



DISASTER MANAGEMENT: AN OVERVIEW

Rajneesh Kumar Sharma^{*} and Manish Khanna^{}**

^{*} Assistant Professor (Commerce), Government Degree College Nadaun, Distt. Hamirpur HP (INDIA) - 177033

Email ID: rajneesh.ndn@gmail.com

^{**} Assistant Professor, School of Management, Career Point University Hamirpur HP (INDIA) - 176041

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ABSTRACT: India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. Developed countries which have modern early warning systems and effective mitigation programmes are able to reduce the impact of natural hazards whereas countries with less preparedness and inadequate mitigation efforts suffer more from natural hazards. In the case of India, the human and economic losses from disasters are high in comparison to many other developing nations. According to an estimate by the World Bank direct losses from natural disaster are up to 2 percent of the India's GDP. More importantly, the impact of most of the disasters is disproportionately high on the poor.

Keywords: Objective of study, Types of disaster and Tools of Past disaster management.

INTRODUCTION

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. In the decade 1990-2000, an average of about 4344 people lost their lives and about 30 million people were affected by disasters every year. The loss in terms of private, community and public assets has been astronomical².

At the global level, there has been considerable concern over natural disasters. Even as substantial scientific and material progress is made, the loss of lives and property due to disasters has not decreased. In fact, the human toll and economic losses have mounted. It was in this background that the United Nations General Assembly, in 1989, declared the decade 1990-2000 as the International Decade for Natural Disaster Reduction with the objective to reduce loss of lives and property and restrict socio-economic damage through concerted international action, especially in developing countries. The super cyclone in Orissa in October, 1999 and the Bhuj earthquake in Gujarat in January, 2001 underscored the need to adopt a multi dimensional endeavor involving diverse scientific, engineering, financial and social processes; the need to adopt multi-disciplinary and multi-sector approach and incorporation of risk reduction in the developmental plans and strategies.

Developed countries which have modern early warning systems and effective mitigation programmes are able to reduce the impact of natural hazards whereas countries with less preparedness and inadequate mitigation efforts suffer more from natural hazards⁴. In the case of India, the human and economic losses from disasters are high in comparison to many other developing nations. According to an estimate by the World Bank direct losses from natural disaster are up to 2 percent of the India's GDP. More importantly, the impact of most of the disasters is disproportionately high on the poor.

1.1. Objectives of the study:

- To identify the major disaster types.
- To describe the planning strategies useful in mitigation.
- To analyze the tools of post-disaster management.

- To study the role of NGOs on disaster management.

1.2. Types of disasters: Due to the increasing frequency of natural and man-made disasters and their severe impact on the individuals, society, economy, natural resources and environment, Government of India constituted a High Powered Committee (HPC) on Disaster Management in August, 1999 to prepare comprehensive plans for National, State and District levels. The HPC has rightly stressed on the need for a comprehensive and holistic approach towards dealing with all kinds of disasters⁷. From a compartmentalized response oriented approach, a coordinated, holistic and participatory approach has been recommended. HPC identified thirty one disasters in the country. These disasters have been categorized into following five sub-groups depending on generic (origin) considerations and various departments/ ministries dealing with various aspects:

1.2.1. Water and Climate Related Disasters: Floods and Drainage Management, Cyclones, Tornadoes and Hurricanes, Hailstorm, Cloud Burst, Heat Wave and Cold Wave, Snow Avalanches, Droughts, Sea Erosion and Thunder and Lightning. United States Floods (1993), Mumbai Floods (2005), Hurricane Katrina (2005), Cyclone Yasi (2011), Sichuan Province China's Drought (2006), Munich's Hailstorms (1984), European Heat Waves (2003) are amongst the climate related disasters.

1.2.2. Geologically related disasters: Landslides and Mudflows, Earthquakes, Dam Failures/ Dam Bursts and Mine Fires are geological related disasters. South Fork dam failure (1889), United State's mudflows (1984), Indian Ocean earthquake (2004), Uttarakhand disaster (2013) are some major geological related disasters.

1.2.3. Chemical, Industrial & Nuclear related disasters: Chemical and industrial waste, and nuclear disasters had already proved themselves as a disaster. Bhopal gas tragedy, India (Dec, 1984), Atomic bombings on Hiroshima & Nagasaki, Japan (Aug, 1945), Limnic eruption in lake Monoun, Cameroon (1984) are the general examples.

