

National Commitments for Mainstreaming Disaster Risk Reduction in Development

Afghanistan: Disaster Risk Reduction in Social and Economic Developments

Objective: To have in key sectors of government disaster mitigation measures that will minimise or prevent disaster impacts on social and economic development programmes within these sectors

Adoption of measures that prevent or reduce the impact of hazards is internationally accepted as much cheaper than responding to disasters after they have occurred. However, because this has less visibility because it is part of the normal process of development, it does not get the same attention as humanitarian relief. Implementing mitigation measures require a coordinated approach by the numerous development partners as most have development implications. Apart from their lower costs compared to the combined relief activities, the community empowerment and involvement that they encourage will help to reduce existing vulnerability and hopefully stem the apparent growth of risk from a number of hazards. There will be a need for international assistance with the early stages of implementing mitigation activities – particularly in mitigation planning, and public education and training phases. Afghanistan is rebuilding its devastated infrastructure and economy, and there is no better time than now to design and implement mitigation options that will establish a more resilient, sustainable and less vulnerable community to the impacts of disasters and other external factors. These are some recommended mitigation options for Afghanistan:

Output 1: Reduced disaster vulnerability in the agriculture sector through implemented mitigation measures
Indicators: The Ministry of Agriculture have adopted the project activities in principle and are progressively implementing them as resources are available.

Activities:

- i. Produce Land Use Regulations and Zoning to begin the process of control and legislation for the long-term reduction of the impact of floods, soil erosion, drought through better and controlled and sustainable land use.
- ii. Research and implement relevant agriculture and forestry programmes or farming systems that reduces the risk to natural hazards in particular drought
- iii. Implement a community-based programme on locust management programme that reduces infestations through community effort
- iv. Improving irrigation and water management systems through community based watershed management and redevelopment programmes (agro-forestry), water harvesting and improvement and maintenance of irrigation systems that are owned, implemented and managed by local communities
- v. Baseline data and information gathering in the agriculture sector for particularly vulnerable communities and regions to support mitigation and response planning

Output 2: Emergency health and medical services significantly improved Indicators: Medical services improved significantly and EHTF are effectively operational

Activities:

- i. Conduct needs assessment in emergency health services at the national, subnational and community levels
- ii. Develop contingency plan for disaster preparedness and response for the health sector
- iii. Set up “emergency health task forces” (EHTF) in disaster prone regions
- iv. Conduct training and capacity building activities for the EHTF, emergency health response teams, and relevant medical personnel in government, medical NGOs and other stakeholders, in disaster-related subjects
- v. Develop and conduct public education and awareness materials and campaigns

Output 3: Increased knowledge of the social, economic, environmental and management

aspects of disasters and emergencies through implementation of relevant research and development activities that are specific to Afghanistan and its environment Indicators: The research activities have been completed and follow-on long-term activities are ongoing

Activities:

- i. Conduct applied research on the social, economic and environmental impact of disasters to increase knowledge and understanding and to provide relevant recommendations and activities to implement best practices for recovery at all levels of the community (for example the impact of Nahrin earthquake, and the ongoing drought)
- ii. Carry out a historical study of past significant disasters events, occurrences, locations, intensity and impact to establish a base for disaster information in the country
- iii. The role of Afghanistan women in disasters with specific focus on humanitarian relief and disaster rehabilitation and long-term development
- iv. Develop disaster-related text books and curriculum for primary and secondary schools introduce these into normal education programmes



Bangladesh: Mainstreaming Risk Reduction – The Strategies

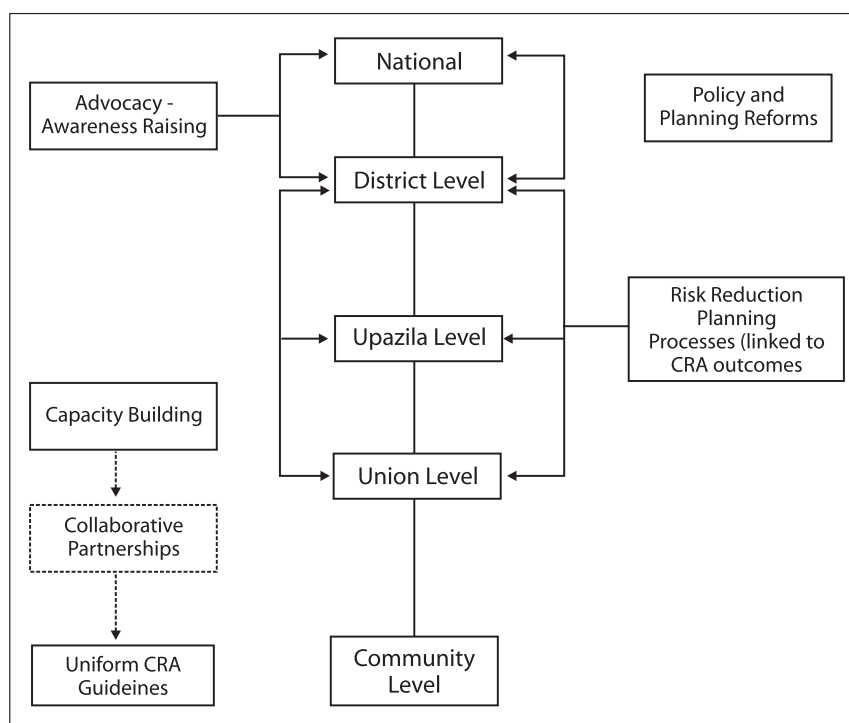
Mainstreaming risk reduction efforts within government, NGOs and private sector is viewed as being the key to achieving sustainable all hazards risk reduction interventions across the whole country. In Bangladesh mainstreaming is seen in much the same light as poverty reduction in that it is the outcome of many top down and bottom up interventions. These are summarized below and articulated briefly within Figure 16.

