- Promoting a culture of prevention, preparedness and resilience at all levels through knowledge, innovation and education;
- Encouraging mitigation measures based on technology, traditional wisdom and environmental sustainability;
- Mainstreaming disaster management into the developmental planning process;
- Establishing institutional and technological frameworks to create an enabling regulatory environment and a compliance regime;
- Ensuring efficient mechanism for identification, assessment and monitoring of disaster risks;
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communication with information technology support;
- Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society;
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat for ensuring safer living; and
- Promoting a productive and proactive partnership with the media for disaster management.

5.6.2 National Disaster Management Plan (NDMP), 2016

The Prime Minister of India released the National Disaster Management Plan (NDMP), as a first ever national plan prepared in the country.

Salient Features

The NDMP incorporates substantively the approach mentioned in the Sendai Framework. The plan covers all phases of disaster management: prevention, mitigation, response and recovery. It provides for horizontal and vertical integration among all the agencies and departments of the government. The aim of the plan is to make India disaster resilient. It is designed to maximise the ability of the country

**Disaster Management:
Concepts and Institutional
Framework**

to cope with disasters at all levels by integrating disaster risk reduction into development and by increasing the preparedness to respond to all kinds of disasters.

The plan also takes into account the Global trends in disaster management. It incorporates the approaches for disaster risk reduction mentioned in the Sendai Framework (2015- 2030), which is an agreement under the United Nations to which India is a signatory.

- The plan has assigned roles and responsibilities at all levels of Government, right up to *Panchayat* and Urban Local body level in a matrix format.
- As the plan follows the regional approach, it is beneficial not only for disaster management, but also for development planning.
- It also identifies major activities such as early warning, information dissemination, medical care, fuel, transportation, search and rescue, evacuation, etc., to serve as a checklist for agencies responding to a disaster.
- The plan emphasises on preparing communities to cope with disasters, so it stresses on a greater need for Information, Education, and Communication activities.

National Disaster Management Plan (NDMP) is also based on the four priority themes of the Sendai Framework, namely: understanding disaster risk, improving disaster risk governance, investing in disaster risk reduction (through structural and non-structural measures) and disaster preparedness, early warning and building back better in the aftermath of a disaster. NDMP covers all phases of disaster management: prevention, mitigation, response and recovery. It also identifies major activities such as early warning, information dissemination, medical care, fuel, transportation, search and rescue, evacuation, etc., to serve as a checklist for agencies responding to a disaster. It also provides a generalised framework for recovery and offers flexibility to assess a situation and build back better. To prepare communities to cope with disasters, NDMP emphasises on a greater need for Information, Education and Communication activities.

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Write down the key points of National Policy on Disaster Management.

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2) Bring out the features of National Disaster Management Plan, 2016.

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5.7 CONCLUSION

There had been great loss of lives and property after major disasters like the Super Cyclone in 1999 and the Earthquake in 2001. As a result of the large scale devastation, there were measures initiated in India towards making institutional arrangement for disaster management. Major initiatives such as the Disaster Management Act, Disaster Management Policy and agencies for disaster management at the Central, State and District levels have been discussed at length in this Unit.

5.8 GLOSSARY

- Disaster Management Act, 2005** : The Disaster Management Act, 2005, (23 December 2005) received the assent of The President of India on 9 January 2006. The Act extends to the whole of India. The Act provides for “the effective management of disasters and for matters connected therewith or incidental thereto”.
- National Disaster Management Authority (NDMA)** : The NDMA is responsible for “laying down the policies, plans and guidelines for disaster management” and to ensure “timely and effective response to disaster”. It is responsible for laying “down guidelines to be followed by the State Authorities in drawing up the State Plans”.
- National Disaster Response Force (NDRF)** : The National Disaster Response Force (NDRF) is a specialised force constituted “for the purpose of specialist response to a threatening disaster situation or disaster” under the Disaster Management Act, 2005: section 44–45. When ‘calamities of severe nature’ occur, the Central Government is responsible for providing aid and assistance to the affected state, including deploying, at the State’s request, of Armed Forces, Central Paramilitary Forces, National Disaster Response Force (NDRF), and such communication, air and other assets, as are available and needed. National Disaster Response Force (NDRF) is under the National Disaster Management Authority.
- National Institute of Disaster Management (NIDM)** : The NIDM has been mandated by the Government of India (NDMA – as per DM Act 2005, guidelines for NIDM) to be a deemed University and institute of excellence of higher learning and capacity building. UGC has worked out with NIDM and developed a model curriculum for strengthening disaster management in higher education and research.

5.9 REFERENCES

Eapen, A. (2016). *Role of Indo-Tibetan Border Police in disaster response in hill area border villages: An analytical study*. Unpublished Thesis. New Delhi: IGNOU.

Government of India. (2005). Disaster Management Act, 2005. New Delhi: National Disaster Management Authority.

Government of India. (2016). *National Disaster Management Plan*. New Delhi: National Disaster Management Authority.

United Nations General Assembly Session 54 *Resolution 219*. (2000). Retrieved from <https://unisdr.org/files/resolutions/N0027175.pdf>

National Institute of Disaster Management. Retrieved from <http://www.nidm.gov.in/>

National Disaster Management Authority. Retrieved from <https://ndma.gov.in/en/>

National Disaster Response Force. Retrieved from <http://www.ndrf.gov.in>

5.10 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should include the following points:
 - Disaster Management Act was enacted in 2005.
 - Institutional frameworks such as NDMA, NEC, NDRF, SDMA and DDMA
- 2) Your answer should include the following points:
 - State Disaster Management Authority
 - District Disaster Management Authority
- 3) Your answer should include the following points:
 - NDRF is a specialised force constituted for the purpose of specialist response to a threatening disaster situation or disaster.
 - It consists of forces from Border Security Force, Central Reserve Police Force, Central Industrial Security Force, Indo-Tibetan Border Police and *Sashastra Seema Bal*.

Check Your Progress 2

- 1) Your answer should include the following points:
 - Evolution and aims of the National Policy on Disaster Management, 2009.
- 2) Your answer should include the following points:
 - NDMP covers all phases of disaster management: prevention, mitigation, response and recovery.
 - It points out the roles and responsibilities of all levels of Government right up to Panchayat and Urban Local Body level in a matrix format.
 - It will help to maximise the ability of the country to cope with disasters at all levels by integrating disaster risk reduction into development and by increasing the preparedness to respond to all kinds of disasters.

UNIT 6 DISASTER MANAGEMENT CYCLE WITH FOCUS ON PREPAREDNESS, PREVENTION AND MITIGATION*

Structure

- 6.0 Objectives
- 6.1 Introduction
- 6.2 International and National Approach towards Disasters
- 6.3 Disaster Management Cycle
- 6.4 Disaster Prevention
- 6.5 Disaster Preparedness
 - 6.5.1 Key Components of Disaster Preparedness Framework
 - 6.5.2 Types of Preparedness
- 6.6 Disaster Mitigation
- 6.7 Conclusion
- 6.8 Glossary
- 6.9 References
- 6.10 Answers to Check Your Progress Exercises

6.0 OBJECTIVES

After reading this Unit, you should be able to:

- Understand the disaster management cycle and its stages;
- Examine the concept and principles of disaster prevention;
- Elaborate the disaster preparedness measures and its types; and
- Explain the concept of disaster mitigation and discuss its approaches.

6.1 INTRODUCTION

Disaster management measures in earlier times were oriented mostly to the relief measures, wherein items of relief are distributed to the victims after the disaster. However, there was a realisation in later times on disaster management and it was felt that rather than serving the needs of the victims after a disaster happens, it is better to engage in prevention and mitigation measures which can contribute towards not only preventing huge loss of life and property, but also contribute towards preventing huge burden on the exchequer.

Both at the international and national level, the approach towards disaster management has changed and the focus is on concentrating on the disaster management cycle and promoting the culture of disaster risk prevention and mitigation. In this Unit,

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you will be introduced to the Disaster Management Cycle, which encompasses various stages viz. pre-disaster, during-disaster and post-disaster. Rather than focusing on the post-disaster measures, emphasis has been made on the pre and during-disaster measures which cover aspects such as prevention, preparedness and mitigation.

6.2 INTERNATIONAL AND NATIONAL APPROACH TOWARDS DISASTER

As stated earlier, the initial measures of disaster management only meant distribution of relief to the victims. It was only after the Yokohama Strategy for Disaster Reduction in 1994 that the approach at the international level took a shift from relief to mitigation and prevention. The Yokohama Strategy states that “disaster prevention, mitigation and preparedness are better than disaster relief as the latter only leads to temporary results with high costs, while the former contributes to lasting improvement in safety thereby focusing on integrated disaster management” (UNISDR, 1994). The same point has been reiterated by UNICEF (2016), which states that, on an average “every \$1 spent on preparing is worth more than \$2 in the emergency response, and that preparedness saves responders over a week of operational time – doubling the impact of donors’ and taxpayers’ contributions”.

In the Indian context too, the approach towards prevention and mitigation can be found in the Disaster Management Act of 2005. The Act states that the National Plan shall include:

- i) measures to be taken for prevention of disasters or the mitigation of their effects;
- ii) measures to be taken for the integration of mitigation measures in the development plans;
- iii) measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster situations or disaster; and
- iv) roles and responsibilities of different Ministries or Departments of the Government of India in respect of measures on the three aspects mentioned above (Government of India, 2016).

Thus, the shift in approach can be observed both at the international as well as national level and the core objective of India towards disaster management is to promote the culture of disaster risk prevention and mitigation at central, state and local levels.

6.3 DISASTER MANAGEMENT CYCLE

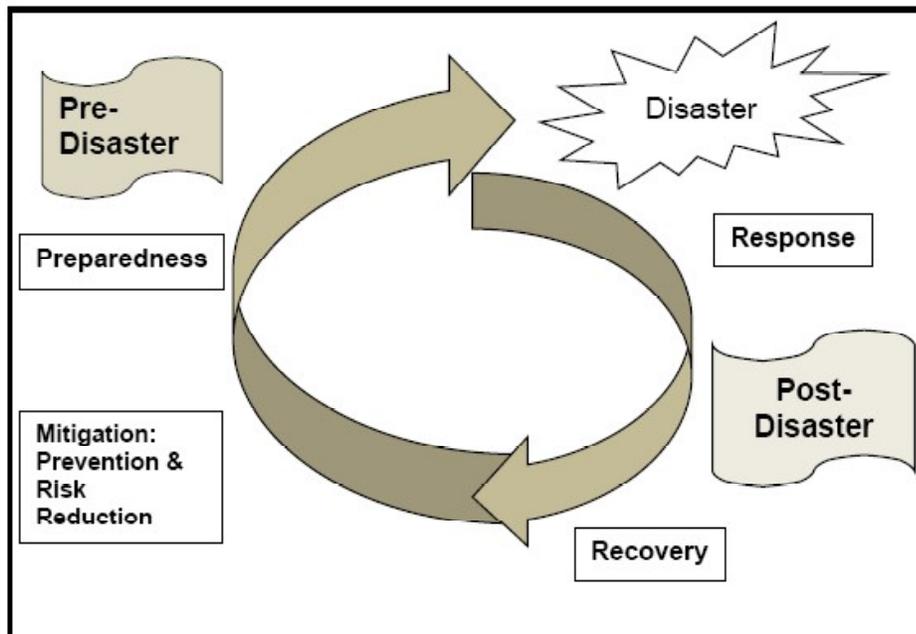
Disaster Management is not a single entity. It involves so many actions and actors as a disaster is not confined to any particular area/ location. It can happen anywhere and at any time, which is so sudden and it makes enormous damage to the lives of the people and the infrastructure. In managing disaster situation, emphasis has been made on the Disaster Management Cycle, which is a new approach to look into disasters in a holistic way. The Disaster Management Cycle thus:

- integrates various isolated activities, attempts and different actors;
- shows new path in handling disasters, which makes a shift from relief-oriented approach to proactive approach.

As per Disaster Management Act, 2005, “Disaster Management” means a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for – (i) prevention of danger or threat of any disaster; (ii) mitigation or reduction of risk any disaster or its severity or consequences; (iii) capacity building; (iv) preparedness to deal with any disaster; (v) prompt response to any threatening disaster situation or disaster; (vi) assessing the severity or magnitude of effects of any disaster; (vii) evacuation, rescue and relief; and (viii) rehabilitation and reconstruction. All these components mentioned in the Act are not an isolated or single activity and should be holistic, integrated and interconnected. Hence these components should be inbuilt into the development programmes for effective disaster management. Such effective disaster management is based upon the partnership among the Central, State and Local levels to ensure the protection of the people through measures of proper preparedness, mitigation, response, relief, recovery and rehabilitation.

Stages of Disaster Management Cycle

The Disaster Management Cycle can be divided into three stages, that is, Pre-disaster, During-disaster and Post-disaster.



Source: Government of India, 2016.

Pre-disaster: Preparedness, Prevention and Mitigation are the major activities in pre-disaster stage. It is based upon the principle that prevention is better than cure. In this stage, various preventive measures and activities are undertaken well in advance so as to respond to disasters in an effective way. Much of the disastrous effects could be avoided, if we are well equipped with preparedness, prevention and mitigation measures and give serious attention to the early warnings. Pre-disaster activities should, thus, concentrate on creating disaster resilient structures and communities. For example, in India, cyclones are a common phenomenon that occurs and warnings are generally given beforehand. If preparatory activities can be undertaken well in advance, then it becomes easy to prevent huge losses in terms of lives and property, in the aftermath phase.