1.2.4. Accident related disasters: Forest Fires, Urban Fires, Mines Flooding Oil Spill, Major Building Collapse, Serial Bomb Blasts, Festival related disasters, Electrical disasters and Fires, Air, Road and Rail Accidents, Boat Capsizing and Village Fire have been included in this sub-group by HPC. Peshtigo Fire in United States (1871) and Victorian bushfires in Australia (2009) are the notable cases.

1.2.5. Biologically related disasters: Epidemics, Pest Attacks, Cattle epidemics and Food poisoning. These disasters are natural phenomenon and occur without any intention while man-made disasters are events which, either intentionally or by accident cause severe threats to public health and well-being. Because their occurrence is unpredictable, man-made disasters pose an especially challenging threat that must be dealt with through vigilance, and proper preparedness and response. SARS epidemic (2002-03), Asian flu (1957-58), Swine Flu (2009-10) are some outbreak that spreads through human population.

1.2.6. Natural Disasters: *Floods* - Floods in the Indo-Gangatic Brahmaputra plains are an annual feature. Seventy five percent of rainfall is concentrated over four months of monsoon (June - September) and as a result almost all the rivers carry heavy discharge during this period. Brahmaputra and the Gangetic Basin are the most flood prone areas. The other flood prone areas are the north-west region of west due to over flowing rivers such as the Narmada and Tapti, Central India and the Deccan region with major eastward flowing rivers like Mahanadi, Krishna and Cavery. The average area affected by floods annually is about 8 million hectares while the total area in India liable to floods is 40 million hectares in which Uttar Pradesh has 21.9 percent, Bihar (12.71 percent), Assam (9.4 percent), West Bengal (7.91 percent), Orissa (4.18 percent) and other states have 43.9 percent flood prone area⁸.

Droughts - We have a largely monsoon dependant irrigation network. An erratic pattern, both low (less than 750 mm) and medium (750 - 1125 mm) makes 68 percent of the total sown area vulnerable to periodic droughts. Severe and rare droughts occur in arid and semi-arid zones once in almost every 8-9 years. Drought is a perennial feature in some states of India. 16 percent of the country's total area is drought prone and approximately 50 million people are annually affected by droughts. In fact, persistent drought with less than average rainfall over a long period of time gives rise to serious environmental problems.

Cyclones - India has a long coastline of approximately 8,000 km. There are two distinct cyclone seasons: pre-monsoon (May-June) and post-monsoon (October-November). The impact of these cyclones is confined to the coastal districts, the maximum destruction being within 100 km from the centre of the cyclones and on either side of the storm track. Most casualties are caused due to coastal inundation by tidal waves, storm surges and torrential rains. The occurrence of tropical cyclone is almost a common natural phenomenon. The Indian Ocean is one of the six major cyclones-prone regions of the world. In India, cyclones from Indian Ocean usually occur between April and May, and also between October and December. The eastern coastline is more prone to cyclones than the western coast. About 80 percent of total cyclones generated in the region hit the eastern coast. Out of approximately six cyclones formed every year, two to three may be severe.

Earthquakes - The Himalayan mountain ranges are considered to be the world's youngest fold mountain ranges. The subterranean Himalayas are geologically very active. In a span of 53 years four earthquakes exceeding magnitude 8 have occurred in this region. The peninsular part of India comprises stable continental crust. Although these regions were considered seismically least active, earthquakes, which occurred in Latur in Maharashtra on September 30, 1993 of magnitude 6.4 on the Richter scale and Gujarat 2001 of magnitude 6.9 on the Richter scale caused substantial loss of lives and damage to infrastructure. India has a large part of its land area liable to wide range of probable maximum seismic intensities where shallow earthquake of magnitudes of 5.0 or more on Richter Scale have been known to occur in the historical past or recorded in the last about 100 years. The Himalayas frontal that are flanked by the Arakan Yoma fold belt in the east and the Chaman fault in the west constitute one of the most seismically active regions in the world.

