

CHAPTER – 7

DISASTER MANAGEMENT: THE DEVELOPMENT PERSPECTIVE

7.1 Five Year Plan documents have, historically, not included consideration of issues relating to the management and mitigation of natural disasters. The traditional perception has been limited to the idea of “calamity relief”, which is seen essentially as a non-plan item of expenditure. However, the impact of major disasters cannot be mitigated by the provision of immediate relief alone, which is the primary focus of calamity relief efforts. Disasters can have devastating effects on the economy; they cause huge human and economic losses, and can significantly set back development efforts of a region or a State. Two recent disasters, the Orissa Cyclone and the Gujarat Earthquake, are cases in point. With the kind of economic losses and developmental setbacks that the country has been suffering year after year, the development process needs to be sensitive towards disaster prevention and mitigation aspects. There is thus need to look at disasters from a development perspective as well.

7.2 Further, although disaster management is not generally associated with plan financing, there are in fact a number of plan schemes in operation, such as for drought proofing, afforestation, drinking water, etc., which deal with the prevention and mitigation of the impact of natural disasters. External assistance for post-disaster reconstruction and streamlining of management structures also is a part of the Plan. A specific, centrally sponsored scheme on disaster management also exists. The Plan thus already has a defined role in dealing with the subject.

7.3 Recently, expert bodies have dwelt on the role of the Planning Commission and the use of plan funds in the context of disaster management. Suggestions have been made in this regard by the Eleventh Finance Commission, and also the High

Powered Committee on Disaster Management. An approach on planning for safe development needs to be set out in the light of these suggestions.

7.4 This chapter reflects the considerations outlined above. It briefly outlines the global context and the Indian experience of disasters, sets out the institutional and financial arrangements for disaster management and the response towards these in the country, looks at directions for improvement, and concludes with a strategy to facilitate planning for safe national development in the Tenth Plan period.

THE GLOBAL CONTEXT

7.5 There has been an increase in the number of natural disasters over the past years, and with it, increasing losses on account of urbanisation and population growth, as a result of which the impact of natural disasters is now felt to a larger extent. According to the United Nations, in 2001 alone, natural disasters of medium to high range caused at least 25,000 deaths around the world, more than double the previous year, and economic losses of around US \$ 36 billion. These figures would be much higher, if the consequences of the many smaller and unrecorded disasters that cause significant losses at the local community level were to be taken into account. Devastations in the aftermath of powerful earthquakes that struck Gujarat, El Salvador and Peru; floods that ravaged many countries in Africa, Asia and elsewhere; droughts that plagued Central Asia including Afghanistan, Africa and Central America; the cyclone in Madagascar and Orissa; and floods in Bolivia are global events in recent memory. However, what is disturbing is the knowledge that these trends of destruction and devastation are on the rise instead of being kept in check.

7.6 Natural disasters are not bound by political boundaries and have no social or economic considerations. They are borderless as they affect both developing and developed countries. They are also merciless, and as such the vulnerable tend to suffer more at the impact of natural disasters. For example, the developing countries are much more seriously affected in terms of the loss of lives, hardship borne by population and the percentage of their GNP lost. Since 1991, two-third of the victims of natural disasters were from developing countries, while just 2 per cent were from highly developed nations. Those living in developing countries and especially those with limited resources tend to be more adversely affected. With the alarming rise in the natural disasters and vulnerability per se, the world community is strengthening its efforts to cope with it.

7.7 As a number of the most vulnerable regions are in India, natural disaster management has emerged as a high priority for the country. Going beyond the historical focus on relief and rehabilitation after the event, we now have to look ahead and plan for disaster preparedness and mitigation, in order that the periodic shocks to our development efforts are minimized.

THE INDIAN EXPERIENCE

Regional Vulnerabilities

7.8 Physical vulnerability relates to the physical location of people, their proximity to the

Box 7.1

INDIA'S KEY VULNERABILITIES

Coastal States, particularly in the East Coast and Gujarat are vulnerable to cyclones.

4 crore hectare land mass is vulnerable to floods.

68 per cent of net sown area is vulnerable to drought.

55 per cent of total area is in Seismic Zones III - V, and vulnerable to earthquakes.

Sub-Himalayan/Western Ghat is vulnerable to landslides.

hazard zone and standards of safety maintained to counter the effects. For instance, some people are vulnerable to flood only because they live in a flood prone area. Physical vulnerability also relates to the technical capacity of buildings and structures to resist the forces acting upon them during a hazard event.