During-disaster: Response and Relief are the important activities in the during-disaster stage. It will start in the aftermath of a disaster. It includes immediate

**Disaster Management:
Concepts and Institutional
Framework**

activities like search, rescue and evacuation, identification of and management of dead bodies and debris management, provision of first-aid, food, water, shelter, safety and security, health care and sanitation, restoration of basic facilities, etc. For example, when the Indian Ocean Tsunami struck in 2004, one can reflect that all these measures were undertaken immediately.

Post-disaster: The major activities in the post-disaster phase include: Rehabilitation, Reconstruction and Recovery. These activities will ensure that the disaster affected community becomes resilient and return back to normalcy. Generally, this phase takes a long time, as the efforts are made to restore all essential facilities to pre-disaster status. The major focus of this phase is on the measures that could pave way for long-term recovery of social, economic and physical structures, as well as processes in such a way that future disasters are unable to impact severely and irreversibly.

As discussed earlier, the activities undertaken in all the three phases are not an isolated one and hence proper preparedness and mitigation measures are essential for an effective response and recovery of the society. Further insights on the different stages of a disaster have been made here to provide better understanding (IGNOU-NDMA, 2012):

Prevention	Prevention activities aim at totally avoiding the adverse impact of hazards and providing means to minimise environmental, technological and biological disasters. Depending on social and technical feasibility and cost-benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters.
Mitigation	Mitigation means any action taken to minimise the extent of a disaster or potential disaster. Mitigation can take place before, during or after a disaster, but the term is most often used proactively to refer to actions against potential disasters. Mitigation measures are physical and both structural and non-structural. Structural measures are measures that can be easily seen or perceived such as strengthening of buildings, disaster-resistant construction, and erection of infrastructure. The non-structural measures are intangible in nature. These cannot be easily quantified, but are very important such as generation of awareness, education and training, adherence to the rules and byelaws.
Preparedness	Preparedness entails activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings, preparation of emergency plans, maintenance of inventories, at-risk planning and temporary evacuation of people and property from threatened locations. It involves measures that enable governments, community and individuals to respond rapidly to disaster situations and effectively cope with them. The following are the important components of disaster preparedness, that is, evacuation plans, incident response

	set-up, logistics management, standardisation of relief procedures, land-use planning, disaster insurance, awareness on vulnerability of women, elderly, children and disadvantaged sections of society, pertinence of disaster task force, role of traditional wisdom and community based disaster management.
Response/Relief	Relief can be of an immediate, short-term, or protracted duration. For example, search and rescue of the affected people and provision of food, temporary shelter and medical care to the persons affected by the disaster are some common areas of intervention after a disaster. Relief involves strategies and ways that can help to reduce the level of suffering and mitigate the distress, so as to bring out the affected people from the shock and trauma of suddenly losing their means of livelihood. Further, the main objective of relief is to assist the affected persons to start their normal activities again. The following are important components of disaster response, that is, role of search and rescue, health assessment, epidemiological survey, standard operation procedures, emergency operations centre, emergency health care, geographical information system and remote sensing, community radio and internet, communication and alarm systems and evacuation plans (See Unit 7 for more information).
Rehabilitation	Rehabilitation process includes all operations and decisions taken after a disaster with a view to restoring an affected community to its former living conditions, by encouraging and facilitating the necessary adjustments to the changes caused by the disaster (See Unit 9 for more information).
Reconstruction	Process of Reconstruction includes the actions taken to re-establish a community, following rehabilitation after a disaster. These actions generally include construction of permanent housing, complete restoration of all services and physical infrastructure to the pre disaster state (See Unit 9 for more information).
Recovery	Recovery refers to decisions and actions related to rehabilitation and reconstruction taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the affected community. At the same time, it also focuses on encouraging and facilitating necessary adjustments to reduce disaster risk. Recovery activities make use of disaster risk reduction measures to improve the situation in affected areas. The aim is to also develop the areas in a way that vulnerability and risk to disasters are minimised. All development programmes in the area need to be mainstreamed with recovery programmes in order to treat disasters as development opportunities (See Unit 9 for more information).

Source: Adapted from IGNOU-NDMA, 2012.

6.4 DISASTER PREVENTION

As we know, disasters are inevitable and unavoidable. But appropriate preventive measures will help in reducing the impact of a disaster. The High Powered Committee (HPC) Report on Disaster Management (2001) considers “development of a culture of prevention as an essential component of an integrated approach to disaster reduction”. The Committee also pointed out that the ‘culture of prevention’ should be developed among the people, government and other community based organisations. In recent times, the system of disaster management has undergone a major change and importance has been given to disaster prevention too. The National Policy on Disaster Management (2009) considers it essential to put in place “appropriate institutional framework, management systems, and allocation of resources for efficient prevention and handling of disasters”. Developing early warning systems and developmental planning are the key measures towards disaster prevention. For achieving long-term development or sustainable development, the country should include the disaster preventive components in the policies, plans and the projects. Ideally, these preventive measures will be helpful during the stages of preparedness, response, recovery and rehabilitation. Following are some of the measures towards disaster prevention:

6.4.1 Measures towards Disaster Prevention

HPC has listed the following measures towards disaster prevention.

- Risk assessment is a required step for the adoption of adequate and successful disaster reduction policies.
- Disaster prevention should focus on reducing the need for disaster relief.
- Disaster prevention should be an integral part of the developmental policy and planning at national, regional, bilateral, multilateral and international stage.
- Early warning of impending disasters and their effective dissemination using telecommunication are the key factors to successful prevention.
- Preventive measures should involve participation at all levels, from the local community to national level to the regional and international level, to ensure effectiveness.
- Application of proper design and patterns of development focused on target groups through appropriate education and training is essential for the reduction of vulnerability.
- There should be acceptance on the part of the international community to share necessary technology to prevent disasters, which should be made freely available and done in a timely manner as an integral part of technical cooperation.
- 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 adequate resources and make efficient use of existing resources, including financial, scientific and technological means (HPC, 2001).

Thus, the focus of preventive measures is to give thrust to vulnerability reduction and risk reduction. Proper preventive measures can reduce the need of the disaster relief and response. Though disasters cannot be completely prevented, paying

need to early warning systems and communication strategies can help in reducing the impact of the disasters. The preventive measures cannot be implemented without the coordination of the community and the government. The following Table (adapted from Coppola, 2015) shows the difference between response and recovery based efforts and prevention and risk reduction based efforts.

Response and Recovery-based Efforts	Prevention and Risk-reduction based Efforts
Primary focus on disaster events	Focus on vulnerability and risk areas
Single, event based scenarios	Dynamic, multiple risk issues and development scenarios
Basic responsibility to respond to an event	Fundamental need to assess, monitor and update exposure to changing conditions
Often fixed, location-specific conditions	Extended, changing, shared or regional, local variations
Responsibility in single authority or agency	Involves multiple authorities, interests, actors
Command and control, directed operations	Situation-specific functions, free and open association and participation
Established hierarchical relationships	Shifting, fluid, and tangential relationships
Often focused on hardware and equipment	Dependent on related practices, abilities, and knowledge base
Dependent on specialised expertise	Focused on aligning specialised expertise and public views and priorities
Urgent, immediate, and short time frames in outlook, planning, attention and returns	Moderate and long time-frames in outlook, planning, values and returns
Rapidly changing, dynamic information usage, which is often conflicting or sensitive in nature	Accumulated, historical, layered, updated or comparative use of information
Primary, authorised, or singular information sources, need for definitive facts	Open or public information, multiple, diverse, or changing sources, differing perspectives and points of view
In-out or vertical flows of information	Dispersed, lateral flows of information
Related to matters of public security, safety	Matters of public interest, investment and money

Source: Terry, 2001.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Discuss Disaster Management Cycle and its stages.

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2) Explain Disaster Prevention.

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3) Bring out the difference between response and recovery based efforts, as well as prevention and risk reduction based efforts.

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6.5 DISASTER PREPAREDNESS

Disaster preparedness is defined as “actions taken in advance of a disaster to ensure adequate response to its impacts, and the relief and recovery from its consequences – is performed to eliminate the need for any last-minute actions” (Coppola, 2015). United Nations’ International Strategy for Disaster Reduction (UNISDR) has referred to preparedness as “the knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions”. Disaster preparedness, as per IFRC (2005), is a “continuous and integrated process involving a wide range of activities and resources from multi-sectoral sources”. The United Nations Disaster Relief Office (UNDRO, 1982) defines disaster preparedness as “measures designed to organise and facilitate timely and effective rescue, relief, rehabilitation operations in case of disaster. Measures of preparedness include among others, setting up of 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”. Thus, preparedness includes formulation of emergency plans, development of warning system, and training of personnel to handle the emergency. It also includes planning of evacuation measures and preparation for rescue measures. Preparedness helps in minimising loss of life, disruption of critical services and damages on the occurrence of a disaster (Kanal, 2013).

Disaster preparedness is not an easy task and is a complex process. No one knows about the aftermath of the disasters. It needs prior planning, proper institutional settings and coordination among various stakeholders. In this process of preparedness, the role of community is very important. Preparedness has to be the core requirement for communities, if they have to survive the aftermath of different catastrophes. There is an urgent need to build the capacity and capability of the local communities by empowering them with coping capacities and increasing their self-confidence

through recognition and increasing their knowledge, practices and values so that this falls in line with the developmental activities. The role of community participation in disaster preparedness is discussed at length in Unit 13.

6.5.1 Key Components of Disaster Preparedness Framework

Disaster preparedness framework has to encompass various measures. Following are some of the key components of disaster preparedness:

- Strengthening of policy, technical and institutional capacities in regional, national and local disaster management, including those related to technology, training, as well as human and material resources.
- Promoting and supporting dialogue, exchange of information and coordination, with the aim of fostering a holistic approach towards disaster risk reduction.
- Strengthening and developing coordinated regional approaches, to prepare or review and periodically update disaster preparedness plans and policies at all levels, with a particular focus on the most vulnerable areas and groups.
- Promoting the establishment of emergency funds, wherever needed, to support preparedness measures.
- Developing specific mechanisms to engage the active participation and ownership of relevant stakeholders including the communities, with the spirit of volunteerism.

6.5.2 Types of Preparedness

The preparedness activities can be divided into three types, namely 1) Target-oriented Preparedness; 2) Task-oriented Preparedness; and 3) Disaster-oriented Preparedness, which are discussed as follows:

6.5.2.1 Target-oriented Preparedness

Preparedness plans are target specific and for instance, the focus is laid on making different types of planning for the vulnerable groups viz., women, children, elderly and disabled. It also focuses on animals. Livestock would need a specific preparedness plan. Apart from that there could be health preparedness plans, risk reduction preparedness plans and awareness generation plans, some of which have been discussed in the succeeding text.

- **Livestock Preparedness Plan** – this may include preparatory work on database that provides information with regard to hazards, community profile, livestock profile and animals at risk; Assessment of resources including veterinary personnel, drugs and equipment, mobile veterinary units, veterinary hospitals; and General awareness amongst the community, and volunteers about the livestock management aspects including their recovery, rehabilitation, and control of diseases.
- **Composite, Long-term Disaster Health Preparedness Plan** – a composite plan for mitigation of medical and health related problems arising out of any natural disaster should include community profile, Plan of Action, Resource Planning, Training Plan, Allied Planning, Periodical Practice, Evaluation of Plan and its consequent modification; collaboration and coordination with allied agencies and neighbourhood areas.

- **Community Based Disaster Management (CBDM) Plan** – The preparatory work for CBDM plans to safeguard lives, livelihood and property and in this context, involvement of community or people is integral to disaster preparedness. It contains Risk Assessment Vulnerability Analysis; Resource Analysis and Mobilisation; Warning System and its dissemination; Community Response Mechanisms; Construction and Maintenance of Shelters; Mock Drills; Strengthening of Community Self-help capacities; Formation of Disaster Management committees and teams; Making of Seasonal Calendars; and Creating Hazard, Vulnerability, Risk and Capacity Analysis, etc.
- **Coordination Plan** – It is pertinent that coordination between all the institutions/agencies (Governmental and Non-Governmental) takes place systematically. Even though, coordination has to be established between the central, state and local levels, the majority of disaster information for the purpose of coordination is processed at the state level, depending on the intensity and scale of disaster event.

6.5.2.2 Task-oriented Preparedness

Task-oriented preparedness planning, focuses on carving out various tasks, which include the following:

- Mapping
- Planning
- Forming Disaster Task Forces
- Training of members of Task Force and other Volunteers
- Creating Structures for Coordination
- Promoting Awareness Campaigns
- Operationalising Disaster Management
- Recruiting Personnel for Relief and Distribution Tasks

6.5.2.3 Disaster-oriented Preparedness

Sometimes the disaster preparedness is oriented towards the particular type of disaster, for which the planning can be both structural and non-structural:

- **Structural Preparedness Measures** are proactive and reactive measures. These are used to arrest the adverse impact of disasters. These measures would vary from disaster to disaster.
- **Non-structural Preparedness Measures** include: Administrative and Regulatory Legislation; Insurance Schemes; Information, Education and Training; Community Participation, Community Action Groups; Responding to Warning Systems; Institution Building; Provision of Incentives; and Creations of Public Awareness (IGNOU-NDMA, 2012).