Advocacy: Awareness raising among Political, Senior Policy and Government Department Officials, Media and Academic Institutions is a priority strategy for building knowledge and understanding on the benefits of risk reduction and the roles these organizations play in implementing risk reduction programmes.

Policy and Planning Reform: A significant review of disaster management and development planning policy is being undertaken to ensure that they facilitate mainstreaming and promote a comprehensive risk reduction culture.

Capacity Building: This strategy has targeted a complete review of the roles and responsibilities of disaster management committees (DMCs) at all levels to ensure they reflect risk reduction as well as emergency response functions. A national training curriculum is being developed to ensure that committees receive capacity building training to ensure they understand and can fulfill their functions effectively.

Planning Frameworks: Disaster management planning at all levels is being significantly overhauled to ensure that DMC plans accommodate risk reduction mainstreaming at all levels.



Uniform CRA Guidelines: Uniform CRA processes are being established to ensure consistency in the conduct of community risk identification and compatibility with the risk reduction planning processes of the respective DMCs. The guidelines also have steps to ensure strong linkages with scientific analysis information.

Poverty Reduction Strategy Paper (PRSP), Bangladesh

Poverty-disaster interface in Bangladesh is quite perplexing. Disasters have had adverse long-term impact on economic and social activities of the poor. Additionally, the poor are more vulnerable to any kind of disaster due to a) depletion of assets, b) income erosion due to loss of employment, c) increased indebtedness and d) out migration. Moreover, cost to cope with disaster is disproportionately higher for the poor.

Poverty Reduction Strategy Paper is a policy and strategy document prepared by World Bank and the IMF member countries in broad consultation with stakeholders and development partners, including the staffs of the World Bank and the IMF to be updated every three years with annual progress reports. It describes the country's macroeconomic, structural and social policies and programs in support of growth and poverty reduction, as well as associated external financing needs and major sources of financing. For WB and the IMF financing it is the basis for concessional lending from IMF and the WB for the low-income countries and debt relief under the WB-IMF Heavily Indebted Poor Countries (HIPC) initiatives.

The principal goal of the Bangladesh Government's economic policy is to reduce poverty so as to gradually lift the vast majority of the people above the poverty line and improve the quality of life for the average citizen. Developing homegrown poverty reduction strategies (PRSPs) along with operational plans suited to the particular circumstances and needs of Bangladesh with a focus of long-term vision was thus the objective of Bangladesh PRSP.

The core principle of the Bangladesh PRSP include the following:

- It is country-driven and promotes national ownership of strategies through broad based participation of civil society;
- It is result-oriented and focused on outcomes that will benefit the poor;
- It is comprehensive in recognizing the multidimensional nature of poverty;
- It is partnership-oriented and involves coordinated participation of development partners (government, domestic stakeholders, and external donors); and
- It is based on a long-term perspective for poverty reduction.

The poverty reduction strategy framework in Bangladesh is as follows:

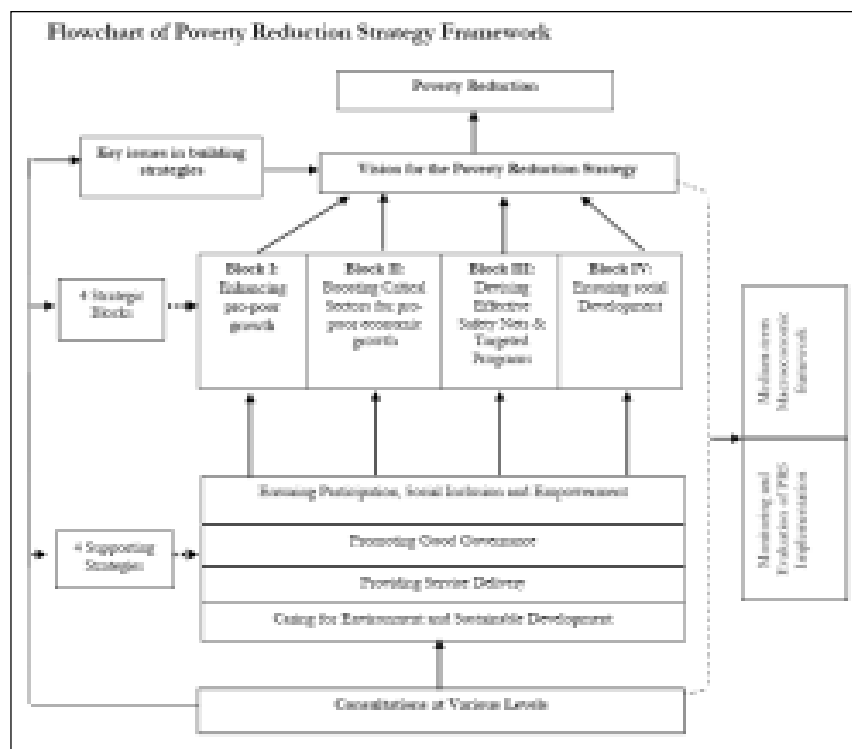


Figure- 2: Poverty Reduction Strategy Framework

Considering the direct poverty disaster linkages the Bangladesh PRSP included one separate policy matrix on Comprehensive disaster management towards poverty reduction and growth. Disaster Management as a cross-cutting issue being included in the following three other policy matrices:

