

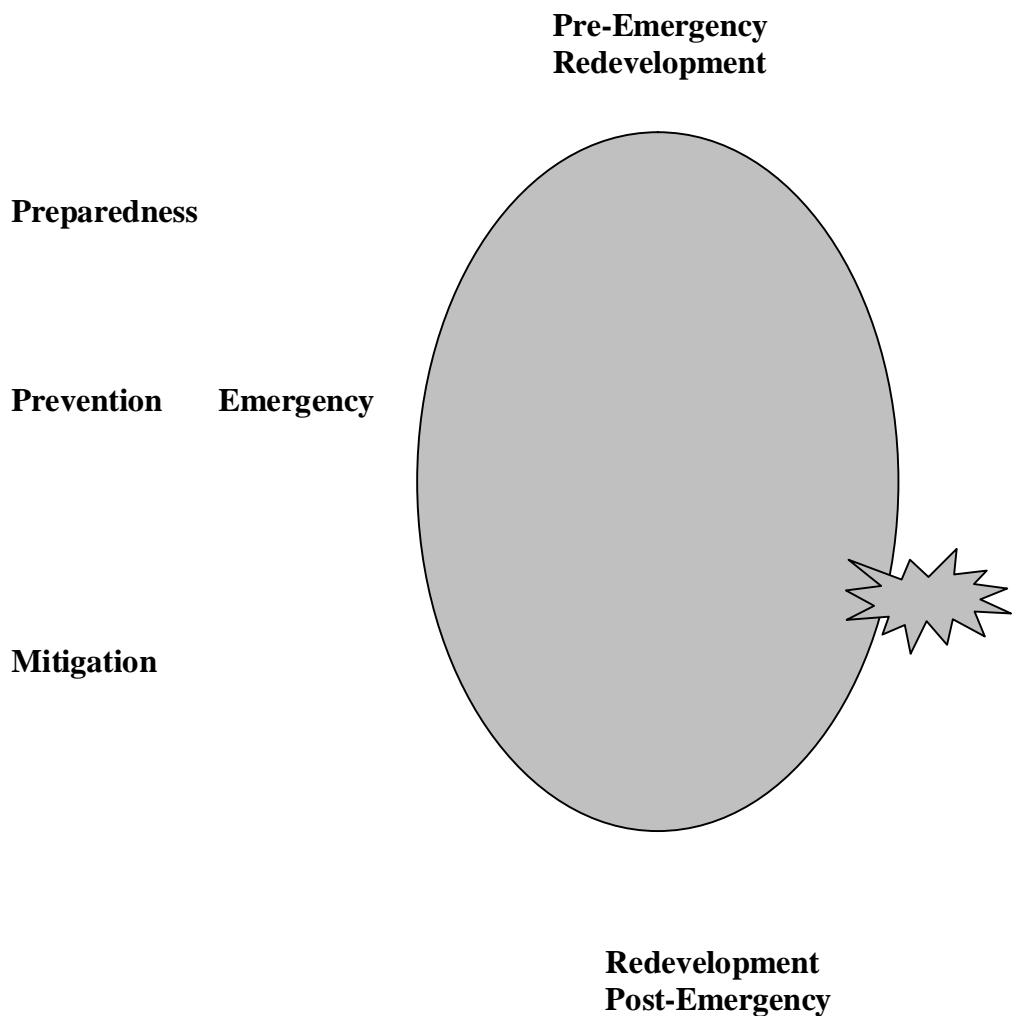
DISASTER MANAGEMENT

The word Disaster is from a French word Disaster meaning bad or evil star. However this is a very narrow conception of disaster and in our context, any disaster means a situation in which there is a sudden disruption of normalcy within society causing widespread damage to life and property. Typology of disaster- A disaster can be either natural [rain, flood, cyclone, storm, land slides, earthquake, volcanoes] or man made [war including biological, arson, sabotage, riots, accident (train, air, ship), industrial accidents, fires (forest fires), bomb explosions, nuclear explosions and ecological disasters]. The discussion here is confined to the natural disasters.