7.9 The extent to which a population is affected by a calamity does not purely lie in the physical components of vulnerability, but is contextual also to the prevailing social and economic conditions and its consequential effect on human activities within a given society. Research in areas affected by earthquakes indicates that single parent families, women, handicapped people, children and the aged are particularly vulnerable social groups. The geo-physical setting with unplanned and inadequate developmental activity is a cause for increased losses during disasters. In the case of India, the contribution of over-population to high population density, which in turn results in escalating losses, deserves to be noted. This factor sometimes tends to be as important as physical vulnerability attributed to geography and infrastructure alone.

7.10 The continent of Asia is particularly vulnerable to disaster strikes. Between the years 1991 to 2000 Asia has accounted for 83 per cent of the population affected by disasters globally. While the number of people affected in the rest of the world were 1,11,159, in Asia the number was 5,54,439.¹ Within Asia, 24 per cent of deaths due to disasters occur in India, on account of its size, population and vulnerability. Floods and high winds account for 60 per cent of all disasters in India. While substantial progress has been made in other sectors of human development, there is need to do more towards mitigating the effect of disasters.

7.11 Many parts of the Indian sub-continent are susceptible to different types of disasters owing to the unique topographic and climatic characteristics. About 54 per cent of the sub-continent's landmass is vulnerable to earthquakes while about 4 crore hectares is vulnerable to periodic floods. The

1. World Disasters Report, IFRC, 2001

decade 1990-2000, has been one of very high disaster losses within the country, losses in the Orissa Cyclone in 1999, and later, the Gujarat Earthquake in 2001 alone amount to several thousand crore of Rupees, while the total expenditure on relief and reconstruction in Gujarat alone has been to the tune of Rs 11,500 crore.²

7.12 Similarly, the country has suffered four major earthquakes in the span of last fifty years along with a series of moderate intensity earthquakes that have occurred at regular intervals. Since 1988, six earthquakes have struck different parts of the country. These caused considerable human and property losses.

Table 7.1
Major Earthquakes in India, 1988-2001

Date	Location	Magnitude
August 21, 1988	Bihar-Nepal Border	6.4
October 20, 1991	Uttarkashi, Uttar Pradesh	6.6
September 30, 1993	Latur- Osmanabad, Maharashtra	6.3
May 22, 1997	Jabalpur, Madhya Pradesh	6.0
March 29, 1999	Chamoli, Uttar Pradesh	6.9
January 26, 2001	Bhuj, Gujarat	7.7

Source : Indian Meteorological Department and US Geological Survey

Economic Losses Due to Disasters

7.13 Disasters lead to enormous economic losses that are both immediate as well as long term in nature and demand additional revenues. Also, as an immediate fall-out, disasters reduce revenues from the affected region due to lower levels of economic activity leading to loss of direct and indirect taxes. In addition, unplanned budgetary allocation to disaster recovery can hamper development interventions and lead to unmet developmental targets.

2. As on 11-12-2000, Gujarat Earthquake : A Case Study, NCDM, 2002, New Delhi

Box 7.2

Global Losses Through Natural Disasters

According to Reinsurance Company 'Munich Re' costs associated with natural disasters has gone up 14 fold since the 1950s. Each year from 1991 to 2000, an average of 211 million people were killed or affected by natural disasters - seven times greater than the figure for those killed or affected by conflict. Towards the end of the 1990s, the world counted some 25 million 'environmental refugees'- for the first time more people had fled natural hazards than conflict.

Source: World Disasters Report, 2001

7.14 Disasters may also reduce availability of new investment, further constricting the growth of the region. Besides, additional pressures may be imposed on finances of the government through investments in relief and rehabilitation work.

7.15 In the recent earthquake in Gujarat, more than 14,000 lives were lost, ten lakh houses were damaged and the asset loss has been indicated to be worth 15,000 crore. Tables 7.2 to 7.5 give an indication of the magnitude of the damage and losses incurred by the country in recent natural disasters.

7.16 The dimensions of the damage, as evident in the tables and the diagram 7.1 emphasise the point that natural disasters cause major setbacks to development and it is the poorest and the weakest that are the most vulnerable to disasters. Given the high frequency with which one or the other part of the country suffers due to disasters, mitigating the impact of disasters must be an integral component of our development planning and be part of our poverty reduction strategy.

INSTITUTIONAL ARRANGEMENTS

7.17 The country with its federal system of Government has specific roles for the Central and State Governments. However, the subject of disaster management does not specifically find

Table 7.2
Damage due to Natural Disasters in India

Year	People affected (Lakh)	Houses & buildings, partially or totally, damaged	Amount of property damage/loss (Rs Crore)
1985	595.6	2,449,878	40.06
1986	550.0	2,049,277	30.74
1987	483.4	2,919,380	20.57
1988	101.5	242,533	40.63
1989	30.1	782,340	20.41
1990	31.7	1,019,930	10.71
1991	342.7	1,190,109	10.90
1992	190.9	570,969	20.05
1993	262.4	1,529,916	50.80
1994	235.3	1,051,223	10.83
1995	543.5	2,088,355	40.73
1996	549.9	2,376,693	50.43
1997	443.8	1,103,549	n.a.
1998	521.7	1,563,405	0.72
1999	501.7	3,104,064	1020.97
2000	594.34	2,736,355	800.00
2001	788.19	846,878	12000