- a. Policy Matrix 1: Food security
- b. Policy Matrix 2: Promote use of ICT in Disaster Management
- c. Policy Matrix 3: Ensure social protection for women against vulnerability and risks

The Policy Matrix envisages:

- Mainstreaming disaster management and risk reduction into national policies, institutions and development processes (introduction of Disaster Impact and Risk Assessment (DIRA))
- Strengthening disaster management and risk reduction capacity
- Ensuring knowledge management (acquiring, storing, sharing and applying) on disaster risk reduction
- Enhancing community level capacity for disaster risk reduction (community level preparedness, response, recovery and rehabilitation)
- Ensuring social protection of women, children, elderly, people with disability and other vulnerable groups against vulnerability and risk.

Bhutan: Mitigation and Integration of Disaster Risk Management in Development Sector

The objective of this component is to reduce loss of life and property in the event of potential hazard occurrences. The primary aim is to reduce the risk of death and injury to the population. Secondary aims include reducing damage and economic losses to public sector infrastructure and reducing private sector losses in as far as they are likely to affect the community as a whole. The objectives are likely to include encouraging people to protect themselves as far as possible.

Any mitigation strategy is likely to include a range of measures. A set of actions that includes engineering measures, spatial planning, and a degree of economic management and community participation will be needed to bring about effective mitigation. A mitigation programme that concentrates solely on any one of these five aspects will be unbalanced and is unlikely to achieve its aims.

Disaster Mitigation investment has to be seen in terms of the price of protecting existing and future infrastructure. The spending of a few percent extra on a new facility to build it a little stronger and protect it against a future threat is usually seen as prudent. The level of investment that is justified to protect society, its economic activities and its built environment is a matter of political decision making, and the economics of risk. Decision making on appropriate levels of investment in disaster mitigation depends on how likely the hazard is to occur, and what would be the impact of the hazard if it does occur. The costs and benefits of alternative investment strategies need to be carefully evaluated. The use of a systematic framework of risk assessment to establish which hazards are most likely to occur and the probable effects will help define the priorities of mitigation programmes.

Table-I: Mitigation and integration of DRR in Development sectors

Outputs	Activities
Mechanisms (such as mandatory risk assessments) developed to incorporate disaster risk concerns (mitigation measures) in all development projects	Reviews existing environmental impact assessment guidelines and explore the possibility of either integrating disaster risk assessment components to it or developing new set of disaster risk assessment guidelines for all new development projects. Appropriate budgetary allocation for ministries/departments involved in mitigation/prevention Evolve a robust risk transfer system to mitigate losses and damages
Earthquake risk mitigation	
Building codes/guidelines developed for earthquake resistant construction	Review and adapt building codes of other countries to the Bhutan context Review byelaws to examine possible gaps, and review ordinances which are not being implemented.
Hazard specific (landslid, flood, GLOF, fire etc) mitigation measures developed and implemented in vulnerable locations	
Some of the most vulnerable sites identified and hazard specific mitigation measures implemented	Identify the most vulnerable locations (with regards to GLOF, floods and landslides) that require structural mitigation measures on an urgent basis Develop detailed mitigation plans for the above Implemented the mitigation in a prioritized manner
Local level mitigation action plans developed and implemented	
Mitigation assessments and programmes in risk prone areas	Identify some of the most vulnerable communities. Locate high and moderate disaster risk sites around these communities. Undertake detailed assessments to determine the most suitable and economically viable mitigation measures. Implement recommendations at the local level.



India: Disaster Management - The Development Perspective *

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.

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.

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.

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

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.

* Chapter 6, Tenth Five Year Plan (2002-07)

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.

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

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

INDIA'S KEY VULNERABILITIES

Costal States, particularly in the East Cost and Gujarat are vulnerable to cyclones, 4 crore hectare land mass is vulnerable to floods. 68 percent of new sown area is vulnerable to drought, 55 percent of total area is in Seismic Zones-III-V, and vulnerable to earthquakes. Sub-Himalayan/Western Ghat is vulnerable to landslides.

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 geophysical 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.

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. 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.

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 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.

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.

Table1: 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

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.

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.

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.

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

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 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.

INDIA'S KEY VULNERABILITIES

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

Table 2 : Damage due to Natural Disasters in India

Year	People affected (Lakh) totally, damaged	Houses & buildings, partially of (Rs Crore)	Amount of property damage/loss
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

Annual Reports. NDM Division, Ministry of Agriculture



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.

Table 3 : Annual Damage due to Heavy Rains, Landslides and Floods

S No.	Year	District affected	Villaves affected No.)	Population affected (Lakhs)	Crop Area (Lakh Ha)	House Damaged (No.)	Human Life loss (No.)	Cattle loss (no.)	Estimated value of loss to houses (Rs in Cr.)	Estimated of value public properties (Rs. in Cr.)
1	1999	202	33,158	328.12	8.45	884,823	1375	3861	0.72	-
2	2000	200	29,964	416.24	34.79	2,736,355	3048	102,121	631.25	389.72
3	2001	122	32,363	210.71	18.72	346,878	834	21,269	195.57	676.05

Table 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 (No.)
17-18.10.99	30	4	5181	37.47	1.58	331,580	199	10,578
29-30.10.99	30	12	14643	129.22	18.43	1,828,532	9,887	444,531

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

Table 5 : Losses due to Droughts : 1999- 2001

S. No.	Year districts	Districts affected	Villages affected (No.)	Population affected (Lakh)	Damage Corp Area (Lakh Ha.)	Estimated value of damaged (Rs. rcores)	Cattle Population affected (in lakh)
1	1999	125	-	369.88	134.22	6.44	345.60
2	2000	110	54,883	378.14	357.00	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

Central Level

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.