Pre-Independence, droughts and famines were the biggest killers in India. The situation has changed due to a combination of factors like irrigation development, food security measures. Floods, cyclones, droughts, landslides, avalanches and earthquakes are some of the major natural disasters that repeatedly and increasingly affect the country. Vulnerability- Vulnerability is defined as the extent to which a community, structure, service, or geographic area is likely to be damaged or disrupted by the impact of particular hazard, on account of their nature, construction and proximity to hazardous terrain or a disaster prone area.

In 1989, the General Assembly of the United Nations proclaimed the decade 1999-2000 as the International Decade for Natural Disaster Reduction (IDNDR). At the World Conference on Natural Disaster Reduction in the city of Yokohama, Japan in 1994, deep concern was expressed at the continuing human suffering and disruption of development due to natural disasters and a Yokohama Strategy and Plan of Action for a Safe World was developed. This was a definitive step in Disaster Mitigation and Preparedness Planning. It is not possible to do away with the devastation due to natural hazards completely. However, destruction from natural hazards can be minimized by the presence of well-functioning warning systems, combined with preparedness on the part of the vulnerable community. Disaster management may be seen as a part of good governance.

Basic concepts of Emergency Management- The basic concept suggests that the same management strategies can be applied to all emergencies. Emergencies do not just appear one day, rather they exist throughout time and have a life-cycle of occurrence, and hence the management strategy should match the phases of an emergency in order to mitigate, prepare, respond and recover from its effect. There are four phases in Emergency Management: Mitigation, Preparedness, Response and Recovery. The four phases are visualized as having a circular relationship to each other (Emergency Management Cycle). The activities in one phase may overlap those in the previous one.



Mitigation: refers to activities which actually eliminate or reduce the vulnerability or chance of occurrence or the effects of a disaster. Mitigation phase begins with conducting hazard identification and vulnerability analysis which are essential to the planning of all other phases. Hazard identification and vulnerability analysis is a two step process. First the hazard is identified which has the potential of affecting the population. Secondly, how people, property and structures will be affected by the disastrous event.

Preparedness: is a state of being ready to react promptly and effectively in the event of an emergency. Being prepared means that a plan of action exists for an emergency so that it is clear as to what to do before the emergency occurs. Preparedness measures to be undertaken depends upon the analysis of hazard severity and vulnerability, which is also the basis for deciding mitigation strategy. In some cases, such as a flood or hurricane, an early warning gives several hours to act. However, often no prior warning of an impending emergency, such as with earthquakes, tornadoes,

explosions, or major fires is possible. Preparedness for any emergency, especially those, which strike without notice, requires a plan. It is essential to identify the resources available, and ways to utilize them. It must also be reasonably certain that the plan will work in an emergency situation.

Preparedness Plan- The purpose of a plan is to provide a systematic way of responding to an emergency situation. The following aspects should be taken into consideration in the development of Emergency Preparedness Plan.

1. Identification of possible emergency situations which may occur in an area.
2. Deployment of officer in charge in case of emergency
3. Developing a strategy for activities likely to be undertaken and resources which could be of use
4. Identifying government bodies responsible to respond in case of emergency
5. Establishment of Emergency Operation Center (EOC) or Control Room to carry on emergency operations

Response activities occur during and immediately following a disaster. They are designed to provide emergency assistance to victims of the event and reduce the likelihood of secondary damage. The five basic stages of response to an emergency or disaster are (i) Notification/ Warning, (ii) Immediate Public Safety, (iii) Property Security, (iv) Public Welfare, and(v) Restoration. The length of each stage depends upon the emergency situation.

Notification/ Warning- is the first stage of response. Warning should be issued to two specific groups:

- (a) The general public; and
- (b) Departments, individuals, or agencies who must respond to the emergency.

In most emergency situations, the general public can be informed through radio and television; however, those in the immediate danger area should be informed by more direct means using public address systems. Those departments, individuals or agencies, which must be alerted should be informed according to the emergency preparedness plan. The alert could be done by two-way radio, telephone, messenger or local television and radio bulletins. The people who are expected to respond must be given enough information so that they know what to do. Practically no warning can

be given for an earthquake as there exists no scientific method to predict its occurrence. However, some of the conventional ways of earthquake prediction have been practiced since ancient times, the most relevant being the erratic behavior of animals just before an earthquake and it can be considered as an indicator of earthquake.

Immediate Public Safety deals primarily with providing emergency medical services, search & rescue and evacuation from the disaster area. The primary concern is for safety of the people and treatment of those who are injured.