Source : Annual Reports, NDM Division, Ministry of Agriculture

Table 7.3
Annual Damage due to Heavy Rains, Landslide and Floods

S. No	Year	Districts affected	Villages affected (No)	Population affected (Lakh)	Crop Area affected (Lakh Ha.)	Houses Damaged (no.)	Human life loss (no.)	Cattle loss (no.)	Estimated value of loss to houses (Rs. in crore)	Estimated value of Public properties (Rs. in crore)
1	1999	202	33,158	328.12	8.45	884,823	1,375	3,861	0.72	-
2	2000	200	29,964	416.24	34.79	2,736,355	3,048	102,121	631.25	389.72
3	2001	122	32,363	210.71	18.72	346,878	834	21,269	195.57	676.05

Source : Annual Reports, Natural Disaster Management Division, Ministry of Agriculture

Table 7.4
Damage due to Cyclone in Orissa in October '2000

Date of occurrence	Total no of districts	Districts affected	Villages affected (No)	Population affected (Lakh)	Crop Area affected (Lakh Ha)	Houses Damaged (no.)	Human life loss (no.)	Cattle loss (no.)
17-18.10.99	30	4	5,181	37.47	1.58	331,580	199	10,578
29-30.10.99	30	12	14,643	129.22	18.43	1,828,532	9,887	444,531

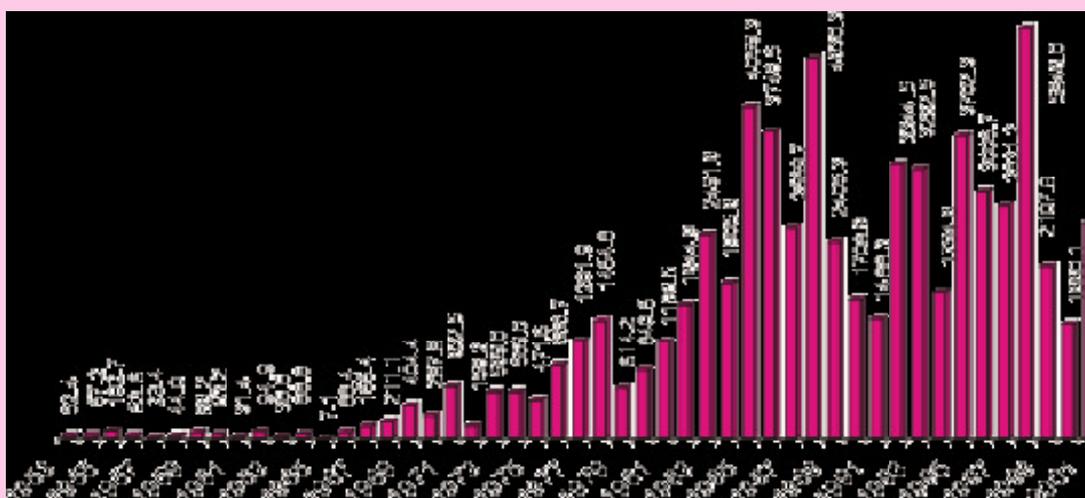
Source : Annual Reports, Natural Disaster Management Division, Ministry of Agriculture

Table 7.5
Losses due to Droughts: 1999-2001

S.No	Year	Districts affected	Villages affected (No)	Population affected (Lakh)	Damage to crops area (Lakh Ha)	Estimated value of damaged crops (Rs crore)	Cattle population affected (in lakh)
1	1999	125	-	369.88	134.22	6.44	345.60
2	2000	110	54,883	378.14	367.00	371.87	541.67
3	2001	103	22,255	88.19	67.44	NA	34.28
TOTAL		338	77,138	836.21	568.66	378.31	921.55

Source: Annual Reports, Natural Disaster Management Division, Ministry of Agriculture

Figure 7.1
Cumulative Annualised Flood Damage (Rs. in crore)



Source: Central Water Commission.

mention in any of the three lists in the 7th Schedule of the Indian Constitution, where subjects under the Central and State Governments as also subjects that come under both are specified. On the legal front, there is no enactment either of the Central or of any State Government to deal with the management of disasters of various types in a comprehensive manner.

7.18 The country has an integrated administrative machinery for management of disasters at the National, State, District and Sub-District levels. The basic responsibility of undertaking rescue, relief and rehabilitation measures in the event of natural disasters, as at present, is that of the State Governments concerned. The Central Government supplements the efforts of the States by providing financial and logistic support.