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.

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 6.

Table 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 Material and Technology 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.



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- 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 organizational 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

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

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.

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.

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, nongovernment organisations (NGOs), public and private sector enterprises, media and HAM operators, all of whom have important roles to play.

Armed Forces

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

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

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.



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- 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 specialized 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 the Ministry of External Affairs and the relevant international 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

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.

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.

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

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.

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 &



Ecocodevelopment 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

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.

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

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

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

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.



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- (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.

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

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 emphasizing 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.

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

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.

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.

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.

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.

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.

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.

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

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.

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.

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

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.

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.

Source: An extract of the Chapter in the Tenth Five Year Plan Document [2002-2007]



Nepal : Tenth Five Year Plan of Nepal - Natural Disaster Management

Background

Man made and natural disasters are on the increase every day in Nepal owing to her specific geographical and geological formation as well as unmanaged settlements, increasing population, economic backwardness, lack of education and ignorance. On the one hand, natural disasters like floods and landslide are creating the destruction of development infrastructures like road, electricity irrigation, etc. resulting in the possibility of the wastage of investment. In addition to this, thousands of people have lost their lives and countless cattle have been destroyed, lots of agricultural land and crops have been damaged. In order to minimize the damages caused by earthquake and other natural disasters in a country like ours lying in the earthquake zone, it is necessary for us to prepare a comprehensive plan beforehand.

The main challenges to disaster management are the absence of adequate co-ordination among agencies involved in it; the reactive, not proactive nature of disaster management efforts, the absence of a modern technology to give prior information and warn us of disasters and the absence of making the maps of disaster prone areas. Similarly the lack of disaster evaluation at the time of project selection, absence of sufficient co-operation and rehabilitation programmes and non-compliance with building code at the time of constructing high rise buildings are some important disaster management problems.

a. Objective

The objective of the 10th Plan is to make disaster management more systematic and effective so as to contribute to making the construction and development projects of the country durable, sustainable and highly result-oriented.

b. Strategies

1. Emphasis will be given to the use and development technology that reduces the effects of natural disaster and its environmental impacts to the minimum level at the time of formulating plans and policies relating to disaster management.
2. The rescue and relief to be provided by the state to the families suffering from natural disaster will be made transparent.
3. A hazard map of earthquakes, floods and landslides will be prepared.
4. The seismic record centers of the country will be strengthened and used to monitor earthquakes regularly.
5. Timely reforms will be introduced in the existing law and organizational structure relating to disaster management.

c. Policy:

1. A long term disaster management action plan will be made, co-ordination between donors, the government, NOGs and the private sector will be established and the formulation and implementation of sectoral programmes based on the action plan will be made more effective.
2. The study of environmental impact and disaster evaluation study of infrastructure construction projects will be made compulsory.
3. Public awareness programmes will be launched to increase people's participation in the management of natural disasters including floods, landslides and earthquakes.
4. The institutional strengthening of organizations involved in disaster management will be emphasized and Disaster Management Department will be developed as the central co-ordinating unit.
5. On the basis of the evaluation of the past earthquake management and their effects, programmes like the mapping of earthquake prone zones, regular monitoring, early preparedness for and management of earthquakes, as well as the increase in awareness programmes of people living in such areas will be launched with a view to reducing the destructive effects of such earthquakes in the future.
6. In order to manage water induced disaster and to enhance the capacity of organizations involved in the formulation of its policy action plan and programme, the participation of the people in watershed management and river control will be enlisted.
7. A hazard map of flood, landslide, silt flow and glaciers will be prepared through the collection, exchange, storage and flow of information relating to water induced disaster and disaster prone areas will be classified.

d. Programme

1. Co-ordination will be established between different agencies involved in disaster management at national and international disaster management through the development of an integrated information system.
2. In order to increase people's awareness of disaster management, different types of awareness programmes including the inclusion of such reading materials in the curricula of classes up to the secondary school level will be launched.
3. A central Information Unit will be set up at the centre and District Information Unit at the district level will be established in a phased manner on the basis of the database system and the hazard map of disasters like earthquake, flood, landslide etc.
4. An inventory the existing institutional capacity for pre-disaster preparedness will be developed and the rescue and relief materials will be stored in the storage centres of all the five development regions.



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5. The fire brigade services of the Kathmandu valley will be extended in the process of increasing the fire fighting capacity and the physical facilities for it will be made available; a bill relating to fire fighting service will be drafted and a national fire code will be prepared.
 6. The development of mines and geology will be made to prepare a geological map of Nepal to explore mines to identify the potential areas of damage from disasters like floods, landslides, soil erosions and earthquakes, to prepare an inventory of landslides, and to give continuity to the task of making an epicentre map on the basis of the earthquake records of the past.
 7. The task of collecting statistics, updating catalogues and informing the public about earthquakes above 4 richters scale after recording the earthquakes measured by 21 seismic stations established under national earthquake measurement centre will be made systematic.
 8. Public awareness programmes to increase people's information about the damage from water induced disaster and its management will be launched.
 9. A hazard map, geo-engineering map and geo-environment map of increasing urbanization, unmanaged settlement and unsuitable land use in city areas will be prepared and such maps will be utilized in urban area and infrastructure development as well as in natural resource management.