Landslides - The Himalayas, the Northeast hill ranges and the Western Ghats experience considerable landslide activity of varying intensities. River erosions, seismic movements and heavy rainfalls cause considerable landslide activity. Heavy monsoon rainfall often in association with cyclonic disturbances results in considerable landslide activity on the slopes of the Western Ghats. The Himalayan, the north-east hill and the Western Ghats experience considerable land-slides activities of varying intensities. The rock and debris carried by the rivers like Kosi originating in the Himalayas cause enormous landslide in the valleys. The seismic activity in the Himalayan region also results in considerable landslide movement. The Government of India is collaborating with a wide range of Indian academic institutions on hill research. Landslides Zonation Mapping is a modern method to identify landslide prone areas and has been in use in India since 1980s.

Avalanches - Avalanches constitute a major hazard in the higher elevations of Himalayas. Parts of the Himalayas receive snowfall round the year and adventure sports are in abundance in such locations. Severe snow avalanches occur in States like Jammu & Kashmir, Himachal Pradesh and Uttrakhand. Losses of life and property have been reported due to avalanches¹.

Manmade Disasters - The fast pace of growth and expansion in the name of development without comprehensive understanding or preparedness has brought forth a range of issues that seek urgent attention at all levels. In the absence of such measures growing numbers in our population are at a risk of prospective hazards such as air accidents, boat capsizing, building collapse, electric fires, festival related disasters, forest fires, mine flooding, oil spills, rail accidents, road accidents, serial bomb blasts, and fires. The safeguards within existing systems are limited and the risks involved high. Nuclear, Chemical and Biological threats are apparent in the present scenario. Deliberate international terrorism or accidental secondary fallout can be fatal. Creation of specific infrastructure is imperative to avoid a catastrophe in the future. However, rapid and effective response needs intensive research and laboratory support³.

TOOLS AND METHODS USED IN MITIGATION

The primary focus of disaster management should be to prevent disasters and/or to mitigate those that do happen. Disaster managers can generally use sets of tools, which are:

2.1. Core Group on Earthquake Mitigation: A Core Group on Earthquake Mitigation has been set up having the most eminent authorities on earthquake engineering in the country as members. The States in seismic zones III, IV and V have been advised to change their building bye-laws to incorporate the BIS

codes for safe construction in the seismic zones. Some States have done this already. In order to help other States, a Committee has been set up to draw up model building bye laws and development control regulation for adoption by the States/UTs. The Committee is expected to submit its report to the Ministry by 15th June, 2004 ⁶.

2.2. Awareness Campaign: This in itself will not be sufficient unless the people living in the seismic zones are also made aware of their vulnerability as well as the means of reducing that vulnerability. A nation-wide media campaign is proposed. The Home Secretary had taken a meeting with the Secretary (I&B), DG, Doordarshan, and DG, DAVP to discuss this. In pursuance of this meeting, a Steering Committee was set up under the Chairmanship of Secretary (BM) to consider the matter in detail. The Prasar Bharti proposed to the Steering Committee that they may be given an opportunity to draw up the media plan. Prasar Bharti have made a presentation submitted a plan/proposal on the media campaign. The matter will be considered further by the Steering Committee in its next meeting scheduled to be held shortly.

2.3. Earthquake Risk Mitigation Project: An Earthquake Mitigation Project has been drawn up, with an estimated cost of Rs.1039 crore. That project has been given in-principle clearance by the Planning Commission. The project is being submitted for in principle approval of Home Minister. Thereafter, the project will be appraised by the Committee on Non Plan Expenditure (CNE) before it is submitted for the approval of the Cabinet.

2.4. Cyclone Monitoring and Mitigation Group: A Cyclone Monitoring and Mitigation Group has been set up. This Group is looking at protocols for cyclone warning and also the observation/monitoring platform which need to be strengthened. A project has been taken up with the United States for up gradation of models for cyclone track prediction.

2.5. Cyclone Risk Mitigation Project: A project for Cyclone Mitigation (estimated cost Rs.1050 crore) has been drawn up in consultation with the cyclone prone States. This project envisages construction of cyclone shelters, coastal shelter belt plantation in areas which are prone to storm surges, strengthening of warning systems, training and education etc. This project has also been given in-principle clearance by the Planning Commission and the World Bank has agreed in principle to provide funding for the project. The project has been posed to the World Bank through Department of Economic Affairs. Counter-part funding will have to be provided in the plan budget.