Central Level

7.19 The dimensions of response at the level of the Central Government are determined in accordance with the existing policy of financing relief expenditure and keeping in view the factors like:

- (i) the gravity of a natural disaster;
- (ii) the scale of the relief operation necessary; and
- (iii) the requirements of Central assistance for augmenting financial resources and logistic support at the disposal of the State Government.

7.20 The Contingency Action Plan (CAP) identifies initiatives required to be taken by various Central Ministries and Public Departments in the wake of natural calamities. It sets down the procedures and determines the focal points in the administrative machinery to facilitate launching of relief and rescue operations without delay.

7.21 The Ministry of Home Affairs is the nodal Ministry for coordination of relief and response and overall natural disaster management, and the Department of Agriculture & Cooperation is the nodal Ministry for drought management. Other

Ministries are assigned the responsibility of providing emergency support in case of disasters that fall in their purview as indicated in Table 7.6.

Table 7.6
Ministries Responsible for Various
Categories of Disasters

Disaster	Nodal Ministry
Natural Disasters Management (other than Drought)	Ministry of Home Affairs
Drought Relief	Ministry of Agriculture
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disasters	Ministry of Environment & Forests
Biological Disasters	Ministry of Health
Nuclear Disasters	Department of Atomic Energy

The following decision-making and standing bodies are responsible for disaster management at the Central level:

- Union Cabinet, headed by the Prime Minister.
- Empowered Group of Ministers, headed by the Deputy Prime Minister
- National Crisis Management Committee (NCMC), under the chairmanship of the Cabinet Secretary.
- Crisis Management Group (CMG): under the chairmanship of the Central Relief Commissioner comprising senior officers from the various Ministries and other concerned Departments which reviews contingency plans, measures required for dealing with a natural disaster, and co-ordinates the activities of the Central Ministries and the State Governments in relation to disaster preparedness response and relief.
- Technical Organizations, such as the Indian Meteorological Department (cyclone/earthquake), Central Water Commission (floods),

Building and Material Promotion Council (construction laws), Bureau of Indian Standards (norms), Defence Research & Development Organization (nuclear/biological), Directorate General Civil Defence provide specific technical support to coordination of disaster response and management functions.

- The setting up of a National Disaster Management Authority (NDMA) is being contemplated by the Ministry of Home Affairs as the proposed apex structure within the government for the purpose. Amongst other major organisational initiatives, it is proposed to:
 - (a) establish a specialised and earmarked response team for dealing with nuclear/biological/chemical disasters;
 - (b) establish search and rescue teams in each State;
 - (c) strengthen communication systems in the North Eastern Region.

State Government

7.22 The responsibility to cope with natural disasters is essentially that of the State Government. The role of the Central Government is supportive in terms of supplementation of physical and financial resources. The Chief Secretary of the State heads a state level committee which is in overall charge of the relief operations in the State and the Relief Commissioners who are in charge of the relief and rehabilitation measures in the wake of natural disasters in their States function under the overall direction and control of the state level committee. In many states, Secretary, Department of Revenue, is also in-charge of relief. State Governments usually have relief manuals and the districts have their contingency plan that is updated from time to time.

District and Local Level

7.23 The district administration is the focal point for implementation of all governmental plans and activities. The actual day-to-day function of administering relief is the responsibility of the Collector/District Magistrate/Deputy Commissioner who

exercises coordinating and supervising powers over all departments at the district level. Though it may not be a common phenomenon, there exists by and large in districts also a district level relief committee consisting of officials and non-officials.

7.24 The 73rd and 74th constitutional amendments recognise Panchayati Raj Institutions as 'Institutions of self-government'. The amendment has also laid down necessary guidelines for the structure of their composition, powers, functions, devolution of finances, regular holding of elections and reservation of seats for weaker sections including women. These local bodies can be effective instruments in tackling disasters through early warning system, relief distribution, providing shelter to the victims, medical assistance etc.

7.25 Other than the national, state, district and local levels, there are various institutional stakeholders who are involved in disaster management at various levels in the country. These include the police and para-military forces, civil defence and home-guards, fire services, ex-servicemen, non-government organisations (NGOs), public and private sector enterprises, media and HAM operators, all of whom have important roles to play.

Armed Forces

7.26 The Indian Armed Forces are supposed to be called upon to intervene and take on specific tasks only when the situation is beyond the capability of civil administration. In practice, the Armed Forces are the core of the government's response capacity and tend to be the first responders of the Government of India in a major disaster. Due to their ability to organize action in adverse ground circumstances, speed of operational response and the resources and capabilities at their disposal, the Armed Forces have historically played a major role in emergency support functions such as communications, search and rescue operations, health and medical facilities, transportation, power, food and civil supplies, public works and engineering, especially in the immediate aftermath of disaster. Disaster management plans should incorporate the role expected of them so that the procedure for deploying them is smooth and quick.