Expected Outcomes

1. Co-ordination will be established with different international agencies involved in disaster management, such information will be exchanged and the task of minimizing the effects of disaster will be made effective.
2. Such hazard map of disaster prone areas will help reduce the loss of life and property.
3. The system of storing relief materials at regional centres with the intention of making them available to the victims at a short notice according to their needs will make instant relief possible and contribute to the rehabilitation programme.

20.3.5. Probable Problems and Risks in Implementation and Achievements:

The limited budget is likely to be the main obstacle to achieve the objective. The practice of the release of the sanctioned budget only at the end of the fiscal year is likely to stand in the way of realizing the expected goal. If the concerned organization is not able to fulfil the need for necessary trained manpower in time it is also going to present many hurdles. Another main problem is the difficulty in collecting information owing to geographical remoteness.

Pakistan: Mainstreaming disaster risk Reduction into Development

Key issues

An important priority of NDMA will be to promote the adoption of a risk sensitive approach in development planning and programming in all sectors. The purpose of this effort would be to ensure that all development infrastructures in hazard-prone areas is built to higher standards of hazards resiliency; e.g. schools, hospitals, roads, bridges, dams and telecommunications infrastructure etc. This can be done by incorporating risk and vulnerability assessment into project planning stage, and including vulnerability reduction measures in projects implementation in case the proposed projects are found vulnerable to hazards risks.

Strategy

NDMA will work with the National Planning Commission and the Ministry of Finance in order to integrate disaster risk reduction into the National Development Plan and the National Poverty alleviation Strategy. NDMA will also work with ministries on integration of disaster risk reduction into sectoral policy, planning and implementation. It would develop technical guidelines on incorporating risk assessment into sectoral project planning and sectoral vulnerability reduction. NDMA will also work closely with the National Planning Commission to develop criteria for assessment of development projects with a risk reduction lens. NDMA would conduct national and provincial workshops for selected line ministries to orient them on integrating risk assessment in programme planning and design, and to include vulnerability reduction in programme implementation. NDMA may initiate pilot projects with selected line ministries on mainstreaming of risk reduction in order to show case for others. Prior to initiating pilot projects, the NDMA will organize a review of current status on mainstreaming DRR within the line ministries and departments and produce case studies of good practice. Pilot projects on Mainstreaming DRR in five (5) selected ministries will be undertaken with following sub-activities

- Establish dialogue and working group with the sectoral ministry/department.
- Plan pilot activity to integrate DRM considerations in a planned or ongoing programme in the selected sector.
- Implement pilot activity
- Document experience and lessons learnt during the project implementation, and
- Identify ways to extend mainstreaming in other programmes of the Ministry and/ or other interested ministries/sectors

Insurance sector has played a very important role in many countries in promoting disaster mitigation at family and business levels. NDMA would work with insurance companies to explore the possibilities and develop schemes for promotion of insurance for shelter and business against natural disasters.



Outputs

A section on integrating disaster risk reduction included in the National Development Plan and in the National Poverty Reduction Strategy.

A set of sectoral guidelines on mainstreaming DRR, and criteria on assessment of development projects from a risk reduction perspective available for the use of development ministries and the Ministry of Planning and Development.

Curriculum of national and provincial workshops on mainstreaming DRR available;

Technical capacity of selected federal line ministries increased on integrating risk reduction into development plans and programmes; available;

Lesson learnt from pilot projects on mainstreaming DRM available;

Cost-benefit analysis of integrating risk reduction into development sectors available.

Sri Lanka: Mitigation and Integration of DRR into Development Planning

The aim of a mitigation strategy is to reduce losses in the event of potential hazard occurrences. The primary aim is to reduce the risk of death and injury to the population. Secondary aims include reducing damage and economic losses to public sector infrastructure and reducing private sector losses in as far as they are likely to affect the community as a whole. The objectives are likely to include encouraging people to protect themselves as far as possible.

Any mitigation strategy is likely to include a range of measures. A set of actions that includes some engineering measures, some spatial planning, and a degree of economic, management and societal inputs will be needed to bring about effective mitigation. A mitigation programme that concentrates solely on any one of these five aspects will be unbalanced and is unlikely to achieve its aims.

Disaster Mitigation investment has to be seen in terms of the price of protecting existing and future infrastructure. Spending a bit more on a new facility to build it a little stronger and protect it against a future threat is usually seen as prudent. The level of investment that is justified to protect society, its economic activities and its built environment is a matter of political decision making, and the economics of risk. Decision making on appropriate levels of investment in disaster mitigation depends on how likely the hazard is to occur, and what would be the impact of the hazard if it does occur. The costs and benefits of alternative investment strategies need to be carefully evaluated. The use of a systematic framework of risk assessment to establish which hazards are most likely to occur and the probable effects will help define the priorities of mitigation programmes.

Strategy

In order to mitigate disasters and integrate DRR into development plans, identified activities are categorized into five main areas after consultations amongst the working group:

- Organizational and legal interventions
- Demonstration projects
- Physical interventions through projects and programme
- Research and development
- Awareness and training programmes

Activities proposed under the area of organizational and legal interventions are: the establishment of DRM committees; the development, regular review and update of DRM plans; and the development and review of guidelines, bylaws, regulations, procedures etc. to include DRM (mitigation) aspects.

