

INTRODUCTION

A disaster is a, event, located in time and space, that produces the conditions whereby the continuity of the structure and processes of social units become problematic." (Russell R. Dynes, 1980. Participation in Social and Political Activities, San Francisco, Jossey-Bass Publishers.)

1.1 Background

Disasters threaten sustainable economic development worldwide. In the past twenty years, earthquakes, floods, tropical storms, droughts and other calamities have killed around three million people, inflicted injury, disease, homelessness, and misery on one billion others, and caused damage worth millions of rupees. Disasters destroy decades of human effort and investments, thereby placing new demands on society for reconstruction and rehabilitation.

Some of the major disasters that have occurred so far in this decade are as follows:

Year	Hazard	Country	No. of dead	Damage estimate (million US \$)
1990	Earthquake	Phillipines	1,660	920
	Tropical Wind storm	South Pacific	8	119
	Tropical Wind storm	Phillipines	503	720
1991	Earthquake	Georgia	270	1,700
	Volcano	Phillipines	932	260
	Wind storm and Flash Flood	Phillipines	4,889	
	Tropical Wind storm	Bangladesh	138,866	1,780
	River Flood	China	2,470	21,000
	Wind storm	USA/Carribbean		20,000
	Earthquake	India	2,000	
Tropical Wind storm	South Pacific	12	331	
1992	Tsunami	Indonesia	2,080	100
	Tsunami	Nicargua	116	25
	Earthquake	Turkey	547	
	Mudflow	Phillipines	333	320
1992-93	Drought	Southern Africa		
1993	River Flood	United States		20,000
	Earthquake / Tsunami	Japan	122	
	31 Typhoons	Phillipines	514	
	Tropical Wind storm	Fiji	21	134
	Earthquake	India	10,000	
	Flood	Western Europe	7	hundreds of millions

1994	Earthquake Earthquake / Mudslide Volcano Flood Flood	United States Colombia Papua New Guinea China India	271 100,000 affected 1,400 2,001	20,000
1995	Earthquake Earthquake	Japan Russia	5,500	100,000
1998	Cyclone	India / East Asia		
2001	Earthquake	India/ Western India		
2004	Tsunami	South Asia : Indonesia, Sri Lanka, India		
2005	Earthquake	Northern Asia: Pakistan, India		
2005	Katrina /tornado	United States of America		

Source : United Nations, Department of Humanitarian Affairs and Recent Incidences

In a nutshell, the major natural disasters for the period 1960-1996 are as follows:

	1960-1969	1970-79	1980-89	Last 10 years 1987-1996
Number	16	29	70	64
Economic Losses	48.4	93.0	147.6	404.4
Insured Losses	6.5	10.9	29.8	98.8

[Source : "Topics: Natural Catastrophes," Munich Reinsurance, 1997].

The member states of the United Nations General Assembly declared the 90s as the International Decade for Natural Disaster Reduction (IDNDR). This international promotional mechanism was conceived to run from 1990 through 1999, to motivate concerted international action and cooperation which could "reduce the loss of life, property damage, and social and economic disruption caused by natural disasters, especially in developing countries".

IDNDR is based on the understanding that there is sufficient scientific and technical knowledge, save lives and property from natural and similar disasters through to more extensive application. IDNDR provides a framework and serves as a catalyst for disaster reduction. It provides a stimulus to provoke the

expanded use of practical measures for more effective disaster preparedness and management practices.

The international impact of the subject was expanded in May 1994 at the World Conference for Natural Disaster Reduction, convened by the UN in Yokohama, Japan. Representatives of 155 nations adopted fundamental guidelines for natural disaster prevention, preparedness and mitigation, embodied in the *Yokohama Strategy and Plan of Action for a Safer World*. The Yokohama Conference underlined the importance of an economic rationale for disaster reduction, complementing the earlier scientific foundation with an essential commitment from public policy authorities.