External Linkages

7.27 The Government of India is a member of various international organisations in the field of disaster response and relief. While, as a policy, no requests for assistance or appeals are made to the international community in the event of a disaster, assistance offered suo moto is accepted. Linkages exist with the following organisations:

- a) UN Office for Coordination of Humanitarian Affairs (UN OCHA), which has been made responsible by UN General Assembly mandate for all international disaster response.
- b) United Nations Development Programme (UNDP), responsible for mitigation and prevention aspects of disaster management.
- c) UN Disaster Assessment and Coordination (UNDAC) System.

Streamlining Institutional Arrangements for Disaster Response

7.28 Institutional arrangements for disaster response are the heart of disaster management systems. There is no dearth of personnel, both civilian and military, experienced in handling situations arising out of natural disasters. However, there certainly is a pressing need for improvement and strengthening of existing institutional arrangements and systems in this regard to make the initial response to a disaster more effective and professional. Most of the resources and expertise needed already exist with the Government. What needs to be streamlined is how they should be integrated, trained and deployed. Some of the areas where improvement is urgently needed are:

- a) Integrated planning for disasters, including the integration of relevant Armed Forces formations into disaster management planning at all levels from District to State and Central Government.
- b) Setting up of a modern, permanent national command centre or operations

room, with redundant communications and data links to all State capitals. The national command centre or operations room needs to be manned on a 24-hour basis by professionals to cater for instant integrated response. There needs to be a properly equipped operations room at the State level as well.

- c) Establishment of a national stand by, quick reaction team composed of experienced professionals, both military and civilian, drawn from Central and State Government staff to respond immediately by flying in a matter of hours an experienced response team to the locations when a disaster strikes. This team can be organized and run professionally on the same lines as the United Nations Disaster Assessment and Coordination (UNDAC) teams.
- d) Creation of urban search and rescue capacity at all levels, by establishing a fully equipped Search and Rescue unit, as part of the fire service in all State capitals, with trained staff and modern equipment such as thermal imagers, acoustic detection devices etc. This is of immediate relevance since a major weakness exposed in the Gujarat earthquake was a lack of specialised urban search and rescue capability in India.
- e) Media policy geared to handling the growing phenomenon of real time television reporting, which generates enormous political pressures on a government to respond rapidly and efficiently. This needs attention since the effect is going to increase, not decrease in future.
- f) Closer interface with and better understanding of the international system for disaster response, and putting in place, systems for dealing with international assistance once it comes in e.g., customs, immigration, foreign policy implications etc. A greater appreciation is needed of the speed and automation of modern international response to a natural disaster. Closer interaction is required between of

the Ministry of External Affairs and the relevant inter-national agencies concerned with disaster response.

- g) Standard procedures for dealing with domestic humanitarian and relief assistance from non-government sources. Procedures and systems need to be set out to avoid confusion and ensure best utilisation of the assistance being offered, just as in the case of systems for international assistance.
- h) Modern unified legislation for disaster management. In view of the current division of responsibilities between the State and Central Government into state, central and concurrent lists, there is a need to create a body of legislation dealing with response to natural disasters and other emergencies, clearly delineating responsibilities and powers of each entity and specifying what powers or actions would need to be triggered on declaration of a disaster by the Government of India or a State Government. This legislation should also incorporate the current legislation dealing with chemical emergencies that has been created by the Ministry of Environment so that all emergencies are dealt with under one law. The legislation should include clear definitions of what constitutes a disaster at a national level.

FINANCIAL ARRANGEMENTS

Financing of Relief Expenditures

7.29 The policy arrangements for meeting relief expenditure related to natural disasters are, by and large, based on the recommendations of successive finance commissions. The two main windows presently open for meeting such expenditures are the Calamity Relief Fund (CRF) and National Calamity Contingency Fund (NCCF). The Calamity Relief Fund is used for meeting the expenditure for providing immediate relief to the victims of cyclone, drought, earthquake, fire, flood and hailstorm. Expenditure on restoration of

damaged capital works should ordinarily be met from the normal budgetary heads, except when it is to be incurred as part of providing immediate relief, such as restoration of drinking water sources or provision of shelters etc., or restoration of communication links for facilitating relief operations. The amount of annual contribution to the CRF of each State for each of the financial years 2000-01 to 2004-05 is as indicated by the Finance Commission. Of the total contribution indicated, the Government of India contributes 75 per cent of the total yearly allocation in the form of a non-plan grant, and the balance amount is contributed by the State Government concerned. A total of Rs. 11,007.59 crore was provided for the Calamity Relief Fund from 2000-05.