There is a need to review the by-laws and approval procedures of local governments to reduce inappropriate construction and land use practices in hazard prone areas. Physical interventions through projects would include the implementation of Coastal Management Plan in 15 identified locations in coastal areas to minimize coastal erosion; implementation of dam safety programmes to mitigate floods and minimize damages in the downstream of dams; construction of upstream reservoirs across three major rivers, Kalu Ganga, Kelani Ganga and Nilwala Ganga; and the introduction of drought tolerant agricultural methods including micro irrigation facilities, seeds etc in drought prone areas. Landslides often take place in mountainous regions, and



in particular, in urban areas due to wrong practices, unavailability of retaining structures, cutting and filling operations etc. The demonstration projects can be implemented to showcase appropriate practices and also to train artisans and technicians in relevant construction techniques. In order to achieve the above, there is a need to undertake research activities through universities and other institutes to arrive at the most suitable methods of stabilizing landslide prone areas and genetic engineering research to develop drought resistant seeds. Training and awareness programmes will also be conducted to achieve the outlined objectives.

Key Interventions

In view of the above strategy, the projects prioritized for the next 10 years under this component entail:

- o Review and revise the building approval procedures adopted by local government agencies to reduce the impact of natural disaster events.
- o Integrate disaster risk mitigation into development processes through disaster mitigation plans, specific allocation for mitigation in all development budgets.
- o Integrate disaster risk mitigation into development processes through disaster mitigation plans, and specific allocation for mitigation in all development budgets.
- o Mitigate impact of drought and reduce drought risk through improved seed materials and introduction of micro-irrigation.
- o Mitigate impact of landslides and reduce risk through improvements and recommendations for structural mitigation.
- o Protect against and control floods through improvements and new protection systems.
- o Reduce disaster risk in all physical planning processes by integrating DRR in decision making on national land use and physical planning policy.
- o Protect against storm surges/ sea/ coastal flooding through green belt and incorporation of disaster risk considerations in coastal zone management.
- o Increase disaster resilience in housing and other critical infrastructure through revisions in building codes and bylaws.
- o Reduce dam-related hazard risks through appropriate dam safety regulations.

The following projects has been prioritized in the short to medium term:

Minimize Loss of Life and Property Damage due to Floods

This project will be executed in major cities and villages in the downstream of Kalu Ganga in order to adequately protect Ratnapura and Kalutara districts from floods.

Mitigate and Stabilize Slopes in High Risk Landslide and Rockfall Sites

The objective is to stabilize rockfall and landslide sites from HaldumuUa to Haputale and Kahagolla to Haputale respecti

Mitigation and Integration of DRR into Development

In the event of a future occurrence of a hazard, to reduce damage and economic losses, Risk of death and injury to the population.

Outcomes	Outputs/ Activities
1. Landslide Mitigation in Risk-prone areas	
Areas (slopes) categorized as moderate and high risk zones (landslides, slope failures, rock fall) stabilized	<p>Output:</p> <ul style="list-style-type: none"> i. Mitigation and Slope Stabilization programmes in High & Moderate Risk Land Slide Areas. ii. Updated Landslide Hazard Zoning (LHZ) maps with respect to land use pattern. <p>Activities:</p> <ul style="list-style-type: none"> - Locate High Risk and Moderate Risk sites within the landslide prone areas - Undertake detail studies to identify most suitable and economical mitigation measures - Implementation of Mitigation measures in 10 districts (M) - Undertake risk assessment in rock fall site at Haldumulla to Haputale and in landslide site at Kahagalla to Haputale (S) - Implement recommendations to minimize hazard due to rock fall and landslides (M)
2. Flood Protection for Major Cities	
Cities down stream of Kalani, Kalu and Nilwala rivers protected from floods	<p>Output:</p> <ul style="list-style-type: none"> i. Less flood damages in major cities (Colombo, Rathnapura, Galle, Matara and Kalutara districts) <p>Activities:</p> <ul style="list-style-type: none"> - Construction of upstream reservoirs across major rivers - Kalani, Kalu and Nilwala - Study alternative options to mitigate floods in rivers
3. Disaster Mitigation Action Plans	
DM (Mitigation) action plans developed, regularly updated and implemented at all levels of government (Provincial Councils, Local Authorities and all public sector institutions.)	<p>Outputs:</p> <ul style="list-style-type: none"> i. DRM Plans and Projects developed and implemented to mitigate the disaster in Local Authorities and Provincial Council areas <p>Activities:</p> <ul style="list-style-type: none"> - Establishment of DRM committees at all levels. - Develop a methodology to prepare DRM plans (S) - Conduct awareness programmes for Heads other relevant officers of Institutions & organizations (S) - Develop & implement DRM (mitigation) plans considering the multi-hazard environment (M) - Develop and review regulations, bylaws and approval procedure relating to all development projects and introduce appropriate disaster reduction measures (S) - Develop guidelines to integrate risk management options in land use plans (M) - Integrate mitigation budget line item in annual budget of all governments (initially preferably to have 5% of the annual budget allocated for mitigation interventions) - Reviewed and revised with feedback planned by DRM once a year