2.6. Mainstreaming Mitigation in Rural Development Schemes: The Ministry of Home Affairs is working with the Ministry of Rural Development for changing the guidelines so that the houses constructed under IAY or school buildings/community buildings constructed under SGRY are earthquake/cyclone/flood resistant; as also that the schemes addressing mitigation are given priority under SGRY. Ministry of Rural Development is carrying out an exercise for this purpose. The matter is being closely followed up with that Ministry.

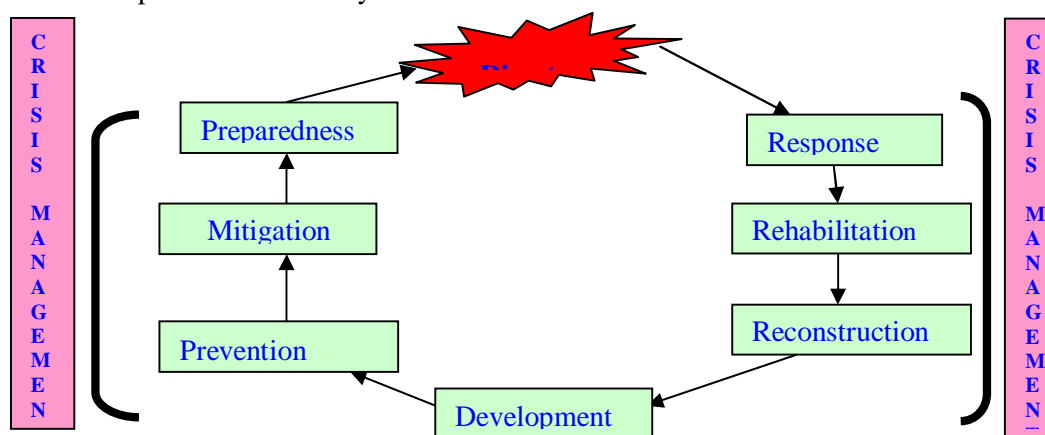


Figure 1: Disaster Management Cycle

TOOLS OF POST-DISASTER MANAGEMENT

A disaster manager uses a variety of tools to plan and manage disaster response. Most important of these are plans and procedures, policies, codes and standards, and standardized Programs or program structures. The next four sections examine in detail these important tools.

3.1. Plans and Procedures: Plans and procedures are the most important tools of disaster management because they structure and guide emergency action. Plans are based on the premise that it is better to make your decisions long before a disaster strikes than in the aftermath of a disaster, when information is inaccurate and the situation is confusing and often unknown.

The primary types of plans and procedures are⁵:

3.1.1. *Disaster Plans:* These include preparedness plans, such as warning and evacuation plans; sheltering plans; disaster and needs assessment plans; search-and-rescue plans; and emergency services operations plans. Disaster plans are prepared on the basis of known risks, estimated impact areas, and predicted needs.

3.1.2. *Contingency Plans:* Contingency plans are actions planned in anticipation that something unexpected might occur. For example, a government may determine that it can handle a disaster of a certain magnitude; it would then develop its plans accordingly. However, on the chance a larger magnitude disaster would outstrip its capacity to meet all the needs, a contingency plan for outside assistance might be developed.

3.1.3. *Forward Planning:* This planning term concerns the development of specific plans to meet an immediate emergency. Forward planning is usually based on an early warning of an impending threat (for example, a warning from a meteorological service that a cyclone is likely to strike a certain community, or information that large numbers of refugees might soon seek asylum in another country). Forward planning usually involves the pre-positioning of emergency supplies and the preparation of emergency response services and resources for action.

3.1.4. *Policies:* In providing assistance to disaster victims, organizations often propose many differing approaches and programs. Different approaches often result in inequitable or unequal provision of materials and services. This can cause problems for the host government and for organizations with long-term commitments to the disaster-affected area.

Uniform disaster policies are one way to avoid these problems. Such policies provide a mechanism for shaping disaster mitigation and vulnerability reduction efforts as well as emergency response and reconstruction. They also provide a basis upon which programs can be coordinated, and in some cases, integrated. Relief and reconstruction policies should ideally be set as part of the disaster preparedness process. However, if they do not exist at the time of a disaster, they should be established during the initial stages of emergency response. Normally, the host government is responsible for the development and implementation of policies, but all major organizations, especially those that will be providing substantial relief aid, should participate in the process. Policies should be straightforward and concise. Simplified, brief policies increase the chances of voluntary compliance. Policies must be flexible, permitting relief agencies to adapt their programs to the specific requirements of the communities in which they are working. The objective of policies is to guide action, not to dictate the precise nature and approach of all agencies. It is also important to incorporate a consistent development philosophy and goals into disaster policies.