7.30 Pursuant to the recommendations of the Eleventh Finance Commission, apart from the CRF, a National Calamity Contingency Fund (NCCF) Scheme came into force with effect from the financial year 2000-01 and would be operative till the end of the financial year 2004-05. NCCF is intended to cover natural calamities like cyclone, drought, earthquake, fire, flood and hailstorm, which are considered to be of severe nature requiring expenditure by the State Government in excess of the balances available in its own Calamity Relief Fund. The assistance from NCCF is available only for immediate relief and rehabilitation. Any reconstruction of assets or restoration of damaged capital should be financed through re-allocation of Plan funds. There is need for defining the arrangements in this regard.

7.31 The initial corpus of the National Fund is Rs.500 crore, provided by the Government of India. This fund is required to be recouped by levy of special surcharge for a limited period on central taxes. An amount of about Rs.2,300 crore has already been released to States from NCCF. A list of items and norms of expenditure for assistance chargeable to CRF/NCCF in the wake of natural calamities is prescribed in detail from time to time.

Financing of Disaster Management Through Five Year Plans

7.32 Although not specifically addressed in Five Year Plan documents in the past, the Government of India has a long history of using funds from the Plan for mitigating natural disasters. Funds are provided under Plan schemes i.e., various schemes of Government of India, such as for drinking water, employment generation, inputs for agriculture and flood control measures etc. There are also facilities for rescheduling short-term loans taken for agriculture purposes upon certification by the District/State administration. Central Government's assets/infrastructure are to be repaired/rectified by the respective Ministry/Department of Government of India. Besides this, at the occurrence of a calamity of great magnitude, funds flow from donors, both local and international, for relief and rehabilitation, and in few cases for long-term preparedness/preventive measures. Funds for the latter purposes are also available from multilateral funding agencies such as the World Bank. These form part of the State Plan.

7.33 There are also a number of important ongoing schemes that specifically help reduce disaster vulnerability. Some of these are: Integrated Wasteland Development Programme (IWDP), Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), Flood Control Programmes, National Afforestation & Eco-development Programme (NA&ED), Accelerated Rural Water Supply Programme (ARWSP), Crop Insurance, Sampurn Grameen Rozgar Yojana (SGRY), Food for Work etc.

Initiatives Proposed by Various Bodies Regarding Financing Under the Plan

7.34 References have recently been made to the role of the Plan in disaster management by the High Power Committee (HPC) on Disaster Management, as well as by the Eleventh Finance Commission. The HPC was constituted in 1999 and submitted its Report in October 2001. The HPC took an overview of all recent disasters (natural as well as manmade) in the country and identified

common response and preparedness mechanisms on the basis of a series of consultations with a number of government, non-government, national and international agencies and media organisations. An important recommendation of the Committee was that at least 10 per cent of plan funds at the national, state and district levels be earmarked and apportioned for schemes which specifically address areas such as prevention, reduction, preparedness and mitigation of disasters.

7.35 The Eleventh Finance Commission too paid detailed attention to the issue of disaster management and, in its chapter on calamity relief, came out with a number of recommendations, of which the following have a direct bearing on the Plan:

- (a) Expenditure on restoration of infrastructure and other capital assets, except those that are intrinsically connected with relief operations and connectivity with the affected area and population, should be met from the plan funds on priority basis.
- (b) Medium and long-term measures be devised by the concerned Ministries of the Government of India, the State Governments and the Planning Commission to reduce, and if possible, eliminate, the occurrences of these calamities by undertaking developmental works.
- (c) The Planning Commission, in consultation with the State Governments and concerned Ministries, should be able to identify works of a capital nature to prevent the recurrence of specific calamities. These works may be funded under the Plan.

PLANNING FOR SAFE NATIONAL DEVELOPMENT

7.36 Development programmes that go into promoting development at the local level have been left to the general exercise of planning. Measures need also to be taken to integrate disaster mitigation efforts at the local level with the general exercise of planning, and a more supportive environment created for initiatives towards managing of disasters

at all levels: national, state, district and local. The future blue-print for disaster management in India rests on the premise that in today's society while hazards, both natural or otherwise, are inevitable, the disasters that follow need not be so and the society can be prepared to cope with them effectively whenever they occur. The need of the hour is to chalk out a multi-pronged strategy for total risk management, comprising prevention, preparedness, response and recovery on the one hand, and initiate development efforts aimed towards risk reduction and mitigation, on the other. Only then can we look forward to "sustainable development."