Outcomes	Outputs/ Activities
4. Integrating Disaster Impact Assessment (DIA) into all Development Projects	
DIA integrated into approval process of all development projects	<p>Outputs:</p> <ol style="list-style-type: none"> i. Procedure in place for integrating DIA into approval process of all development projects is in place. ii. Guidelines developed to categorize projects needing DIA integration into EIA iii. Hazard prone areas, reservation boundaries of rivers, and lands with steep slopes, landslide effected areas identified as special areas and published in the gazette. iv. A total of 1250 persons trained in the DIA integration process <p>Activities:</p> <ul style="list-style-type: none"> - Prepare guidelines to categorize development projects that need to undertake DIA - Demarcate and publish in gazette hazard prone areas, reservation boundaries of rivers, and lands with steep slopes, landslide effected areas etc. within jurisdiction of Local Govt areas to discourage construction - Development of guidelines for integrating DIA into planning & approval process of all development projects - Establish procedure for project approval following DIA and incorporating reduction measures. - Capacity building of the personnel involved in project formulation, assessment & approval. - Implement DIA in the EIA process for selected projects with effect from Jan 2006
Provisions established for mainstreaming risk management as a component of development	<p>Outputs:</p> <ul style="list-style-type: none"> - DRR sector/cluster is established in the national and regional development plans <p>Activities:</p> <ul style="list-style-type: none"> - Discussions with National Planning Department for plan implementation. - Provide information relevant to implementation such as Road map for DM and milestones to be achieved under the achieved under the National DRM plan
5. National Land Use and Physical Planning Policy	
Disaster Risk considerations integrated into national land use and physical planning policy and decision making	<p>Outputs:</p> <ol style="list-style-type: none"> i. Physical planning policy in place ii. 20 Urban Plans in disaster prone areas developed <p>Activities:</p> <ul style="list-style-type: none"> - Discussions with the National Physical Planning Department and Land use policy planning. - Development of physical planning policy and guidelines to integrate DRM into preparation of structure plans, urban land use plans etc. - Train Planning Officers and other relevant personnel to integrate DRM in to reparation of structure plans, urban land use plans etc. - Develop a structure plan incorporating DRR as a pilot project in 7 districts prone to natural disasters - Develop 20 Urban plans incorporating DRR as a pilot project in 7 districts prone to landslides and floods.

Outcomes	Outputs/ Activities
6. Coastal Zone Management (CZM)	
Disaster Risk considerations integrated in CZM policy and in decision making	<p>Outputs:</p> <ul style="list-style-type: none"> i. Implementation of Priority Risk Management Projects under CZM Plan 2004 to reduce impact of coastal hazards ii. Coastal Zone Management plans implemented in 15 locations <p>Activities:</p> <ul style="list-style-type: none"> - Discussions with the Coast Conservation Department and other stakeholder organizations such as NARA, fisheries department etc - Development of CZM policy with considerations on reduction of impact of coastal hazards through a consultative process with other stakeholders - Implementation of identified DM activities in CZM plan
Natural barrier along the coast created and coastal erosion reduced	<p>Outputs:</p> <ul style="list-style-type: none"> i. Selected trees are planted on 1000 ha in high risk coastal land <p>Activities:</p> <ul style="list-style-type: none"> - About 1000 ha of coastal land will be planted with selected plant species to control sea flooding (Green belt Project) - Selection of worst effected coastal areas - Select suitable plants in consultation with Dept of Forest and local communities, - Arrange nurseries of selected species of plants in suitable locations - Develop a tree planting & maintenance programme with PC, LAA, Education Dept. NGO and CBO
7. Development Controls, Building Bye-laws	
Disaster resilience through proper planning and safer housing construction in hazard prone areas	<p>Outputs:</p> <ul style="list-style-type: none"> i. Building codes/guidelines to increase hazard resilience ii. Revised byelaws of local government sector and provincial councils to increase resilience <p>Activities:</p> <ul style="list-style-type: none"> - Formation of Expert Group - Develop or introduce revisions to building codes/guidelines for construction in hazard prone areas - Study the existing bye- laws in local government sector and introduce revisions for construction in hazard prone areas
8. Housing, Education, Tourism and Infrastructure facilities	
Disaster risk vulnerability reduced by adopting mitigation measures in planning and onstruction of government housing schemes, industrial estates, tourist hotels	<p>Outputs:</p> <p>Programme for planning & construction of housing schemes, industrial estates, tourist hotels by state and private sector in hazard prone areas to higher standards hazard resilience</p> <p>Activities:</p> <ul style="list-style-type: none"> - Formation of an expert group. - Development of planning guidelines and building code/guidelines for settlements. - Implementation of guidelines and codes for hazard resistant construction for government housing scheme, industrial estates - Develop and introduce incentive programme for private housing



Outcomes	Outputs/ Activities
	<ul style="list-style-type: none"> - Technical and financial support to construction for higher standards of hazard resilience prescribed in the guidelines.
<p>Disaster risk vulnerability reduced by adopting mitigation measures in planning and construction of high voltage towers, communication towers</p>	<p>Outputs: Guidelines for planning & construction of High voltage towers, Communication towers</p> <p>Activities:</p> <ul style="list-style-type: none"> - Formation of Expert Group - Development of planning guide lines, building code/guidelines for theConstruction of hazard resistant High voltage towers, Communication towers in hazard prone areas
<p>Schools and hospitals in hazard prone areas plannedand constructed to higher standards of hazard resilience</p>	<p>Outputs: Programme for construction of all new schools and hospitals in hazard-prone areas to higher standards of hazard resilience</p> <p>Activities:</p> <ul style="list-style-type: none"> - Identify all new school and hospitals to be constructed in hazard prone areas - Review standard plans & design for adequacy of construction. - Conduct training programme for Engineers, Planners & Technical Officers.
<p>Disaster risk vulnerability around gas, fuel and chemical storage facilities reduced</p>	<p>Outputs:</p> <ol style="list-style-type: none"> i. List of vulnerable sites ii. People are made aware of risk <p>Activities:</p> <ul style="list-style-type: none"> - Review safety precautionary measures adopted. - Identify vulnerable areas near facilities. - Conduct awareness programmes for people residing close by.
<p>Increased disaster resilience through provision of safer critical infrastructure in hazard prone areas</p>	<p>Outputs:</p> <ol style="list-style-type: none"> i. A set of guidelines to increase hazard resilience for construction of Critical Infrastructure in hazard prone areas. <p>Activities:</p> <ul style="list-style-type: none"> - Identify critical infrastructure to be provided in hazard prone areas - Develop guidelines for construction of infrastructure in hazard prone areas - Review construction programmes to ensure adoption of hazard mitigation measures.
9. Drought Mitigation in Select Districts	
<p>Crop failures minimized by introducing and promoting distribution of quality seeds, in time, to farmers in remote villages in drought prone districts</p>	<p>Output:</p> <ol style="list-style-type: none"> i. Drought tolerant agricultural methods in use. ii. Ground Water Assessment maps <p>Activities:</p> <ul style="list-style-type: none"> - To promote research to develop drought tolerant crops and research on Genetic Engineering (M) - Train extension officers to transfer the research findings to farmers in 50 villages (M) - Develop a procedure to obtain quality seeds and distribute to farmers in time.(M)