The goals established at the start of IDNDR are as follows:

- To improve the capacity of each country to mitigate the effects of natural disasters, in the assessment of disaster damage potential, and in the establishment of early warning systems and disaster resistant capabilities.
- To devise appropriate guidelines and strategies for applying existing scientific and technical knowledge.
- To foster scientific and engineering endeavour aimed at addressing critical gaps in knowledge.
- To disseminate existing and new technical information.
- To develop measures for the assessment, prediction, prevention and mitigation of natural disasters through programmes of technical assistance and technology transfer, education and training, and to evaluate the effectiveness of programmes.

In essence, the decade's activities seek to shift the emphasis from post-disaster relief to pre-disaster risk reduction. The key tasks identified in risk reduction are:

- Avoiding habitation in hazardous areas;

- Developing structures resistant to the onslaughts of hazards;
- Developing the ability to rapidly evacuate hazardous areas or to shift residents to hazard-resistant structures;
- Reducing or eliminating natural hazards through technological intervention (e.g., dams, plantings, beach groins); and
- Establishing, through preparedness, the means to quickly recover from disasters with minimal additional suffering and loss of life.

Experiences of Orissa Super Cyclone, 1999 and earthquake in Bhuj, 2001, highlighted the need for a more comprehensive disaster management planning at the national, state and district level.

Response to disasters, in the absence of a defined plan, would be arbitrary, leading to overemphasis on some actions and absence of other critical actions. The objectives of any disaster management plan should be to localize a disaster, and to the maximum extent possible, contain it so as to minimize the impact on life, the environment and property. A formal plan for managing disasters is therefore necessary. It therefore includes a plan of action for the following disasters: earthquakes, floods, wind storms, epidemics, industrial and chemical accidents, road accidents and fires. At the same time disaster management plan has a strong mitigation aspect as well, which will reduce the frequency of occurrence of such disasters. The plan would include: Pre-planning a proper sequence of response actions; Allocation of responsibilities to the participating agencies; Developing codes and standard operating procedures for various departments and relief agencies involved; Inventory of existing facilities and resources; Mechanisms for effective management of resources; Co-ordination of all relief activities including those of NGOs to ensure a coordinated and effective response; Co-ordination with the state response machinery for appropriate support; Monitoring and evaluation of actions taken during relief and

rehabilitation.

Planning for a disaster or emergency is a complex procedure since disaster is largely unscheduled. Emergency planning can be considered as a process of preparation for a range of possible disasters and will include: Identification and analysis of the potential hazards, and if possible the mitigation or elimination of their consequences; Analysis of the resources available to cope with any potential disaster; and Post - disaster response and recovery planning.

The primary purpose of emergency planning is the anticipation of problems and development of possible solutions within existing constraints. Basically the process includes:

- Analysis of hazards which would include vulnerability and risk assessment of available resources;
- Identification of necessary post - disaster tasks and allocation of these tasks to organisations and individuals;
- Co-ordination of all responding groups to ensure a cohesive and effective response.

The purpose of preparing this plan is:

- To understand the vulnerability of Delhi to disasters;
- To ascertain the status of existing resources and facilities available with the various agencies involved in disaster management in the state;
- Assess their adequacies in dealing with a disaster; and
- Identify the requirements for institutional strengthening, and capacity strengthening of human resources.

Using this information, a rational basis for strengthening of the present system for management of disasters in the State of Delhi has been developed.

1.2 The National Capital Territory (NCT) of Delhi

The NCT of Delhi occupies an area of 1483 sq. km and lies between $28^{\circ} 24' 15''$ N to $28^{\circ} 53' 00''$ N and longitudes $76^{\circ} 50' 24''$ S to $77^{\circ} 20' 30''$ S. It has been covered in the nine districts of Delhi named North, North West, West, South West, South, East, Central and New Delhi. Physiographically, Delhi is located in Indo-Gangatic Plains, South of Himalayans and east of Aravallies and adjacent to Punhar (Punjab-Haryana) plains. It was 1911 when Britishers made Delhi as the capital of India and since then it has acquired the status of political, commercial and industrial development.

Now, Delhi, a Megapolis with over a fourteen million of population is extremely vulnerable to various disasters. The entire region of Delhi is in Seismic Zone IV at high risk to earthquakes. Yamuna floods during monsoon cause disasters for the people living in the low lying areas. Delhi is unsystematically urbanised city, densely populated with thousands of unplanned building structures, sizable number of urban slums, unauthorised colonies and stuffed industrial clusters has compounded vulnerabilities of Delhi. It is also vulnerable to the fires, epidemics, bomb blasts, riots, cyclones and terrorism.