Disaster Prevention And Preparedness Measures

Information and Research Network

7.37 Disaster prevention is intrinsically linked to preventive planning. Some of the important steps in this regard are:

- (a) Introduction of a comprehensive process of vulnerability analysis and objective risk assessment.
- (b) Building a robust and sound information database: A comprehensive database of the land use, demography, infrastructure developed at the national, state and local levels along with current information on climate, weather and man-made structures is crucial in planning, warning and assessment of disasters. In addition, resource inventories of governmental and non-governmental systems including personnel and equipment help in efficient mobilisation and optimisation of response measures.
- (c) Creating state-of-the-art infrastructure: The entire disaster mitigation game plan must necessarily be anchored to frontline research and development in a holistic mode. State-of-the art technologies available worldwide need to be made available in India for upgradation of the disaster

management system; at the same time, dedicated research activities should be encouraged, in all frontier areas related to disasters like biological, space applications, information technology, nuclear radiation etc., for a continuous flow of high quality basic information for sound disaster management planning,

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

Capacity Building, Training & Education

7.38 Personnel involved in the exercise have to draw upon knowledge of best practices and resources available to them. Information and training on ways to better respond to and mitigate disasters to the responders go a long way in building the capacity and resilience of the country to reduce and prevent disasters. Training is an integral part of capacity building as trained personnel respond much better to different disasters and appreciate the need for preventive measures. The directions in this regard are:

- (a) The multi-sectoral and multi-hazard prevention based approach to disaster management requires specific professional inputs. Professional training in disaster management should be built into the existing pedagogic research and education. Specialised courses for disaster management may be developed by universities and professional teaching institutions, and disaster management should be treated as a distinct academic and professional discipline, something that the American education system has done successfully. In addition to separate diploma/degree courses in disaster management, the subject needs to be discussed

and taught as a specific component in professional and specialised courses like medicine, nursing, engineering, environmental sciences, architecture, and town and country planning.

- (b) The focus towards preventive disaster management and development of a national ethos of prevention calls for an awareness generation at all levels. An appropriate component of disaster awareness at the school level will help increase awareness among children and, in many cases, parents and other family members through these children. Curriculum development with a focus towards dissemination of disaster related information on a sustained basis, covering junior, middle and high schools may be worked out by the different school boards in the country.
- (c) Training facilities for government personnel involved in disaster management are conducted at the national level by the National Centre for Disaster Management (NCDM) at the Indian Institute of Public Administration, in New Delhi which functions as the nodal institution in the country for training, research and documentation of disasters. At the State level, disaster management cells operating within the State Administrative Training Institutes (ATIs) provide the necessary training. Presently, 24 ATIs have dedicated faculties. There is a need for strengthening specialised training, including training of personnel in disaster response.
- (d) Capacity building should not be limited to professionals and personnel involved in disaster management but should also focus on building the knowledge, attitude and skills of a community to cope with the effects of disasters. Identification and training of volunteers from the community towards first response measures as well as mitigation measures is an urgent imperative. A programme of periodic drills should be introduced in vulnerable areas to enable prompt and appropriate

community response in the event of a disaster, which can help save valuable lives.

7.39 Capacity building for effective disaster management therefore needs to be grounded and linked to the community and local level responders on the one hand and also to the institutional mechanism of the State and the Nation on the other.

Community Level Initiatives

7.40 The goal of any disaster management initiative is to build a disaster resistant/resilient community equipped with safer living and sustainable livelihoods to serve its own development purposes. The community is also the first responder in any disaster situation, thereby emphasising the need for community level initiatives in managing disasters. To encourage such initiatives, the following are required:

- (a) Creating awareness through disaster education and training and information dissemination are necessary steps for empowering the community to cope with disasters.
- (b) Community based approach followed by most NGOs and Community Based Organisations (CBOs) should be incorporated in the disaster management system as an effective vehicle of community participation.
- (c) Within a vulnerable community, there exist groups that are more vulnerable like women and children, aged and infirm and physically challenged people who need special care and attention especially during disaster situations. Efforts are required for identifying such vulnerable groups and providing special assistance in terms of evacuation, relief, aid and medical attention to them in disaster situations.

7.41 Management of disasters should therefore be an interface between a community effort to mitigate and prevent disasters as also an effort from

the government machinery to buttress and support popular initiatives.

Strengthening of Plan Activities

7.42 Given the pervasive nature of disasters and the widespread havoc caused by some of them, planned expenditure on disaster mitigation and prevention measures in addition to the CRF is required. The Central Sector Scheme of Natural Disaster Management Programmes has been implemented since 1993-94 by the Department of Agriculture and Co-operation with the objective to focus on disaster preparedness with emphasis on mitigation and preparedness measures for enhanced capability to reduce the adverse impact of disasters. The major activities undertaken within this scheme include the setting up of the National Centre for Disaster Management (NCDM) at the Indian Institute of Public Administration, creation of 24 disaster management faculties in 23 states, research and consultancy services, documentation of major disaster events and forging regional cooperation. The Eighth Plan allocation of Rs 6.30 crore for this scheme was increased to Rs. 16.32 crore in the Ninth Plan. Within this scheme, NCDM has conducted over 50 training programmes, training more than 1000 people, while 24 disaster management centres with dedicated faculty have been established in the states. Over 4000 people have been trained at the State level. In addition, some important publications and audio-visual training modules have been prepared and documentation of disaster events has been done.