6.6 DISASTER MITIGATION

Disaster mitigation involves measures to reduce the effects of disaster causing phenomena. It includes all actions to reduce the impact of a disaster that can be taken prior to its occurrence including preparedness and long-term risk reduction measures. According to Coppola (2015), “The components of disaster management cycle, that is, preparedness, response and recovery are performed either in reaction

to hazards or in anticipation of their consequences and mitigation measures seek to reduce the likelihood or consequences of hazard risk before a disaster ever occurs”. The DM Act, 2005, defines Mitigation as “measures aimed at reducing the risk, impact, or effects of a disaster or threatening disaster situation”. Like preparedness and preventive measures, mitigation measures are also essential to deal with disaster. Thus, a sustainable development model towards disaster management has to focus on mitigation too.

6.6.1 Disaster Mitigation Approaches

The disaster mitigation can be divided into two approaches viz., Structural Approach and Non-structural Approach .

6.6.1.1 Structural Approach

Structural approach is divided into engineered structures and non-engineered structures. Engineered structure is about the structure that is constructed by architects and engineers. This approach involves various activities like planning and designing of bridges, dams, buildings, roads, etc. The building codes are available to construct various structures in disaster prone areas. Though engineered structures are expensive it helps in disaster resistance. On the other hand, non-engineered structure is something which is constructed by local people with the available local knowledge and skills. Mostly it is constructed by locally available masons, carpenters, etc. The materials which are used for this are mostly from locally available raw material. The cost of the construction is less expensive; however, it is not disaster resistant. The structural approach is also called as a “man-controlling nature”.

6.6.1.2 Non-structural Approach

Non-structural approach of the disaster mitigation is human behaviour oriented, which does not focus on the engineered structures. It is called as a “man adapts nature”. The following are the key components of Non-structural approach of mitigation, that is, Legislation, Insurance, Information, education and training, Community participation, Community action groups, Responding to warning systems, Institution building, Incentives and Public awareness.

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Explain Disaster Preparedness and its key components.

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2) Discuss the various types of Disaster Preparedness.

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3) Examine Disaster Mitigation Approaches.

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6.7 CONCLUSION

Day by day, disasters are leading to huge economic losses and developmental setbacks to the country. Incorporating proper preventive, preparedness and mitigation strategies in the development planning will reduce the impact of the disaster, discussed in this Unit. Towards effective disaster management, it is pertinent that various measures as pointed in disaster management cycle in all three phases of disaster are incorporated at the international and national level to ensure effective disaster management.

6.8 GLOSSARY

- Disaster Management Act, 2005** : The Disaster Management Act, 2005 was enacted from 23rd December 2005. This Act provides for the effective management of disasters and for matters connected there with or incidental thereto.
- National Policy on Disaster Management, 2009** : National Policy on Disaster Management (NPDM) was approved by the then Union Cabinet on 22nd October, 2009 with the vision “To built a safe and disaster resilient India by developing a holistic, proactive, multi-disaster oriented and technology driven strategy through a culture of prevention, mitigation, preparedness and response.

6.9 REFERENCES

Coppola, D.A. (2015). *Introduction to International Disaster Management*. Burlington, USA: Butterworth-Heinemann.

IGNOU-NDMA. (2012). *Conceptual and Institutional framework of Disaster Management*. New Delhi.

Government of India. (2005). *Disaster Management Act, 2005*. New Delhi: National Disaster Management Authority.

Government of India. (2016). *National Disaster Management Plan*. New Delhi: National Disaster Management Authority.

High Powered Committee (HPC). (2011). The Report of High Powered Committee on Disaster Management. Government of India. New Delhi.

International Federation of Red Cross and Red Crescent Societies. (2005). World disaster report, 2005. Retrieved from <http://www.ifrc.org/Global/Publications/disasters/WDR/69001-WDR2005-english-LR.pdf>

IGNOU-NDMA. (2012). *Conceptual and Institutional framework of Disaster Management*. New Delhi.

Kanal, S. (2013). *Disaster Management in Tamil Nadu: A Case Study of Nagappatinam District*. Unpublished thesis. New Delhi: Indira Gandhi National Open University.

National Disaster Management Authority. (2009). *National Policy on Disaster Management, 2009*. New Delhi: Ministry of Home Affairs.

Sahni, P., Dhameja, A. & Medury, U. (Eds.). (2001). *Disaster Mitigation: Experiences and Reflections*. New Delhi: Prentice Hall of India.

Terry, J. (2001). The evolution of disaster reduction as an international strategy: Policy implications for the future. In Rosenthal, U., Boin, R.A., and Comfort, L.K (eds). *Managing crises: Threats, Dilemmas, Opportunities*. Springfield: Charles C.Thomas.

UNDRO. (1982). *Natural Disasters and Vulnerability Analysis*. Geneva: Office of United Nations Disaster Relief Coordinator.

UNISDR. (1994). *Yokohoma strategy and plan of action for a safer world: Guidelines for natural disaster prevention, preparedness and mitigation*. Retrieved from http://www.unisdr.org/files/8241_doc6841contenido1.pdf

UNICEF. (2016). *Preparedness for emergency response in UNICEF: Guidance note*. Retrieved from https://www.unicef.org/emergencies/files/UNICEF_Preparedness_Guidance_Note_29_Dec_2016_.pdf

6.10 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should include the following points:
 - Disaster Management Cycle integrates various isolated activities, attempts and different actors.
 - Pre-disaster, During-disaster and Post-disaster.
- 2) Your answer should include the following points:
 - Prevention activities aim at totally avoiding the adverse impact of hazards and providing means to minimise environmental, technological and biological disasters.
 - Measures towards Disaster Prevention.
- 3) Your answer should include the following points:
 - Response and Recovery-based Efforts.
 - Prevention and Risk-reduction based Efforts.

Check Your Progress 2

- 1) Your answer should include the following points:
 - Preparedness includes formulation of emergency plans, development of warning system, and training of personnel to handle the emergency.
 - Key Components.
- 2) Your answer should include the following points:
 - Target-oriented Preparedness.
 - Task-oriented Preparedness.
- 3) Your answer should include the following points:
 - Structural Approach.
 - Non-structural Approach.



UNIT 7 DISASTER RELIEF AND RESPONSE*

Structure

- 7.0 Objectives
- 7.1 Introduction
- 7.2 Disaster Relief Measures and Methodologies
- 7.3 Response Mechanism
- 7.4 Conclusion
- 7.5 Glossary
- 7.6 References
- 7.7 Answers to Check Your Progress Exercises

7.0 OBJECTIVES

After reading this Unit, you should be able to:

- Understand the concepts of disaster relief and response;
- Examine disaster relief measures and methodologies;
- Assess response mechanism; and
- Understand the role of Government and Non-government bodies involved in the process of disaster response and relief.

7.1 INTRODUCTION

A disaster is an event that occurs, in most cases, suddenly and unexpectedly, causing severe disturbance to people and objects of environment, resulting in loss of life, property and health of the population. Such a situation causes disruption in the normal pattern of life, generating misfortune, helplessness and suffering and affecting the socio-economic structure of a region or country or continent to such an extent that there is a need for assistance or immediate external intervention from within the country or outside.

Disasters threaten sustainability of economy worldwide. In the past twenty years, earthquakes, landslides, floods, tropical storms, tsunamis and other calamities have killed around three million people, inflicted injury, disease, homelessness and misery on about one billion others, and caused damage worth billions of rupees. Developing countries, especially the most densely populated regions suffer the brunt of natural disasters. Between 1990 and 2015, more than 97 per cent of all natural disaster related deaths were in developing countries. The world's worst natural disasters have claimed many lives and have caused damage to property in millions. Poverty and unsystematic development amplify the adverse effects of natural disasters. Developing countries are particularly vulnerable because they have limited capacity of preventing and absorbing these effects.

* Contributed by Dr. Kamla Bora, Assistant Professor, Govt. P.G. College, Rudrapur, Uttarakhand.

Disasters destroy decades of human effort and investment, thereby forcing demand on society for reconstruction and rehabilitation. However, the impact of disasters in terms of loss of life and property, and damage to the environment can be minimised by appropriate mitigation and preparedness plans, commensurate with level of resources and technologies available. India is one of the most disaster prone countries in the world. A major disaster occurs in India almost in every 2-3 years and 50 million people are affected annually from these disasters. On an annual basis, around 1 million houses are damaged along with human, social, economic and other losses.

In the aftermath of a disaster, the immediate need is that of relief to be provided to the victims. This falls within broad parameters of response that gets into being after the disaster has caused enormous devastation. The response is ensured so that at the immediate instance some relief is made possible.

Relief work is about the bottom line of ensuring basic minimal necessities that relief must secure. Basic relief attempts to secure survival by ensuring that people have access to four things:

- Sufficient drinking water and sanitation
- Sufficient food
- Basic medical care; and
- Shelter from extreme weather conditions.

7.2 DISASTER RELIEF MEASURES AND METHODOLOGIES

Disaster relief is a systematic effort carried out through a number of actions. These are discussed here under.

Evacuation

In the event of the impending disaster the first step towards relief to be provided in the area concerned is through evacuation. It is carried out for the purpose of ensuring safety of people. Thus, it involves shifting of population from the risk areas of the concerned disaster to safer place, which could be a cyclone shelter, a concrete building, and higher altitude for a temporary shelter.

Evacuation is of different types namely:

- Preventive (done much before the disaster actually strikes);
- Protective (done as a precautionary measure to guard against spread of diseases or an impending disaster);
- Rescue-oriented (focusing on rescue operation whereby in the aftermath of disaster the inhabitants are to be moved to identified places in safe areas).

For evacuation to be effective, there is requirement of timely and accurate warning, clearly identified escape routes, arrangement for transportation, cooperation of the people of affected area and coordination amongst various stakeholders involved in the process. Evacuation could be of great relevance, if carried out effectively. It gets proved by the example of cyclone Phailin wherein large scale evacuation was carried out leading to a minimum death toll, though the region suffered damage,

worth million of dollars and affected the livelihood of 13 million in October, 2013 (World Bank, 2013).

Past experiences and lessons learnt from the past also play a substantive role in making evacuation a success. It gets proved from the view expressed by an official in Odisha, “zero causality became the war cry of the state government. We took cyclone 1999 as a benchmark to develop policies to reduce risk, and the reference to 1999 was used to persuade people to evacuate. We knew from 1999 that one of the main reasons the cyclone killed so many people was that few people evacuated. (Interview with high-level official in charge of district of Ganjam, Bhubaneswar, November 2014)” (Walch, 2018). Evacuation process comprises number of steps each leading to required action as shown in the Table 7.1 below:

Table 7.1: Steps in Evacuation Process

STEP	ACTION
Determine the need	Determine whether there is need for total or partial evacuation.
Identify a relocation area	Select an area that is free of hazards and easily accessible.
Communicate	Communicate to everyone involved about the need to evacuate and update them on the locations of shelters.
Pre-designate routes	Designate routes from the area to be evacuated to be the area of location. Consider alternatives.
Verify routes periodically	Make sure that the evacuation is proceeding smoothly, and that during evacuation, no bottlenecks are created along the evacuation route.
Report the evacuation	Be sure to inform governmental emergency management personnel about the evacuation to avoid unnecessary duplication of efforts and risks.

Source: IGNOU-NDMA, 2012.

Search and Rescue (SAR)

Search and Rescue (commonly known as SAR) is of utmost importance in ensuring People’s safety. The process needs to be carried out after the disasters strike an area. It is carried out by the locals, who are the first responders; NGOs; voluntary organisations and the emergency agencies. Search and Rescue operations are meant to save as many trapped people as possible. It aims at survival of the maximum number of affected persons. It is normally and preferably carried out with the help of people as they are familiar with the area concerned and also have the assessment of the trapped victims. Primarily Search and Rescue operations are undertaken by trained personnel who normally follow the following three key principles:

- **LOOK:** See physically the incidents and make a thorough visual perception.
- **LISTEN:** Listen to all sources of information from the community and government records etc. Assess the community data regarding people in danger.
- **FEEL:** Feel convinced regarding the facts, the gravity of the dangers involved and one’s own capacity to respond (IGNOU-NDMA, 2012).

The Search and Rescue kits, ideally available in central location of vulnerable areas, contain required tools. A typical SAR kit comprises the following.

**Disaster Management:
Concepts and Institutional
Framework**

- Evacuation map of the building or area
- Hammer
- Screw driver (6" flat)
- Axe
- 24" Crow bar
- Spade
- Pickaxe
- 50-foot rope
- Torch
- Spare battery cells
- Hard shoes or Gum Boots
- Helmet
- Hand gloves
- Dust Mask

There are number of techniques and ways of rescuing affected individuals and carrying victims. These could be listed as:

- i) One-Person Arm Carry
- ii) One-Person Pack-Strap Carry
- iii) Two-Person Lift
- iv) Chair Carry
- v) Blanket Carry
- vi) Improvised Stretchers
- vii) Drag
- viii) Ropes, Knots and Techniques
- ix) Double Sheet-Bend
- x) Chair Knot
- xi) Lashings (Tie something firmly to something else)
 - Square Lashing
 - Diagonal Lashing
 - Figure of Eight Lashings
 - Round Lashing

xii) Improvised Swimming and Floating Aids

- Raft
- Breast-Line (Life-Lines)
- Rules of Breast-Line-Throwing

Shelter

Disasters like, Earthquake, Landslide, Cyclone, Flood cause destruction and serious damage to buildings and infrastructure. Besides, in case of cyclones or floods, people are asked to move out of the dwelling units to earmarked shelters.