Outcomes	Outputs/ Activities
	<ul style="list-style-type: none"> - Identify potential ground water sources in 500 villages in drought prone districts and promote ground water for irrigation (M) - Strengthen extension service to assist farmers in remote villages of drought prone districts that have limited access to quality seeds to ensure better growth by providing seeds in time. (M)
Soil rehabilitation programme promoted in drought prone areas.	<p>Output:</p> <ul style="list-style-type: none"> i. Soil rehabilitation programme <p>Activities:</p> <p>Develop and implement a programme to encourage farmers through an incentive scheme to produce and apply organic manure to rejuvenate the soil, reduce moisture stress and thereby reduce the crop loss.</p>
Use of micro irrigation facilities by farmers in drought prone areas promoted	<p>Output:</p> <ul style="list-style-type: none"> i. Micro-irrigation scheme <p>Activity:</p> <ul style="list-style-type: none"> - Develop a scheme to provide micro irrigation facilities along with agro-wells and other appropriate water resources.
Drinking water demand and supply management is improved	<p>Output:</p> <ul style="list-style-type: none"> i. Minimum level of drinking water supply is sustained <p>Activities:</p> <ul style="list-style-type: none"> - Formation of user groups to control local water resources/ tanks, including hand pumps - Promotion of water conservation awareness - Augment water supply through bowsering/ dugwell - Promote community/ household rain water harvesting structures, for local drinking water security.
10. Dam Safety Enhanced	
Dam safety ensured through a proactive approach for regular M&E process.	<p>Output:</p> <ul style="list-style-type: none"> i. Database on main dams, which can create flood vulnerability due to sudden release of water. ii. List dams classified according to risk available iii. Procedure for dam inspection and monitoring of reservoir induced landslides & earth quakes <p>Activities:</p> <ul style="list-style-type: none"> - Constitute an expert group for dam inspection and monitoring. - Development of database on dams which can create floods due to sudden release of water - Develop procedure for dam inspection and monitoring of dams and areas around the reservoir - Assess all dams for spillway adequacy & other structural failures - Undertake periodic dam inspection and monitor mitigation programme and recommend further safety measures - Prepare inundation maps for down stream areas of all major reservoirs and identify risk areas. - Develop and introduce a proper warning mechanisms



Outcomes	Outputs/ Activities
	<ul style="list-style-type: none"> - Conduct awareness programme for relevant officials, residents & children in vulnerable areas - Introduce Rubber gates instead of flash boards presently used at Castlereigh reservoir.
11. Risk Transfer Mechanisms	
<p>Effective economic & financial tools for reducing losses/ damages through increased participation of private sector in risk management activities made available</p>	<p>Outputs:</p> <ul style="list-style-type: none"> i. Risk transfer mechanisms and safety nets (Insurance and Incentive schemes) established to reduce losses <p>Activities:</p> <ul style="list-style-type: none"> - Organize periodic seminars for banking sector, insurance sector and micro-credit facilitators. - Develop a resource group for developing schemes or government sector institutions to suit the audience in Sri Lanka - Facilitate participation of stakeholders in international networking events - Improve microfinance for DM
12. Research & Development in DRR	
<p>Technical and scientific institutions and universities encouraged to undertake R & D activities in DRR</p>	<p>Outputs:</p> <ul style="list-style-type: none"> i. Programme for Research and Development for DRR <p>Activities:</p> <ul style="list-style-type: none"> - Identification of needs - Undertaking priority research and development programs
13. Health Risk due to Polluted Groundwater	
<p>Reduce the health risk of people in identified villages in North Central province due to the use of hazardous groundwater for drinking</p>	<p>Outputs:</p> <ul style="list-style-type: none"> i. Capacity of WRB enhance to forecast hazardous ground regimes ii. Hazardous ground water areas in NCP identified iii. People are made aware of the effect of polluted ground water on health and the possible preventive actions <p>Activities:</p> <ul style="list-style-type: none"> - Enhancing the forecasting capability on hazardous aspect of ground water regimes (S) - Identification of hazardous ground water areas in North Central Province (S) - Conduct awareness programmes to make the people aware of drinking water quality health effect of dissolved chemicals and preventive measures (S & M) - Issue water purification kits to 1000 most affected families (M &L)



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