In view of above, Government of Delhi has recognised the need of the comprehensive plan document for Delhi covering all the aspects of Disaster Management. This document has been prepared to address the vulnerabilities of Delhi and also the preparedness and mitigation strategies to reduce the risk involved as a part of pre-disaster planning. The document also provides an inclusive response and rehabilitation plan as a part of post disaster planning. Aspects of Institutional mechanism and financial planning have also been incorporated in the plan.

1.3 Vision

The Government of NCT of Delhi aims to reduce disaster vulnerabilities of its citizens, by addressing issues of awareness on vulnerabilities, system for effective preparedness and response in government and communities, long-term planning for mitigation, capacity building and training to various stakeholders and regular practice drills. It aims to achieve this by adopting best practices a form government and institutions with experience in disaster under overall direction if the apex body if the DDMA.

1.4 Objectives:

Following are the objectives for preparation of the State Disaster Management Plan:

1. To identify the various hazards and hazard prone areas in the State
2. To conduct risk and vulnerability assessment and to identify vulnerable locations
3. To analyse capacities of the institutions of Delhi
4. To evolve strategies for preparedness and mitigation so that risk involved in vulnerable communities can be reduced
5. To evolve Emergency response and recovery mechanism and financial arrangements
6. To reform financial planning for disaster management planning

1.5 Methodology:

The Disaster Management Plan for the state is proposed to be developed as an integrated plan encompassing all disasters in the multi-response fashion keeping with the international trend. Albeit, a common planning and operational framework is proposed for all the disasters which would ensure a systematic assessment, communication and management of risk, appropriate for a disaster and identification of response.

This exercise of preparation of disaster management plan in Delhi, aims to develop a comprehensive Disaster Management Plans (DMP) for the state and all the districts. The study is to be conducted in three phases as shown below:

Phase I - Preparation of the District Disaster Management Plans for all nine districts.

Phase II: Risk and Vulnerability Assessment for the state based on District plans

Phase III: Preparation of Disaster Mitigation Strategy and Emergency Response Plan for State of Delhi.

In the initial stage, District Disaster Management Plans are being formulated by the district nodal agencies and finalised by the District Disaster Management Committee. These plans cover various units encompassing district profile, hazard and risk assessment, preparedness and mitigation strategies and response plans.

In the second phase, published and unpublished information on hazards have been gathered. The information has been tabulated and compared with the several parameters such as physiographic conditions, socioeconomic condition, community preparedness and response level and administrative preparedness and response levels to evaluate the risks involved in Delhi.

Further the Government of NCT of Delhi may form expert committees for deliberating on the various hazards. The committee meetings will provide a platform for discussions on the current status of information related to existing emergency plans in the state, additional study requirements, possible approaches to be followed while developing the plan and a greater focus on the scope of the study.

The process of consultation subsequently will be continued through a series of meetings with Deputy Commissioners and Divisional Commissioners at the district and State level respectively. The draft documents will be presented and reviewed at a workshop, by a group of experts. Based on their suggestions, the documents will be revised.

1.6 Scope and Limitations

The scope of the present document will be extended to an analysis of the generic reasons for the risks due to hazards in the state, and an attempt at identifying the vulnerable areas in the state specific to each hazard. Secondary data from the various state government departments and information from newspaper clippings will be sought. A detailed review of the existing resources and their adequacy vis-à-vis disaster management entails collection of exhaustive information on the project status in the various districts. The major issues that will emerge from the committee meetings will be reiterated in this document for the sake of continuity.

Organisation of Chapters:

With this in view, State level Steering Committee is formed. The committee approved a work plan for the GoI-UNDP DRM Programme to be implemented in the state. This also includes GoNCTD to prepare a Disaster Management Plan for the state and districts. It was further proposed that a multi-hazard response plan should focus specifically on the following disasters – earthquakes, floods, wind-storms, epidemics, road accidents, fires and industrial and chemical accidents.