Shelter is also one of the relief measures as it provides place for people in the event of either impending disaster or in the post-disaster situation. Thus, it means interim housing to meet basic immediate needs of disaster victims. The prime purpose of a temporary or designated shelter is to safeguard peoples' lives from exposure and further suffering. Temporary shelters are either in the form of tents or specifically assembled structures made of variety of material including wood, plastic, tin, etc.

A 10 point guideline for temporary shelter provisions prepared in the aftermath of Kashmir Earthquake of 2005 by Ian Davis is as follows (IGNOU, 2006).

1) **Monitor what is going on**

Use this disaster to inform the coordination agencies about what goes on in this sector, at micro and macro levels, such as, who is deciding on shelter approaches; where is the expertise; what the popular wisdom on shelter is; what are the dilemmas and conflicts? etc.

2) **Tents**

The likelihood is that a wide variety of tents, with varied specifications will arrive, some very appropriate, while others are hopelessly unsuited for the climate or cultural conditions. Who adopts what specifications and, is there any quality control or standardised specification? If families tear their allocated tent to use the canvas in creative ways this can be highly effective, yet in some contexts, some 'tidy minded' officials have been known to ban this adaptive process.

3) **Standards**

Minimum standards of shelter provision are given under the Sphere Project, and are accepted around the world. These should be adhered to, and adapted where there is a need for modifications. The basic principles of the standards should be ensured in all temporary shelter programmes.

4) **Location of Tents**

Where possible, families should be allowed to take a tent and put it near their house rather than on a centralised campsite. Reasons for this are obvious; it would provide for better care of domestic animals in rural settings, protection of household belongings that may remain within their ruined dwellings and maintenance or recovery of livelihoods that may be linked to the home.

5) **Shelter Materials**

Probably, one of the best policies is to distribute shelter materials, such as blankets,

roofing, sheeting, plastic sheeting, lengths of planed timber, building tools, wire, rope, nails, etc. Where possible, these can be sold where people have money to avoid dependency, but where people do not have resources, they can be donated. If the materials for roofing, sheeting, etc., can come with expertise and the support of skilled volunteers to assist in building, this will enhance the process.

6) Shelter for Families with Damaged Dwellings

Aftershocks can bring down damaged, but standing houses. Therefore, such families need to be advised to sleep outside their homes in tents or improvised shelters even if they spend time in the day in their homes. The risks are very high when they are lying flat, sleeping and a damaged structure collapses. Rapid damage surveys need to check on this issue as a vital measure to avoid further losses of lives from aftershocks.

7) Local Advice Centres

Repairs begin immediately, regardless of whether or not the government seeks to stop the process until structural safety surveys have been undertaken. Small teams can be assembled, comprising volunteer engineers/ architects/ builders who can be assigned different areas to offer advice concerning shelters and repair and rebuilding options.

8) Transition Housing

An effective strategy is to seek to help families to create a transitional dwelling that will eventually develop into a permanent dwelling. This is a preferable approach to providing expensive rehabs that will later be replaced by another permanent home (In effect this a wasteful double reconstruction approach). The aim is to use the sheltering process to accomplish three things: provide shelter, strengthen local livelihoods and aid the psychosocial recovery process.

9) Debris

In many disaster situations there is often large-scale destruction of building debris during the clearing and recovery process. Vital timber and masonry debris is destroyed in the process. It is essential to collect useful building debris for recycling purposes.

10) Shelter Units

Each disaster will attract a community of intrepid inventors or commercial opportunists who seek to convince officials to place big orders for their novel creations made of cardboard, plastic, polyurethane, etc. Such designs are essentially innovative answers seeking a problem. They often cost far more than tents and shelter materials; they can be culturally and climatically inappropriate and can take ages to deliver. There are better alternatives available as noted above.

It is not only human beings but also livestock which get affected by disasters. In fact the causality among livestock is very high because at time of disaster, they are left tied to their stakes leaving no means of escape. Thus, there is need for provision of shelter for livestock as well with focuses on the following, availability of fodder; maintenance of hygiene; and assistance of veterinary staff.

Distribution of Food, Water and Fodder

Number of agencies, Government and Non-government, do take steps for the distribution of food, water, medicine and fodder, etc., to the victims after the disaster. However, the community needs to have its own stock of the said items

for the purpose of its consumption in between the time of disaster occurrence and arrival of the relief distribution teams at the affected places. Community is also to be prepared for assisting the relief distribution teams as they are working in the community interest. Nevertheless, the distribution teams should not take this act as that of charity or obligation and should ensure that the consumables are provided to as many as possible and in the shortest possible time.

Clearance of Debris

Debris of collapsed buildings, bridges and other structures, as well as uprooted trees, hoardings, etc., are the biggest hindrance to search, rescue and relief operations, as they lead to the disruption of communication service and transportation. As such, debris clearance is the first step towards re-establishment of transport and communication networks and setting up of a system to enable effective search, rescue and relief efforts.

Debris clearance in a post-disaster scenario is a complex task, not only due to high volumes and hampered accessibility, but because the nature of debris is also unique. It may comprise rubble from damaged buildings, bridges and other structures, uprooted trees, poles and hoardings, damaged vehicles, goods and even accumulated solid waste, which may be of biodegradable or non-biodegradable nature.

During debris clearance operations, care has to be taken so as not to cause further problems endangering lives or property. There is need to safeguard survivors trapped underneath debris and attention is also required not to tamper with any infrastructure and service networks in the process of debris clearance. Survivors can be first searched. Local community can help in carrying out this operation.

Movement of Injured to Hospitals

The Local People, NGOs, elected members of the Gram Panchayat, local officials need to help the rescue team to prioritise the victims who have sustained more injuries for their transportation to the nearby hospitals. The serious cases must be given precedence over the less serious ones and accordingly injured should be moved to the hospitals for proper treatment.

Disposal of Dead Humans

Quick disposal of dead bodies is very important for containing the spread of diseases due to their quick decay. Besides, decomposing human dead bodies on the site with fast spreading stench, present a very unpleasant environment for the rescue workers as well as surviving victims. This could have a telling effect on their mental health.

However, human dead bodies need to be disposed off with great care because sentimental values are attached to the dead and human dignity is to be respected even after death. As such, the means, process and the manner of their disposal are of great importance to their kith and kin. The first step in this regard has to be the identification of the dead bodies. This is also required for compliance with police formalities. Once the ethnic background of the victims has been identified, then the bodies should be suitably disposed in accordance with their religious and cultural practices.

Resources such as fuel need to be mobilised for cremation purposes. Whose ethnic background prescribes burial have to be buried accordingly. If the families of the dead are at hand and are willing to take charge of the bodies for individual

disposal, this may be done. In case where there are no claimants or where bodies cannot be recognised, they should be collectively disposed through mass burial or cremation. In certain cases, where formalities and legalities, such as post-mortem medical reports and filling up of forms are required, assistance is needed to be provided to the relatives of the dead for completion of these formalities.

Disposal of Dead Animals

In most natural disasters, particularly in rural areas, the number of animal deaths are very high in residential areas, due to the fact that most domesticated animals are kept tied up, and in event of a disaster while the people flee urgently, the animals are left tied up; they have no chance of voluntary escape and thus, often perish.

Disposal of dead animals is as important as that of humans because decaying dead bodies can be a potential health and environment threat. Still, this aspect is usually accorded lower priority, more so in case of stray animals. The rescuers are not willing to handle animals' carcasses. Yet, this must be done expeditiously by local volunteers till the authorities take charge and get the carcasses disposed off. Disposal is best done by burial, at some place outside the habitated area. Till such times, nobody should be allowed to hold on to the dead bodies for extraction of hides or bones or any other recoverable material, because the risk of disease and infection is very high, and quickest disposal of the dead bodies is desirable.

Sympathetic Attitude towards Victims

When people suffer from disaster, they undergo certain psychological problems. The psychological stress is seen in the form of:

- i) Shock
- ii) Anger
- iii) Fear
- iv) Helplessness
- v) Anxiety
- vi) Depression
- vii) Sadness

There is a need for proper psychological support to the victims. Listening to distressed persons and offering empathy and understanding enable them not to feel alone and come to terms with the reality. However, it is required of the supporting persons to be objective and non-judgemental and refrain from giving advice or commenting on their emotions. None else than the local people are more suitable for this task as they already know about the victim, the family, the socio-economic conditions of the family, etc.

Assisting Rescue Teams

Once the disaster strikes and the news reach the Government and NGOs concerned, these organisations gear up to rescue the victims. Large number of rescue teams attempts to reach the disaster site. It becomes imperative for the community to provide all kinds of physical assistance by way of information and help to the rescue teams so that they can efficiently and effectively perform the tasks undertaken by them.

Property Security

In the event of disaster like cyclone and floods, people are supposed to move to the safer places like cyclone shelters, concrete shelters, etc. It is being observed that many people refuse to leave their dwelling units for fear of thefts and misplacement of their belongings. The locals with the help of the elected members of the local body, local officials, etc., must ensure safety of property of the people who have moved to the safer structures. This will not only save the assets but will also help in managing the migrants to the safer structures to keep cool and have balance of mind as they will not be worried for their belongings and property.

Information Dissemination and Checking of Rumours

The area, which has been struck by the disaster, has people whose relatives may be staying at far of places. Furthermore, there is a need for exact information to be passed on to the block and district authorities about the severity of disaster, likelihood of the damage, loss of human lives, loss of livestock, number of injured human beings and livestock so that proper rescue operation could be planned and carried out. Community could play a vital role in checking the spread of rumours as this proves to be counterproductive and may stall the relief and response measures initiated by the response teams.

Immediate Damage Assessment

Damage assessment is a pre-requisite of all disaster management practices. Rapid damage assessment is required for emergency relief measures. This would lead to the amount of medical relief and food stocks to reach the disaster area. Rapid damage assessment needs to include area affected in Sq. Kms.; number of people affected in the village, number of households partially and fully damaged, number of injured persons and livestock, etc.

Filing of Claims

The process of filling the claims must start as early as possible. The local officials, NGOs, community could assist the affected people to file the claims.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) What do you understand by disaster relief and response?

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2) List out the major steps initiated under disaster relief.

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7.3 RESPONSE MECHANISM

The National Emergency Operations Centre (NEOC) acts as the communication and coordination hub during this phase and it maintains constant touch with early warning agencies for updated inputs. It informs State Emergency Operations Centre (SEOC) and District Emergency Operations Centre (DEOC) through all available communication channels and mechanisms. The Disaster Management Division (DM Division) of the Ministry of Home Affairs (MHA) communicates and coordinates with designated early warning agencies, various nodal Ministries, and State Governments. It mobilises reinforcements from the National Disaster Response Force (NDRF), Armed Forces and the Central Armed Police Forces (CAPFs) and puts together transportation plans for moving resources. The National Disaster Management Authority (NDMA) supports the overall coordination of response as per needs of MHA. The NDMA provides general guidance, and takes decisions for the deployment of the NDRF. The NDRF is deployed as required depending on the request from State Government. They keep the force in operational readiness at all times.

At the national level, the Central Government has assigned nodal responsibilities to specific Ministries for coordinating disaster-specific responses. The National Executive Committee (NEC) coordinates response in the event of any threatening disaster situation or disaster. The State Government activates the Incident Response Teams (IRTs) at State, District, or block level and ensures coordination with the State Emergency Operation Centers (SEOC). The State Disaster Management Authority (SDMA) provides the technical support needed to strengthen the response system. It is essential that the first responders and relief reach the affected areas in the shortest possible time. Often, there are inordinate delays due to real constraints imposed by the location, nature of disaster and, most regrettably, due to inadequate preparedness. In many situations, even a delay of six to twelve hours proves to be too late or unacceptable. To make matters worse, relief tends to arrive in a highly fragmented or uncoordinated form with multiple organisations acting independently of each other without a cohesive plan, without mechanisms to avoid overlaps and without proper prioritisation of different aspects of relief such as shelter, clothing, food, or medicine. From an operational perspective, the challenges are similar across most hazards. The NDMA has formulated Incident Response System (IRS) Guidelines for the effective, efficient, and comprehensive management of disasters. The implementation of NDMA's IRS Guidelines by the States will help National Disaster Management Authority in standardisation of operations; bring clarity to the roles of various departments and other agencies, which are common to most disaster response situations. Disaster Ministries at the National level are assigned with the role of coordinating response for different disasters. The Table 7.2 below points out the designated ministries' role.

Table 7.2: Central Ministries for Coordination of Response at National Level

	Disaster	Nodal Ministry/ Dept./ Agency
1	Biological Disasters	Ministry of Health and Family Welfare (MoHFW)
2	Chemical Disasters and Industrial Accidents	Ministry of Environment, Forests and Climate Change (MoEFCC)
3	Civil Aviation Accidents	Ministry of Civil Aviation (MoCA)
4	Cyclone, Tornado, and Tsunami	Ministry of Home Affairs (MHA)
5	Disasters in Mines	Ministry of Coal; Ministry of Mines (MoC, MoM)
6	Drought, Hailstorm, Cold Wave and Frost, Pest Attack	Ministry of Agriculture and Farmers Welfare (MoAFW)
7	Earthquakes	Ministry of Home Affairs (MHA)
8	Floods	Ministry of Home Affairs (MHA)
9	Forest Fires	Ministry of Environment, Forests and Climate Change (MoEFCC)
10	Landslides and Avalanches	Ministry of Home Affairs (MHA)
11	Nuclear and Radiological Emergencies	Dept. of Atomic Energy, Ministry of Home Affairs (DAE,MHA)
12	Oil Spills	Ministry of Defence/Indian Coast Guard (MoD/ICG)
13	Rail Accidents	Ministry of Railways (MoR)
14	Road Accidents	Ministry of Road Transport and Highways (MoRTH)
15	Urban Floods	Ministry of Urban Development (MoUD)

Source: Government of India, 2016.