3.1.5. *Standardized Programs or Program Structures:* A relief agency will commonly develop a standard approach for responding to a recurring need in a specific type of disaster. Agencies trying a particular approach in one disaster will often develop a program model that can be used in similar disasters in the same region. Some successful examples of standardized programs are:

- Supplementary feeding programs
- Shelter-to-housing programs
- Housing education programs
- Materials distribution programs
- Food-for-work programs.

Some agencies feel that a standard program will not meet all the needs of victims in different situations; yet they recognize the need for standardizing the management of the disaster response. These agencies often develop standardized program structures, which establish the key positions in an emergency program, develop an organization chart, and provide the preliminary resources necessary to initiate programs. Sufficient authority is delegated to the program staff to enable them to design and implement a program tailored to the particular needs of the affected community. Standardized program structures are workable only if the personnel are experienced and trained disaster managers.

3.1.6. *Programs*: Programs are the principal tool of relief and reconstruction. In disaster management the term "program" describes a set of activities carried out by an organization within a specified time, to accomplish predetermined objectives. A program may be made up of two or more sub-units of activities generally called projects. In a pre-disaster environment programs are usually long-term and have a small, full-time, professional staff. In a post-disaster environment, programs are usually short-term, with limited budgets and a large temporary staff formed around a small core of professionals. Some common examples of programs are housing reconstruction programs, food aid programs, preventive health programs, and food-for-work programs.

3.1.7. *Public Awareness*: Post-disaster programs can have an enormous impact on a community. It is essential that they are planned to be effective and appropriate for the community, that they meet only the needs the community cannot meet for itself, and that the program contribute to the development of the community. This frequently means that a program's objectives should include the participation of the victims in the program planning and design. The program should have an educational component that will upgrade the level of knowledge in the community, to prevent or reduce a future disaster. The program should also be tied to a long-range integrated development scheme⁹.

CONCLUSION

Emerging trends in managing natural disasters have highlighted the role of Non Governmental Organizations (NGOs) as one of the most effective alternative means of achieving an efficient communication link between the Disaster Management agencies and the affected community. Many different types of NGOs are already working at advocacy level as well as grassroots level; in typical disaster situations they can be of help in preparedness, relief and rescue, rehabilitation and reconstruction and also in monitoring and feedback.

The Constitution 73rd and 74th Amendments paved the way for a constitutional status for local governments - Urban Local Bodies and Panchayati Raj institutions, to play a greater role in matters of immediate concern. While they have started taking active interest and initiatives in most of the subjects under their jurisdiction, disaster management is a topic that has not captured their attention so far. Local governance institutions, with their grass-root level contacts with the common people, can make a substantial contribution to the process of spreading awareness and ensuring an active people's participation in disaster mitigation activities. They are the ideal channels for NGOs and other agencies that conduct any disaster management programme, right from relief, recovery and rehabilitation to planning for mitigation and prevention.

REFERENCES

1. *Disaster Preparedness Guidelines*, (1976) FDA Disaster Preparedness Seminar Handbook.
2. Cuny and Thompson, (1980) "*Formulating Policies for Disaster Management*", INTERTECT, Dallas.
3. De Ville de Goyet, C., Seaman, J., and Geiger, U., (1978) "*The Management of Nutritional Emergencies in Large Populations*", World Health Organization, p. 38.
4. *Disaster Preparedness Guidelines*, (1979) OFDA Disaster Preparedness Seminar, St. Lucia.
5. Goel, S. L., *Encyclopaedia of Disaster Management*, Deep & Deep Publications Pvt. Ltd

6. G.K. Ghosh *Disaster Management* A.P.H. Publishing Corporation.
7. Kumar Arvind, *Disaster Management-Recent Approaches* By Anmol Publications
8. Singh. Jagbir ,*Disaster Management Future Challenges and Opportunities* by I.K. International.
9. Shaw Rajiv, Krishnamurthy , “ Disaster Management –Global Challenges & Local solutions” , Published by University Press. *Ed.*, 17, 63.