7.43 Though limited in scope and outlays, the Scheme has made an impact on the training and research activities in the country. Creation of faculties in disaster management in all 28 states is proposed to be taken up in the Tenth Plan in addition to community mobilisation, human resource development, establishment of Control Rooms and forging international cooperation in disaster management. There is also an urgent need for strengthening the disaster management pedagogy by creating disaster management faculties in universities, rural development institutes and other organisations of premier research.

7.44 Sustainability is the key word in the development process. Development activities that do not consider the disaster loss perspective fail to be sustainable. The compounded costs of disasters relating to loss of life, loss of assets, economic activities, and cost of reconstruction of not only assets but of lives can scarcely be borne by any community or nation. Therefore, all development schemes in vulnerable areas should include a disaster mitigation analysis, whereby the feasibility of a project is assessed with respect to vulnerability of the area and the mitigation measures required for sustainability. Environmental protection, afforestation programmes, pollution control, construction of earthquake resistant structures etc., should therefore have high priority within the plans.

7.45 The aim of a mitigation strategy is to reduce losses in the event of a future occurrence of a hazard. Structural mitigation may comprise construction of individual disaster resistant structures like retrofitted or earthquake-resistant buildings or creation of structures whose function is primarily disaster protection like flood control structures, dykes, levees, infiltration dams etc.

7.46 Mitigation measures on individual structures can be achieved by design standards, building codes and performance specifications. Building codes, critical front-line defence for achieving stronger engineered structures, need to be drawn up in accordance with the vulnerability of the area and implemented through appropriate techno-legal measures.

7.47 Mitigation measures need to be considered in land use and site planning activities. Constructions in hazardous areas like flood plains or steep soft slopes are more vulnerable to disasters. Necessary mitigation measures need to be built into the design and costing of development projects.

7.48 Insurance is a potentially important mitigation measure in disaster-prone areas as it brings quality in the infrastructure & consciousness and a culture of safety by its insistence on following building codes, norms, guidelines, quality materials

in construction etc. Disaster insurance mostly works under the premise of 'higher the risk higher the premium, lesser the risk lesser the premium', thus creating awareness towards vulnerable areas and motivating people to settle in relatively safer areas.

THE PATH AHEAD

7.49 For addressing natural calamities such as floods and drought, there already exist a number of plan schemes under which a lot is being done and can be done. State Governments need to make full use of the existing plan schemes and give priority to implementation of such schemes that will help in overcoming the conditions created by the calamity. In some cases this implies possible diversion of the funds from other schemes to those schemes the implementation of which will help meeting the situation. There may also be need in a crisis situation for certain re-appropriations/reallocations among the different departments.

7.50 The Planning Commission will aim at responding quickly to the needs of the Central Ministries/Departments/States in matters relating to the Plan for meeting situations arising out of natural disasters, by enabling adjustment of schemes to meet the requirements as far as possible. A mechanism will be evolved to take expeditious decisions on proposals which involve transfer of funds from one scheme to another, or any other change which involves departure from the existing schemes/pattern of assistance, new schemes and relaxation in procedures, etc. in the case of natural disasters.

7.51 As the first responder in any disaster situation, however, each State needs to build a team

of dedicated trained, skilled personnel, make provision for specialised equipments, efficient communication network, and relevant, intelligent and easily accessible database. There is also a need to consider creation of a plan scheme in each state basically to meet the minimum requirements for strengthening communications and emergency control rooms, thereby improving coordination and response to disasters. No new institutional structures need be created in such a scheme.

7.52 In particular, with regard to major disasters, it is also necessary for disaster mitigation components to be built into all development projects. In order to save larger outlays on reconstruction and rehabilitation subsequently, a mechanism would need to be worked out for allowing components that specifically help projects coming up in highly disaster prone areas withstand the impact of natural disasters as part of approved project cost for projects financed under the Plan.

7.53 The message for the Tenth Plan is that in order to move towards safer national development, development projects should be sensitive towards disaster mitigation. With the kind of economic losses and developmental setbacks that the country has been suffering year after year, it makes good economic sense to spend a little extra today in a planned way on steps and components that can help in prevention and mitigation of disasters, than be forced to spend many multiples more later on restoration and rehabilitation. The design of development projects and the process of development should take the aspect of disaster reduction and mitigation within its ambit; otherwise, the development ceases to be sustainable and eventually causes more hardship and loss to the nation.