“The state and district administration identify sites for establishment of various facilities as mentioned in the IRS guidelines such as Incident Command Post, camp, base, staging area, camp, and helipad, for providing various services during the response. The state and local administration must widely disseminate and publicise information about these arrangements as mandated in the State Disaster Management Plan (SDMP) and District Disaster Management Plan (DDMP). Since disaster response operations are multifaceted, time sensitive, extremely fast-moving, and mostly unpredictable, it requires rapid assessment, close coordination among several departments, quick decision-making, fast deployment of human resources and machinery as well as close monitoring. In order to prevent delays and to eliminate ambiguities with regard to chain of command, the SDMP and DDMP must clearly spell out the response organisation as per IRS. These plans must clearly identify the personnel to be deputed for various responsibilities in the IRT at various levels of administration along with proper responsibility and accountability framework. Provision for implementation of unified command in case of involvement of multiple agencies such as Army, NDRF, CAPF, and International Urban Teams Search and Rescue must be spelt out in the SDMP. From time to time, the DM plan must be tested and rehearsed by carrying out mock exercises” (Adopted from NDMP, Government of India, 2016).

Catastrophic disasters like earthquakes, floods, cyclones and tsunami result in a large number of casualties and inflict tremendous damage on property and infrastructure. The Government of India has established a flexible response mechanism

**Disaster Management:
Concepts and Institutional
Framework**

for a prompt and effective delivery of essential services as well as resources to assist a State Government or Union Territory severely hit by a disaster. Disaster management is considered as the responsibility of the State Governments, and hence the primary responsibility for undertaking rescue, relief and rehabilitation measures during a disaster lies with the State Governments. The Central Government supplements their efforts through logistic and financial support during severe disasters as requested by the State Governments. Responding to such emergencies stretches the resources of district and State administration to the utmost and they may require and seek the assistance of Central Ministries/ Departments and agencies like the NDRF, Armed Forces, CAPF, and Specialised Ministries/ Agencies.

At times, the impact of disasters occurring in one state may spread over to the areas of other states. Similarly, preventive measures in respect of certain disasters, such as floods, etc. may be required to be taken in one state, as the impact of their occurrence may affect another. The administrative hierarchy of the Country is organised in to National, State and District level administration. This presents challenges in respect of disasters impacting more than one state. Management of such situations calls for a coordinated approach, which can respond to a range of issues quite different from those that normally present themselves – before, during and after the event. The National Crisis Management Committee (NCMC) plays a major role in handling such multi-state disasters. The NDMA will encourage identification of such situations and promote the establishment of mechanisms for coordinated strategies for dealing with them by the states and Central Ministries, departments and other relevant agencies.

While there are disaster-specific aspects to the post-disaster response, the emergency functions are broadly common to all disasters and there are specific ministries, departments, or agencies that can provide that emergency response. Besides, very often, there are multiple hazards and secondary disasters that follow a major disaster. Hence, response intrinsically follows a multi-hazard approach. Therefore, all the response activities have been summarised in a single matrix applicable to all types of disasters. The response responsibility matrix specifies the major theme of response. All agencies responsible for response should follow the NDMA's IRS guidelines, which will help in ensuring proper accountability and division of responsibilities. Different ministries and departments have to provide specialised emergency support to the response effort. Certain agencies of Central Government will play a lead role, while others will be in a supporting role. The SDMA, Commissioner of Relief (CoR), or the Dept. of Revenue is the nodal agency at the state level for coordination of response. The DDMA is the nodal agency for coordination of response at District level. Various central ministries, departments, agencies, and state governments have to prepare their own hazard specific response plans as per guidelines of the NDMA and in line with the NDMP. They need to ensure preparedness for response at all times and must carry out regular mock drills and conduct tests of readiness periodically, and the ministries/ departments must report the status to the NDMA (Government of India, 2016). The major tasks of response given in the responsibility matrix are:

- 1) Early Warning, Maps, Satellite inputs, Information Dissemination
- 2) Evacuation of People and Animals
- 3) Search and Rescue of People and Animals
- 4) Medical care

- 5) Drinking Water / Dewatering Pumps / Sanitation Facilities / Public Health
- 6) Food and Essential Supplies
- 7) Communication
- 8) Housing and Temporary Shelters
- 9) Power
- 10) Fuel
- 11) Transportation
- 12) Relief Logistics and Supply Chain Management
- 13) Disposal of animal carcasses
- 14) Fodder for livestock in scarcity-hit areas
- 15) Rehabilitation and Ensuring Safety of Livestock and other Animals, Veterinary Care
- 16) Data Collection and Management
- 17) Relief Employment
- 18) Media Relations

Planning and building capacity for responding to disasters has shown many positive effects. This begins with ensuring strong and standardised data collection capabilities at local and regional levels – in order to have access to up-to-date and accurate information during emergencies, to deploy aid efforts and assess losses. In addition, it is essential to assess risk levels and vulnerabilities of regions and populations towards a disaster as well as its aftermath.

These activities require continued and formalised local and community participation, and rely on non-government organisations and citizen groups to support government and defense organisations.

Emergency planning and preparedness also involves community-level preparedness – for which local, government, defence and private organisations must be provided training and resources. This can range from general safety procedures, guidelines for DOs and DON'Ts, chain of communication, guidelines on controlling emergency scenes, and evacuation and response drills.

With the involvement of multiple groups and at multiple levels of authority and expertise, it is also essential to establish a management mechanism to ensure all efforts and make it sure that communications are streamlined, and disaster assessments (in terms of damage occurred or medical assistance required) are accurate and timely. In the absence of such a mechanism, an emergency site can be overcome by chaos and confusion, further adding to risk and damage to life and property, causing wastage of relief materials and resources, and causing delays in response efforts.

It is thus, extremely critical to enable coordination among all parties involved at various levels of disaster relief and assign clearly defined and documented roles and responsibilities as well as reporting structures.

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Discuss the institutional structure for disaster response in India.

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2) What is the role of Emergency Operation Centre in disaster response?

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7.4 CONCLUSION

In the post-disaster phase, the foremost relief operations which are undertaken are search and rescue. The untraced disaster victims are searched and rescued with the help of local communities. In accordance with Disaster Management Act, 2005, NDRF has been setup by the Government of India to ensure specialised response during disaster incidences. There is detailed discussion on various measures and methods of relief and response in the Unit. The disaster response is the actual implementation of the disaster plan. Disaster response is the organisation of activities used to respond to the events in post-disaster situation. The response phase includes the mobilisation of the necessary emergency services and first responders in the disaster areas. The mechanism of response is the activation of different components of response in accordance with the standardised emergency management procedures and protocols.

7.5 GLOSSARY

Search and Rescue (SAR) : Search and Rescue or SAR, as it is called, is a technical activity rendered by a group of specially trained personnel, who rescue and attend to the casualties under adverse conditions, where life is under threat. Search and Rescue is organised in close cooperation with the community with a team orientation. It is a procedure carried out immediately after a disaster to look for survivors and dead ones.

Emergency Operations Centre (EOC)

: EOC is an off-site facility, which will be functioning from the State/District head quarters, and which is actually an augmented control room having communication facilities and space to accommodate the various officers.

Disaster Relief and Response

7.6 REFERENCES

Brenda, P. (2009). *Disaster Recovery*. Boca Raton: Taylor & Francis Group.

Government of India. (2012). *National Disaster Management Guidelines*. New Delhi: National Disaster Management Authority.

IGNOU. (2006). *Disaster Management*. MPA-018. New Delhi: Faculty of Public Administration.

IGNOU-NDMA. 2012. *Responding to Disasters*. New Delhi.

Jack, H. (2007). *Disaster Response Planning and Preparedness*. Retrieved from http://www.nydis.org/nydis/downloads/manual/NYDIS_Disaster_SC-MH_Manual_SectionI-Chapter1.pdf

Government of India. (2016). *National Disaster Management Plan (NDMP)*. New Delhi: National Disaster Management Authority.

Pandey, R.K. (n.d.). *Guidelines and Operational Procedures for the Preparation of District Disaster Management Action Plan (DDMAP)*. Uttarakhand: Disaster Mitigation and Management Center.

Patwardhan, A. (2007). Disaster Management in India. *IIT Bombay*. 1-20.

Sinha P.C. (2006). *Disaster Relief, Rehabilitation and Emergency Humanitarian Assistance*. New Delhi: SBS publication & distribution Pvt. Ltd.

Sinha, P.C. (2006). *Disaster Vulnerabilities and Risk - Trends, Concepts, Classification and Approaches*. New Delhi: SBS publication & distribution Pvt. Ltd.

State Disaster Management Plan, Uttarakhand. (n.d.). Retrieved from http://smartnet.niua.org/sites/default/files/resources/complete_sdmap.pdf

Talwar A.K & Juneja S. (2009). *Cyclone Disaster Management*. New Delhi: Commonwealth Publishers.

http://www.indiawris.nrsc.gov.in/wrpinfo/index.php?title=Flood_Management#Flood_Prone_Areas_in_India

Walch, C. 2018. Evacuation ahead of natural disasters: Evidence from cyclone phailin in India and typhoon Haiyan in the Philippines. *Geography and Environment*, DOI: 5. 10.1002/geo2.51.

World Bank. (October 17, 2013). Cyclone Devastation Averted: India Weather Phailin. Retrieved from <http://www.worldbank.org/en/news/feature/2013/10/17/india-cyclone-phailin-destruction-preparation>.

7.7 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should include the following points:
 - Disaster relief is the financial aid or services made available to individuals and communities that have experienced losses due to disasters such as floods, hurricanes, earthquakes, drought, tornadoes, and sociological terms as a major disruption of the social patterns of individuals and groups.
 - It is about the “bottom line” of ensuring basic minimal necessities to keep people alive.
 - Disaster response is the organised activities which are used to respond to the post disaster.
- 2) Your answer should include the following points:
 - Search and Rescue.
 - Evacuation.
 - Distribution of Food and Water.

Check Your Progress 2

- 1) Your answer should include the following:
 - National Disaster Response Force and State Disaster Response Force
 - Armed Forces and Para Military Forces.
 - Nodal Ministries/Departments.
- 2) Your answer should include the following:
 - EOC is an off-site facility, which will be functioning from the State/District head quarters, and which is actually an augmented control room having communication facilities and space to accommodate the various officers.

UNIT 8 DAMAGE ASSESSMENT*

Structure

- 8.0 Objectives
- 8.1 Introduction
- 8.2 Elements of Damage Assessment
- 8.3 Dimensions of Damage Assessment
- 8.4 Framework and Methods
 - 8.4.1 Assessing Loss and Damage to Human Life
 - 8.4.2 Assessing Damage to Housing
 - 8.4.3 Assessing Damage to Community Infrastructure
 - 8.4.4 Assessing Damage to Environment
 - 8.4.5 Assessing Loss of Livelihood
 - 8.4.6 Assessing Impact on Health
 - 8.4.7 Assessing the Psycho-social Impact of Disaster
 - 8.4.8 Assessing the Impact of Disasters on Women
- 8.5 Conclusion
- 8.6 Glossary
- 8.7 References
- 8.8 Answers to Check Your Progress Exercises

8.0 OBJECTIVES

After reading this Unit, you should be able to understand:

- Major elements of Damage Assessment;
- Various Dimensions of Damage Assessment; and
- Framework and methods of Damage Assessment.

8.1 INTRODUCTION

Damage assessment is an important tool for retrospective and prospective analysis of disasters to assimilate the extent of impact of a disaster. This forms the basis for future disaster preparedness and preventive planning. It is essential in determining: What happened? What the effects were? Which areas were hardest hit? What situations must be given priority and what types of assistance are needed, for example, Local, State, or Union? Emergency response could be more effective; equipment and personnel could be better used; and help could be provided quicker, if a thorough damage assessment is performed beforehand. The basic objectives of damage assessment could be summarised as follows:

- To make a rapid assessment of areas affected to know the extent of impact for purpose of immediate rescue and relief operations;

* Contributed by Dr. Kamla Bora, Assistant Professor, Govt. P.G. College, Rudrapur, Uttarakhand.

**Disaster Management:
Concepts and Institutional
Framework**

- To prepare estimates for the amount of relief to be provided and the mode of relief, be it food, clothing, medicines, shelter or other essential commodities;
- To make a detailed assessment regarding requirements for long-term relief and rehabilitation planning; and
- To identify focus areas for the purpose of ‘retrofitting’ actions in similar future situations.

Damage assessment is, therefore, a prerequisite for effective disaster response effort. For effective decisions, officials responsible for organising post-disaster relief operations should be properly informed of the damage/possible damage should the event repeat itself sometime in the future, so that they can know the needs, current, as well as prospective, in precise terms. They must have appropriate and timely information about: what happened, what needs to be done, and what resources are available? Their decisions can save lives; minimise injury, damage and loss; prevent any further escalation; prevent secondary hazards; and inform people who need to know. Well-organised response will also help in building confidence and enhancing the credibility of the administration. Relief operations are essentially about the management of information and resources, which is based on assessments and reports carried out from time to time. Information is needed at all levels of administration, but the nature of the information required varies from one level to another. In sum, disaster damage assessment is a vital tool to assimilate the extent of impact of a disaster, both short-term and long-term, and forms the basis for any disaster management and mitigation process and action plan. In the phase of recovery, the first step is damage assessment.

Damage assessment is to make an initial and preliminary onsite evaluation of damage or loss that has been caused by an accident or disaster. Through damage assessment exercise an attempt is made to put on record the amount and degree of damage and also to point out what can be replaced, restored or salvaged. Such an exercise brings to fore the likely required time for repair, replacement and recovery. Thus, damage assessment “is an integral part of facilitating effective and efficient response by government agencies and other organizations” (ODPM).

8.2 ELEMENTS OF DAMAGE ASSESSMENT

The following are the very important elements of damage assessment:

- 1) Identification of type of information needed and sources of data collection.
- 2) Data collection through primary and secondary sources.
- 3) Analysis of data.
- 4) Data interpretation.
- 5) Report writing
- 6) Drawing conclusion
- 7) Making Forecasts
- 8) Recommendation and measures suggested for decision makers, planners, implementers, community groups, NGOs, etc.

Definitely a detailed damage assessment needs to include much more, such as, verification of number of losses of human life and injured persons, losses of cattle lives, agricultural damage in hectares, building damage, losses of public works, business, utilities, total financial loss, etc.

Basic data generated from the flow is bottom up:

- Impact, which a hazard has had on the affected area;
- Needs and priorities for immediate emergency measures to save and sustain lives of survivors;
- Resources available for use;
- Possibilities for facilitating and expediting longer-term recovery and development;
- Directory information: Various line departments contact details;
- Habitation (Village/hamlet/ward) details;
- Village wise different types of disasters along with degree of risk (Vulnerability details);
- Historical records of past events with damage details and details of relief expenditure;
- Census data sets- Agriculture and population census, building and various structure details.

8.3 DIMENSIONS OF DAMAGE ASSESSMENT

Damage assessment is also a multi-disciplinary exercise involving officials from a cross section of experts and administrators from revenue, health, engineering, public works, social scientists, non-profit organisations, community, etc., to get a comprehensive account of losses for adequate future mitigation planning. Some of the data required are already available in the form of baseline data (maps, population statistics, etc.). However, it must be supplemented by real time information regarding the extent/nature of ongoing damage during a disaster event, from the damage site (through information report from various sources) as pre-disaster estimates, however accurate, may not provide sufficient information.

Information to be primarily compiled can be broadly segregated in the following categories:

- 1) Nature of the disaster, that is, the date, time, exact location;
- 2) Details of the occurrence of the disaster;
- 3) Regular reports regarding progress of damage assessment work;
- 4) Expected date and time of restoration or completion of a particular activity or mission.

Damage assessment is done through data collection and information assimilation and dissemination. It is useful to distinguish between the terms “data” and “information”, as data are simply units of information including perceptions, numbers, observations, facts or figures. Data sometimes conflict with one another, for example, when two individuals report widely differing perceptions of the same event. Information, on the other hand, is “useful data”. Data could become information when it can be translated into meaningful, relevant and understandable language, especially particular people at a particular time and place, for a particular purpose (IGNOU-NDMA, 2012).

**Disaster Management:
Concepts and Institutional
Framework**

Data collection, which is an on-going activity, depends on:

- Expertise and advice of survey specialists;
- Use of sample surveys;
- Cultural attitudes; and
- Personal preferences.

Concerned Department and Support Group

Administration and nodal department concerned are to collect all the available disaster related information and compile it at the earliest, through the concerned officials of the department. Support group coordination is a very important part of damage assessment. They provide a forum with which those affected can share their experiences. The group is both a source of information and a means of communication. Support groups can exploit the intense media interest in disaster by campaigning for public injuries by lobbying for better levels of compensation and safety change. The concerned Minister/Secretary, Department of Disaster Management and District Magistrate are only competent persons to interact with press and electronic media. These persons should ensure that only factually correct and confirmed information is shared with media. At the same time, no exaggerated version of any event or any criticism or one's personal opinion or views about the occurrence of disaster at any point of time should be made public.

Damage assessment is required at two basic levels of intervention. Firstly, it is required for emergency relief measures in which quick assessment of damage is the basis for the amount of relief material and food stocks that reach the disaster area. This type of an assessment is called Rapid Damage Assessment. The second level would be a detailed technical analysis of damage for long-term restoration and rehabilitation works. From a long-term perspective, damage assessment scrutinises the mechanisms of failure that took place during the disaster. It is called Detailed Damage Assessment. These studies are very useful for all prevention and mitigation efforts for disasters in the future.

Rapid Damage Assessment

The official agency for reporting estimates of damage is usually the Revenue and Relief Department of the State Government, as they are also the authority for distributing relief to affected persons. As usual, there is a hierarchy of officials who report from the lowest level of Villages/*Panchayats* through Blocks/Revenue Circles, *Tehsils/ Talukas*, and Sub-divisions and finally to the districts and then to the State headquarters. However, relief agencies including NGOs also have their own damage assessment systems and teams to carry out the assessments. The basic items covered in rapid assessment are:

- Name of the place
- The causative factors
- Date and time of disaster occurrence
- Area affected
- Total number of villages or neighborhoods affected
- Total population

The estimate of a disaster’s effects can be characterised as a scenario of possible losses and needs. Estimates can then be created that anticipate the resources that are required to respond to the loss. The estimates include commodities of food, medicines, manpower, and machinery and money requirements for getting relief to the potential victims.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) What do you mean by damage assessment?

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2) Discuss elements of damage assessment?

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8.4 FRAMEWORK AND METHODS

The framework for damage assessment can be broadly divided in two parts:

- 1) Initial Situation overview
- 2) Needs Analysis

The first part is meant to bring to attention the amount of damage done by the disaster in the area concerned. Normally, it is a time bound activity and required to be put forth in the first 8 hours of the happening of the event. The major focus is on issues like casualties, displacement of the population and damage to lifelines and critical facilities. It is mostly through the observations of the key organisations and officials. “The ISO (Initial Situation Overview) often involves observation from an aircraft, sometime satellite photographs, and various other reports. The information from the ISO allows national/local officials to determine immediate action necessary to respond to the effects of the hazard” (ODPM).

The second part tries to articulate level and type of assistance required for the affected population. The damage assessment covers the nature and extent of a disaster, priority need of the affected community, particularly the vulnerable people. It must provide the extent and type of damage and identify secondary threats,

resource availability and the capacity of local response. Finally, the assessment process should make actions, interventions and resources needed to formulate long term rehabilitation or development strategies.

The post-disaster assessment completely highlights the damage and its impact on various aspects of life. Damage assessment plan for various critical sectors are as follows:

8.4.1 Assessing Loss and Damage to Human Life

The loss of human lives affects many other aspects for the lives of survivors which are critical for a dignified living. The first information regarding this loss is to determine the baseline data related to the number of families residing in the affected area where the damage assessment is being undertaken.

For such assessment, it is useful to have data regarding-deaths, permanent disabilities, major injuries, minor injuries and missing people. Data should be segregated on the bases of gender, age or occupations, to develop deeper understanding. Details of occupation also provide a hint of economic status of families and enable to determine number of earning members and dependents within the family.

It is important to pay attention to certain special groups of people who tend to get left out in the enumeration process. Migrant workers, tourists, and travelers or unregistered informal sectors workers may be difficult to be estimated because of the lack of such record. All this information helps in effective targeting of the humanitarian response.

It is essential to have an assessment methodology that uses the community information and is credible for the humanitarian response planners. Collecting information from secondary sources is also important. Loss of life is estimated by community institutions, media and the government and many a time they come up with different figures. It is important that the damage assessment report mentions all the figures published under different reports.

8.4.2 Assessing Damage to Housing

The catastrophic event can cause varying degrees of damage to houses depending on various factors. The quality of construction, materials used, construction technology, type of dwelling, location, etc., contribute to the vulnerability of built structures and affect the extent of damage.

The geographic location of the settlement is the first information needed, including information regarding proximity to natural features such as lakes, rivers or sea. The assessment should further elaborate, in terms of urban or rural, size, typology on the basis of design and structural system, types of ownership and functional usage, etc.

First thing that must be done in the affected area is a transect walk. Transect walk through the disaster struck village and its varied locations and habitations is very useful for the purpose of reconnaissance and gives an overview of the extent and type of damage. Following are parts of good assessment for housing damage:

- i) Area transect;
- ii) Habitat mapping (information such as house type, damage category, vulnerable category);

- iii) Photographic documentation;
- iv) Household level survey.

8.4.3 Assessing Damage to Community Infrastructure

Infrastructure damage includes not only damage to basic services (like drinking water, roads, electricity, etc.), but also to public buildings essential for providing education, health care or those serving other social functions. For the assessment of damage to infrastructure after a disaster, it is must for a good assessment to have following components:

- i) Infrastructure mapping: It gives an overview of the services and infrastructure available in the area. These are shown on maps prepared by community members. This helps in determining the geographic extent of damage and the affected stakeholders;
- ii) Area level survey: It is conducted for each public building, basic services and community owned infrastructure to understand the extent of damage. Steps needed for changes should also be included;
- iii) Photographic documentation: The decision making regarding infrastructure may take a long time and may be done at a distant site: photographic documentation, therefore, helps in making the correct decision about repair or replacement.

8.4.4 Assessing Damage to Environment

It is essential to understand and assess the impact of natural disasters on environment as the state of environment has an important effect on the quality of life of the people living. The loss of many environmental resources like soil, trees, etc., can be assessed directly. However, some damages are indirect, particularly those to the environmental services such as reduction of pollution, carbon sequestration, provision of wild life habitat, etc.

In post-disaster situation, following changes need to be looked into as they may affect the goods (food, fodder, water, timber and other non-timber products) and services (oxygen emission, pollinators, etc.) provided by the ecosystem:

- i) Unique/unusual land form changes;
- ii) Changes in natural drainage;
- iii) Soil degradation;
- iv) Destruction of trees;
- v) Water contamination;
- vi) Loss of plants and animals or their natural habitat.

The methods used for environmental damage assessment are:

- i) Resource mapping: It shows various elements of the ecosystem in which the settlement exists like types of plantation, forest, natural water resources etc.
- ii) Area transect

8.4.5 Assessing Loss of Livelihood

Disasters have significant impact on the socio-economic well being of the community. Different occupations experience varying extents of vulnerability to different disasters.

For example, farmers may be more affected in droughts, fisher-folk in tsunamis, industrial workforce and artisans in earthquake, etc.

Loss of economic assets, employment; reduction in income, critical consumption of food and expenditure on education and health care need to be assessed to understand the impact of the disasters. The assessment of economic loss of disaster is important for future planning.

Economic losses can be divided into two categories:

- i) Direct damages
- ii) Indirect damages

Direct damage assessment includes losses in agriculture, fisheries, local trade and production of goods. Indirect damage assessment includes losses in terms of likely production, future employment, income etc due to direct damage caused by the disaster.

8.4.6 Assessing Impact on Health

The impact assessment on health may be required as part of the overall assessment to identify the possible fallouts of the disaster. Because of disaster's negative impacts on health, health risks, due to worsening living conditions, are aggravated after disaster. Therefore, it is necessary to observe the victims, particularly the families with infants, pregnant/lactating mothers, old aged, disabled, chronically ill, HIV positive members, etc. Health hazards may arise due to site conditions such as water stagnation, mosquito breeding, high population density, etc. The assessment on water, lack of safe sanitation, light and ventilation in shelters, nutrition and food is important. Another important aspect that needs assessment for humanitarian response planners is the extent of the healthcare services required.

Surveillance reveals the type, magnitude, pattern and trends of health problems through periodic and systematic collection of health related data. Mobility map for health services are of great importance because they indicate the distance, frequency of availability and the types of services available. This can also help in identifying vector breeding sites and developing control mechanisms.

8.4.7 Assessing the Psycho-social Impact of Disasters

Disaster affects not only physical and material life of the community, but also affects them psychologically. It is reflected in their emotional reactions and increase in incidents like, anger, irritability, panic attacks, sleeplessness, withdrawal from activities, increased anxiety, nightmares in children, etc. These are some of the universal responses amongst people who experience events beyond their coping capacities. The other important aspect relates to need for psycho-social care for all disaster affected people. For understanding the psycho-social trauma that one may be experiencing, observation and listening is the most essential methodology to understand the type of trauma and its extent. Psychologically it is only through informal community discussion, meeting and personal contact with the households that one can observe these symptoms. Severe traumatic conditions can be identified through the above processes and detailed case cards may have to be prepared. A case card is like a case history and it is important to record the symptoms, personal and family background associated with such reactions. This helps in engaging psycho-social experts.

8.4.8 Assessing the Impact of Disasters on Women

A clear gender framework helps in capturing the important aspects of vulnerabilities in the damage assessment. Therefore, assessment for women groups is of wider significance because gender analysis is useful to understand activities and extent of their role in decision making regarding various aspects that govern daily life and may have been affected in the disaster. Thus, these are all concepts of vulnerability reduction, social inclusion, community participation and gender perspective forming the very important process of damage assessment.

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Explain the framework of damage assessment.

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2) Write a note on Environment Damage Assessment.

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3) List out the impact of damage assessment in the area of health and women.

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8.5 CONCLUSION

Damage assessment is an important aspect in the field of disaster management. In this Unit, we have covered various elements, assessments, frameworks and methods of damage assessment. Increasing the efficiency, effectiveness of post-disaster damage assessment will lead to effective rehabilitation, reconstruction and recovery and also bring backs the resilience of the society. Some of the major elements of damage assessment are identification of types of information needed and sources of data collection as level of primary and secondary sources, data analysis and interpretation then report writing and forecasting, recommendation and measures suggested for decision makers, planners and community group.

8.6 GLOSSARY

- Rapid Damage Assessment (RDA)** : Rapid Damage Assessment (RDA) emphasizes on a rapid appraisal of the situation and extent of damage to provide resources for effective relief and resource. RDA is to be conducted by the planning section of the Incident Response Team (IRT), responsible for response management. The planning section of the IRT may require support of the local community.
- Detailed Damage Assessment (DDA)** : Detailed Damage Assessment is supposed to be done at the district level during the recovery stage involving skilled personnel from various line departments. The aim of this assessment is to estimate the economical and financial aspects of damage, the detailed building damage, agricultural damage, and property damage. It also aims at retrofitting or strengthening of houses, roads, bridges, hospitals, school, warehouses, railway tracks and other infrastructure.

8.7 REFERENCES

- Bhatt, M.R. and Pandya, M. & Murphy, C. (2005). Community damage assessment and demand analysis. Retrieved from <http://lib.riskreductionafrica.org/bitstream/handle/123456789/241/community%20damage%20assessment%20and%20demand%20analysis.pdf?sequence=1>
- Brenda, P. (2009). *Disaster Recovery*. Boca Raton: Taylor & Francis Group.
- Chaudhari, N. (2014). *Disaster Governance in India Series-2*. Mussoorie: Centre for disaster Management, Lal Bahadur Shastri National Academy of Administration.
- IGNOU-NDMA. (2012). *Responding to Disasters*. New Delhi: Indira Gandhi National Open University.
- Galande, V.M., Thakare, Ho. & Pande, A.M. (2010) Disaster Mitigation in India Planning, Skills and Training Needs. In Salpekar, A., & Sharma, K. (Eds.). *Disaster Management and Development Interference*. New Delhi. Jananada Prakashan (P&D).
- Salpekar, A. & Sharma, K. (2010). *Disaster Management and Development Interface*. New Delhi : Jananada Prakashan.
- Sinha, P.C. (2006). *Disaster Vulnerabilities and Risk - Trends, Concepts, Classification and Approaches*. New Delhi: SBS publication & distribution Pvt. Ltd.
- State Disaster Management Plan. Uttarakhand. (n.d.). Retrieved from https://smartnet.niua.org/sites/default/files/resources/complete_sdmap.pdf
- Office of Disaster Preparedness and Management. Government of Trinidad and Tobago (ODPM). Retrieve from <http://odpm.gov.tt>

8.8 ANSWER TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should include the following points:
 - Damage assessment is an important process to assimilate the extent of impact of a disaster both short term and long term and forms the basis for any disaster management and mitigation process and action plan.
 - Damage assessment is essential for effective rehabilitation and reconstruction.
- 2) Your answer should include the following points:
 - Identification of type of information needed and sources of data collection; data collection through primary and secondary sources; analysis of data.; data interpretation; report writing; drawing conclusion; making Forecasts; recommendation and measures suggested for decision makers, planners, implementers, community groups, NGOs etc.

Check Your Progress 2

- 1) Your answer should include the following points:
 - The framework can be divided into two types, that is, Initial situation overview and Needs analysis.
 - Initial situation overview is carried out to obtain a broad picture of the extent of damage caused by disaster.
 - Needs analysis is tries to articulate level and type of assistance required for the affected population.
- 2) Your answer should include the following points:
 - Unique/unusual land form changes; changes in natural drainage; soil degradation; destruction of trees; water contamination and loss of plants and animals or their natural habitat.
 - Resource mapping and Area transect are the methods of environment damage assessment.
- 3) Your answer should include the following points:
 - It is very necessary to observe the situation during disaster particularly the families with infants, pregnant women, old aged, disabled, chronically ill, HIV positive members etc. Health hazards may arise due to site conditions such as water stagnation, mosquito breeding, high population density etc.
 - The assessment of water, lack of safe sanitation, light and ventilation in shelters, nutrition and food is important. Other very important aspect that needs assessment for humanitarian response planners is the extent of the health care services required.
 - Gender framework helps in capturing the important aspects of vulnerabilities in the damage assessment.

UNIT 9 REHABILITATION, RECONSTRUCTION AND RECOVERY*

Structure

- 9.0 Objectives
- 9.1 Introduction
- 9.2 Rehabilitation
 - 9.2.1 Physical Rehabilitation
 - 9.2.2 Social Rehabilitation
 - 9.2.3 Economic Rehabilitation
 - 9.2.4 Psychological Rehabilitation
- 9.3 Reconstruction
 - 9.3.1 Development of Physical and Economic Infrastructure
 - 9.3.2 Funding Arrangements for Reconstruction
- 9.4 Recovery
 - 9.4.1 The Ground for Recovery Activity
 - 9.4.2 Problems in Recovery Areas
- 9.5 Conclusion
- 9.6 Glossary
- 9.7 References
- 9.8 Answers to Check Your Progress Exercises

9.0 OBJECTIVES

After reading this Unit, you should be able to:

- Discuss the scope of rehabilitation;
- Explain the need of rehabilitation;
- Understand the scope of reconstruction;
- Explain the requirements of reconstruction and its significance; and
- Describe the relevance of recovery.

9.1 INTRODUCTION

Rehabilitation, reconstruction and recovery are three essential facets in post-disaster phase. These are in direct consonance with the nature of the disaster, location of disaster, proportion of damage, direct and indirect losses, availability of human resource with local capacities, available material resources along with institutional capacities. For example, when an earthquake occurs, it leads to damage of infrastructure and buildings, therefore, the planning for rehabilitation and reconstruction

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should be related to buildings and infrastructure. In the previous Unit, we have learnt about damage assessment and in this Unit, we will discuss rehabilitation, its types; reconstruction, requirements of reconstruction; and relevance of recovery as well as problems in recovery.

9.2 REHABILITATION

Rehabilitation means to take necessary actions after the disaster to resume the basic services, help the victim, to compensate the physical damage done to the surroundings and to start again economic actions to provide psychological support, social security and comfort to the victim. It functions to capacitate the affected people to restart regular functions of life. It may be considered as a dovetailing between present time relief and long-term development. Thus, the main aim of rehabilitation is to revive the victim to the normal life. Rehabilitation is classified as:

- Physical Rehabilitation
- Social Rehabilitation
- Economic Rehabilitation
- Psychological Rehabilitation

9.2.1 Physical Rehabilitation

Physical rehabilitation is an important component of rehabilitation. In this step, the focus is on the reconstruction of physical amenities such as houses, buildings, railways, roads, water supply, communication network, electricity, etc. It also includes strategies towards environment protection, employment generation, job creation, watershed management, alternative cropping techniques, canal irrigation. Rehabilitation of animal husbandry, agriculture, farm implements, flood plain zoning, land-use planning, retrofitting of undamaged houses are some other related activities of physical rehabilitation.

9.2.2 Social Rehabilitation

Social rehabilitation has its own significance. It aims at providing social support to sufferers. It could be through:

- Establishing educational committees that provide regular counselling to sufferers.
- Finding persons who could conduct educational activities and provide books and writing material to children.
- Running various programmes related to physical and mental health, stress management, nutrition and hygiene etc.
- Providing day care and old age homes to the sufferers for a limited time period.
- Setting up multi-purpose community centre and promote self help group.
- Finding native surroundings to sufferers like old age persons, women & children.

9.2.3 Economic Rehabilitation

It plays an important role to compensate the economic loss occurred due to the disaster, it involves providing compensation to the victim based on:

- Broad investigation of actual and future hazard and compulsion of troubled group; and
- Investigation of current livelihood planning and business.

9.2.4 Psychological Rehabilitation

One of the most important steps of rehabilitation is psychological rehabilitation. It is a very sensitive issue. Shock of disaster is directly connected with victims' psychology. The victims generally experience many types of physical and psychological strains.

A disaster victim goes through specific types of emotional stages. Psychological rehabilitation focuses on treating victims to cope up with the emotional imbalance. The psychological rehabilitation helps the victims to lead a normal life. Counsellors help the affected in leading a happy and healthy life.

9.3 RECONSTRUCTION

Reconstruction means to repair or to re-establish all services like buildings, infrastructure, replacement of damaged structures, reintegration of economic sectors (industries & agriculture), and the creation of cultural, social and environmental settings. Reconstruction is a long-term development plan to mitigate or reduce future disaster risk by incorporating appropriate measures. Damaged structure may not be necessarily being restored to their previous form. It may include temporary arrangements. Reconstruction aims to build the rehabilitated system to safer standards so that the future risks could be reduced.

The reconstruction efforts aim at restoring the affected structures to a condition equal to or better than what existed before the disaster. It also aims at constructing permanent housing besides restoring the basic amenities.

Reconstruction should pay attention to certain specific activities for speedy recovery in disaster hit areas. Every disaster results in a different type of damage, for example, when an earthquake occurs, it damages the infrastructure and buildings of that area, therefore, the planning for reconstruction should focus on mentioned thrust areas.

The major steps of reconstruction are:

9.3.1 Development of Physical and Economic Infrastructure

Infrastructure is classified as:

- **Physical Infrastructure:** Physical infrastructure includes roads, water, drainage, electricity.
- **Service Infrastructure:** In service infrastructure, transportation, health and education are included.
- **Social Infrastructure:** In social infrastructure, social sector services, primary healthcare, old age homes and community centres are the main components.
- **Environmental Infrastructure:** In environmental infrastructure, creation of necessary environmental conditions to reduce the risk of disaster is the thrust area.

When we talk about the physical infrastructure in relation to disaster, we refer to the nature of houses. In case of earthquake, it needs to be ensured that the houses

are earthquake resistant. In the case of flood, it needs to be ensured that the houses are constructed away from the flood prone area. In case of landslides, it needs to be ensured that the houses are constructed away from the area prone to landslides. Housing infrastructure needs to be planned according to the environmental conditions of the region.

Example of post-earthquake rehabilitation in Gujarat is useful at this point. The agenda in the reconstruction programme, propagated by United Nations Development Programme (UNDP), has not been just to build houses, but also construct them in a demonstrative manner to transfer the technologies to the villagers. These houses have served as model houses, incorporating disaster resistant technologies.

The UNDP's shelter programme aimed to:

- Build local capacities (training of semi- skilled construction workers and masons in hazard resistant construction)
- Support the environment (use of alternative technologies)
- Involve local communities
- Help rebuild lost livelihoods

9.3.2 Funding Arrangements for Reconstruction

It is very important to have proper knowledge about the policies available for providing funds for reconstruction in a disaster hit area. Central and state governments have specific schemes/ strategies for providing funds for disaster management activities like reconstruction and rehabilitation. Some of the funding arrangements are as follows:

9.3.2.1 National Disaster Response Fund (NDRF)

The NDRF (earlier known by the nomenclature NCCF) is a Fund constituted under Section 46 of Disaster Management Act, 2005. It covers calamities of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst and pest attack. NDRF is operated by the Government of India (GoI) for the purpose of providing immediate relief to people affected by the calamities of severe nature, under non-plan expenditure. NDRF is classified in the Public Account in Sub-section(b) Reserve Funds not bearing interest of the Government of India under the National Disaster Response Fund major head 8235 – ‘General and other Reserve Funds’ – 119. Funds are to be credited into NDRF in accordance with the provisions of DM Act. Let us have a look at some of these provisions (IGNOU-NDMA, 2012):

- Upon a request made by a state not having adequate balance in its State Disaster Response Fund (SDRF), Ministry of Home Affairs (MHA) or Ministry of Agriculture, as the case may be, will assess whether a case for additional assistance from NDRF is made out under the guidelines and the approved items and norms of assistance under NDRF/SDRF.
- MHA shall oversee the utilisation of releases from NDRF for the purposes for which funds have been released and monitor compliance with guidelines of NDRF.
- Upon the approval of High Level Committee (HLC), constituted with members from Ministry of Finance, Ministry of Agriculture, Ministry of Home Affairs, Deputy Chairman Planning Commission, the assistance shall be released by the Ministry of Finance from NDRF to states.

**Disaster Management:
Concepts and Institutional
Framework**

- The actual expenditure out of NDRF should be booked under respective minor heads within major head.
- The Pay and Accounts Office, Ministry of Finance shall release payments to the state governments. The detailed accounts of the Fund shall be maintained by the Controller General of Accounts through the Chief Controller of Accounts, Ministry of Finance.
- The State Executive Committee shall be responsible for ensuring that the expenditure incurred out of funds received under NDRF is in accordance with the items and norms of expenditure of NDRF/SDRF.
- The accounts of NDRF shall be maintained and audited by the Comptroller and Auditor General (CAG) annually. Its report will be submitted to Ministry of Finance and Ministry of Home Affairs.

9.3.2.2 State Disaster Response Fund (SDRF)

SDRF (which has replaced the earlier Calamity Relief Fund (CRF)) is a Fund constituted under Section 48 (1a) of Disaster Management Act. The SDRF shall be used only for meeting the expenditure for providing immediate relief to the victims of Disasters, as identified for NDRF grant. The SDRF is constituted in Public Account under the Reserve Fund bearing Interest in the Major Head: 8121. The provisions include (IGNOU-NDMA, 2012):

- Of the total contribution indicated by the Thirteenth Finance Commission, Government of India will contribute 75 per cent for general category states and 90 per cent for special category states, of the total yearly allocation in the form of a non-plan grant. The balance 25 per cent in case of general category states and 10 per cent in case of special category states will be contributed by the state government concerned.
- The share of Government of India to SDRF shall be paid as Grant-in-aid and accounted for in the Government of India accounts under the Major Head “3601-Grants-in-aid to state governments – 01 Non-Plan Grants – 109 Grants towards contribution to SDRF”.
- The Annual Report shall, inter-alia, furnish details of expenditure incurred by the state government on each of calamities, for each type of expenditure allowed as per the items and norms of expenditure of SDRF/NDRF so fixed by MHA with the concurrence of Ministry of Finance.
- The State’s SDRF account would distinctly show the receipt of assistance from NDRF apart from the remaining four sources of receipts into the Fund, namely (i) Centre’s share of SDRF, (ii) State’s share of Disaster Response Fund, (iii) Returns on investments, and (iv) Redemption of investments.
- The State government will constitute a State Executive Committee (SEC) according to DM Act and entrust it with responsibility to decide on all matters connected with the financing of relief expenditure of immediate relief from SDRF.
- The accounts of SDRF and investment shall be maintained by Accountant General in charge of accounts of the State. CAG would cause audit of SDRF annually.
- The share of the Central government in SDRF shall be remitted to State governments in two instalments in each financial year. The State governments

shall furnish a certificate to MHA and Ministry of Finance indicating that the amount received earlier has been credited to SDRF along with State's share of contribution, accompanied by a statement giving the up-to-date expenditure and balance amount available in the SDRF.

9.3.2.3 National Disaster Mitigation Fund

As per Section 47 of the DM Act, 2005, Central Government may constitute a National Disaster Mitigation Fund for projects exclusively for the purpose of mitigation. This Section has not been notified by the Government so far. As mentioned earlier, the FC-XIV restricted its recommendation to existing arrangements on the financing of the already constituted funds (National Disaster Response Fund and State Disaster Response Fund) only, as per its terms of reference. The FC-XIV did not make any specific recommendation for a mitigation fund (Government of India, 2016).

9.3.2.4 Recommendations of the Fourteenth Finance Commission

In regard to grants for disaster management, Fourteenth Finance Commission (FC-XIV) has adopted the procedure of the XIII FC and used past expenditures on disaster relief to determine the State Disaster Response Fund corpus. While making recommendations, XIV FC have taken note of the additional responsibility cast on States and their district administrations under the Disaster Management Act. XIV FC has also taken note of the location-specific natural disasters not mentioned in the notified list, which are unique to some States (ibid).

9.3.2.5 District Level Funds

District Relief Fund at the district level is based on the principles of CRF so that they are readily availability for immediate requirements. The District Level Relief Committee under the chairmanship of the District Collector/ Magistrate would evolve the guidelines and norms for expenditure to be made from the funds allotted for rehabilitation at the district level. At least fifty percent of the contribution to the funds could come from the public. DDRF is proposed to be created at the District Level as mandated by Section 48 of the DM Act. The disaster response funds at the district level would be used by the DDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines and norms laid down by the Government of India and the State Government (DDMP, 2012).

9.3.2.6 Members of Parliament Local Area Development Scheme

Another funding arrangement, called as Members of Parliament Local Area Development Scheme (MPLADS), was started in December 1993. Under this scheme, Members of Parliament (MPs) are allotted funds, annually, to pursue developmental work in their constituencies. Each MP gives a choice of works, to be undertaken in his/her constituency to the concerned District Heads, who get them implemented by the established procedures laid down in the guidelines for the improvement of their districts under MPLADS.

9.3.2.7 Prime Minister's National Relief Fund

The Prime Minister's National Relief Fund, created shortly after independence, provides immediate relief to people in distress. The fund depends entirely on voluntary donations received from the public. The fund renders assistance to individuals facing disaster. Its resources are utilised for the provision of immediate relief to the families of those killed in natural calamities like floods, cyclones and earthquake.

9.3.2.8 Insurance Schemes

Insurance is an important risk transfer technique. Insurance is very helpful to counter the losses caused by the disaster. The insurance cover, however, cannot be regarded as a funding arrangement for disaster. We need an insurance system that common people, especially the rural poor could afford. Some insurance schemes are:

- **Pradhan Mantri Fasal Bima Yojna – PMFBY** provides a comprehensive insurance cover against failure of the crop thus helping in stabilising the income of the farmers. The scheme covers all Food & Oilseeds crops and Annual Commercial/Horticultural Crops for which past yield data is available and for which requisite number of Crop Cutting Experiments (CCEs) are conducted being under General Crop Estimation Survey (GCES) (www.financialservices.gov.in).
- **Restructured Weather-based Crop Insurance Scheme – RWBCIS** aims to mitigate the hardship of the insured farmers against the likelihood of financial loss on account of anticipated crop loss resulting from adverse weather conditions relating to rainfall, temperature, wind, humidity etc. WBCIS uses weather parameters as “proxy for crop yields in compensating the cultivators for deemed crop losses. Pay-out structures are developed to the extent of losses deemed to have been suffered using the weather triggers (www.financialservices.gov.in).
- **Seed Crop Insurance** – is to provide financial security & income stability to the breeder/seed growers in the event of failure of seed crop. The salient feature of the scheme is to cover the risk involved in seed production at field stage, loss in expected raw seed yield, loss of seed crop after harvest so that more number of the breeder /institutions /organisations /seed growers would take up and come forward in seed production (RKMP, 2011).
- **Kisan Credit Card** – was introduced in 1998 for issue of KCC to farmers so that farmers may use them to readily purchase agriculture inputs such as seeds, fertilizers, pesticides etc. and draw cash for their production needs. The KCC scheme has since been simplified and provides for issue of ATM enabled RuPay Debit Card, inter alia, with facilities of one-time documentation, built-in cost escalation in the limit, and any number of drawals within the limit, etc (PIB, 2018).

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Discuss the concept and types of Rehabilitation.

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2) What do you mean by Reconstruction?

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3) Discuss the financial arrangements for Reconstruction.

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9.4 RECOVERY

Recovery is the process by which society and the nation are supported in turning back to their appropriate level of working, ensuing disaster. The recovery process is a time taking process which takes almost 5 to 10 years or even more. The recovery process includes activities like re-establishing the necessary services, reconstruction of repairable homes and also other buildings, accommodate alternate housing, measures to facilitate the physical and psychological rehabilitation of persons who have gone through the disaster and also long term measures of reconstruction, including the restoration of buildings and infrastructure that have been devastated by the disaster. Post-disaster analysis should also be involved as part of the recovery process. The recovery process is, therefore, complex and extensive; it can lead to a multiplicity of problems, some of which will necessitate changes to original plans as recovery proceeds. Thus, decision makers should be prepared to take a flexible attitude toward policy implementation to produce the best results. Also, it is important to bear in mind that recovery from disaster offers opportunities for improvement and development.

9.4.1 The Ground for Recovery Activity

The ground for earliest recovery activity depends on following pillars:

- Identification of various necessary aspects of the recovery mode;
- Defining an overall strategy for recovery, with suitable proposed and potential national development;
- Decision of distinct recovery programmes within the overall strategy;
- Implementation of the individual programmes within the overall strategy; and
- Fulfilment of individual programmes and projects on a well supervised and coordinated basis.

9.4.2 Problems in Recovery Areas

Major problems in the area of recovery are necessary to be outlined. These are:

- Recovery programmes formulation has been always delayed because the description and administration of recovery programmes have not been sufficiently considered in overall counter-disaster planning;
- Severe and extensive damage may be so destructive that difficulties can take considerable time to formulate and assess recovery programmes;
- Information for the formulation of recovery programme is inadequate. Resurveys can be necessary in some cases in order to establish more accurately the post-disaster effect;
- Recovery programme may impose additional load on government system and even functioning output of government departments may slow down whereby the whole recovery process becomes unsatisfactory;
- Resources from recovery programmes and fund may divert due to the occurrence of another major disaster;
- Problems relating to ministerial responsibilities may arise because recovery requirements overlap from one department to another;
- Formulation of recovery programmes may hinder due to inavailability of required finance and restrictions;
- Sometimes political problems can arise when some areas are not receiving the same priority of attention as in regard to other recovery programmes;

The above do not necessarily reflect all the problems which might affect recovery programmes, but they illustrate the kind of difficulties with which disaster management officials may have to deal. There is much felt need for the Government to initiate steps towards long-term recovery. With the massive Kerala Floods, 2018, in view, it has been stated that the “Government has to come forward and accept the challenges and immediately initiate extraordinary efforts for quick recovery. People are in distress and complete disarray. State should stand behind them and get back to the business of innovative planning for faster recovery. Country has faced such problems in the past too. It took time but they could recover well. Maharashtra (1993), Andhra Pradesh (1997, 2001) Orissa (1999), Gujarat (2001), Tamil Nadu (2005, 2015) , Andman & Nicobar (2004), Jammu & Kashmir (2005, 2015), Bihar (2008) Utarrakhand (2015) and few more states have gone through the process of long-term recovery earlier. Few states have taken partial recovery with few sectors approach and some have gone for full recovery with all sectors approach with significant recovery. Prioritising recovery need is the immediate requirement for the state” (Kumar, 2018).

Check Your Progress 2

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the Unit.

1) Define Recovery.

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2) Write a note on problems in Recovery Areas.

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9.5 CONCLUSION

In this Unit, the issues of Rehabilitation, Reconstruction and Recovery have been discussed. Various types of rehabilitation namely physical, social, economic and psychological have been explained. Besides describing the concept of Reconstruction, its major steps have been explained. Further detailed analysis on funding arrangements for reconstruction has been made. Towards the end, the discussion is on the problems in recovery areas.

9.6 GLOSSARY

- Rehabilitation** : To return to a good, healthy, or normal condition after a disaster.
- Reconstruction** : Reconstruction is the process of rebuilding something.
- Recovery** : To become successful or normal again after being damaged or having problems.
- NGO** : A non-profit organisation or an NGO is an organisation that operates independently of any government, typically one whose purpose is to address a social or political issue.
- Economic infrastructure** : Economic infrastructure promotes economic activity, such as roads, highways, railroads, airports, sea ports, electricity, telecommunications, and water supply.

9.7 REFERENCES

Asian Development Bank (ADB). (1991). *Disaster Mitigation in Asia and the Pacific*. Manila: Asian Development Bank.

Aysan, Y. & Davis. (1993). Rehabilitation and Reconstruction. Module prepared for Department of Humanitarian Affairs (DHA). UNDP.

Carter, N. W. (1991). *Disaster Management: A Disaster Managers Hand Book*. Manila: Asian Development Bank.

DDMP. (2012). *District Disaster Management Plan of District Kinnaur, Himachal Pradesh*. Kinnaur: District Disaster Management Authority.

IGNOU. (2006). *Rehabilitation, Reconstruction and Recovery*. New Delhi: Faculty of Public Administration, Indira Gandhi National Open University.

IGNOU-NDMA. (2012). *Training Manual on Conceptual and Institutional Framework of Disaster Management*. New Delhi.

Government of India. (2016). *National Disaster Management Plan*. New Delhi: National Disaster Management Authority.

Kumar, S. (September 13, 2018). Kerala Deluge: Dilemma of Long-term Recovery. Retrieved from <http://indianobserverpost.com/News-Detail.aspx?Article=118&WebUrl=Kerala-Deluge:-Dilemma-of-Long-term-Recovery>

Public Information Bureau. (August 7, 2018). Issue of Kisan Credit Cards. Retrieved from <http://pib.nic.in/newsite/PrintRelease.aspx?relid=181634>

RKMP. (2011). Pilot Scheme on seed crop insurance. Retrieved from <http://www.rkmp.co.in/content/pilot-scheme-on-seed-crop-insurance>

Sahni, P., Dhameja, A. & Medury, U. (Eds.). (2001). *Disaster Mitigation: Experiences and Reflections*. New Delhi: Prentice Hall of India.

9.8 ANSWER TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should include the following points:
 - Rehabilitation means to take necessary actions after the disaster to resume the basic services, help the diseased, to compensate the physical damage done to the surroundings and to start again economic actions to provide psychological support, social security and comfort to the diseased.
 - Physical rehabilitation; Social rehabilitation; Economic rehabilitation and Psychological rehabilitation.
- 2) Your answer should include the following points:
 - Reconstruction means to repair or reestablishment of physical infrastructure, service infrastructure and Environmental infrastructures.
 - It aims to build the rehabilitated system to safer standard so that the future risks would be reduced.
 - The reconstruction efforts aim at restoring the affected structures to a condition equal to or better than what existed before the disaster.
- 3) Your answer should include the following points:
 - National Disaster Response Fund (NDRF)
 - State Disaster Response Fund (SDRF)
 - National Disaster Mitigation Fund

- Recommendations of the Fourteenth Finance Commission
- District Level Funds
- Members of Parliament Local Area Development Scheme
- Prime Minister's National Relief Fund
- Insurance Schemes.

Check Your Progress 2

1) Your answer should include the following points:

- The recovery process includes activities like re-establishing the necessary services, reconstruction of repairable homes and also other buildings, accommodate alternate housing, measures to facilitate the physical and psychological rehabilitation of persons who have gone through the disaster and also long term measures of reconstruction, including the restoration of buildings and infrastructure that have been devastated by the disaster.

2) Your answer should include the following:

- Major points discussed in the Sub-section 9.4.2.