Property Security- This stage deals primarily with the protection of property in the community. Primarily local police carry out the actions in this stage. The police should see that property is safe and looting or vandalism does not occur. The fire department aids in prevention of further damage to surrounding property. The Public Works/ Highways Department/ local urban or rural bodies may also play an important part by providing manpower, removing debris or providing street barricades.

Public Welfare consists of two main operations- caring for the people after the emergency and assessing damage. This stage is where it is most important that all the service agencies work closely. During the public welfare stage the prime concern is about mass care for injured, shelter for the homeless, food and clothing for those in need. During this stage assessment of the damage is necessary in order to obtain State or National support.

Restoration involves actions that repair the necessities of life, which means restoring utility service and the removal of debris from the disaster scene.

Recovery: is the final phase of the emergency management cycle. Recovery continues until all systems return to normal, or near normal. Short- term recovery returns vital life support systems to minimum operating standards. It grows out of the response effort. During the response phase, emergency repairs to buildings are made as protective measures against further damage or injury. Short-term recovery is the restoration of vital services and facilities to minimum standards of operation and safety. Severely damaged buildings are scheduled to be replaced or removed, water and sewer repairs are made, electricity and telephone services returned to normal.

Long-term recovery may continue for a number of years, as the community slowly returns to pre-emergency or better conditions. Long-term recovery may include the complete redevelopment of damaged areas. During short-term recovery, buildings are repaired and people's immediate needs are taken care of and assistance programmes are put into effect. There is no clear-cut distinction when long-term recovery begins. They are not two distinctly different phases of recovery. Long-term recovery is simply those recovery efforts, which are still in operation long after the disaster and includes everything from complete redevelopment of the disaster area to mitigation efforts to prevent a similar disaster on an on-going basis for years after the emergency. The recovery phase of emergency management is just as vital as the mitigation, preparedness, and response phases. A key element in the recovery phase is to develop and implement ways to reduce community's vulnerability to a repeat of a similar emergency and also continued liaison with the State Headquarters and the Central Government for assistance.

Redevelopment as mitigation- After a major disaster, certain areas may be completely levelled and new buildings must be designed to take their place. Redevelopment refers to the complete replacement of structures, and not just structure repair. Redevelopment provides the opportunity to reduce the chances that similar structural damage will occur again. The redevelopment officials (public and private) must think of ways to rebuild the damaged structures so that the next time the same hazard strikes, the impact is greatly reduced. Engineers should evaluate if the building codes respond to particular hazard. Planners should evaluate whether the damaged area should be rezoned for lower density uses. Residents of a disaster-affected area should be asked for their preference for resettlement in the same area or other.

The loss of human life and property from a disaster can be substantially reduced by timely issue of warning to the community likely to be affected from the disaster. Similarly, providing a quick response immediately after the disaster can substantially reduce the suffering of the affected people.

Organizational structure and Institutional arrangements for emergency management in the State

State Emergency Management Planning Committee (SEMPC)- A State Emergency Management Plan must be prepared for each kind of disaster and the details of the organizational structure for emergency management activities should be made known. Responsibility of concerned agencies for the execution of rescue, relief and recovery operations and Standard Operating Procedure for each should be made available. A State Emergency Management Planning Committee (SEMPC) should be constituted with all the stakeholders as members.

State Crisis Group (SCG)- The setting up of a State Crisis Group (SCG) will enable quick decision making, operational direction and coordination of the issue of warning and execution of rescue, relief and recovery operations. The responsibilities of the SCG would include:

1. on spot decision making
2. Control and coordination of response and recovery activities
3. Resource mobilization and replenishment
4. Monitoring of overall response & recovery activities.
5. Preparation of reports for submission to State Government through
6. Relief Commissioner

State Emergency Manager (SEM)- Different government agencies and the NGOs are supposed to operate within the overall direction and coordination of the Commissioner of Revenue Administration/ Relief Commissioner, who may be designated as the State Emergency Manager (SEM). The individual government agencies and the NGOs will perform the assigned jobs but the State Emergency Manager will appropriately augment their resources by drawing upon resources from other government agencies and the local communities. The Chief Secretary or Commissioner of Revenue Administration can also assign additional responsibilities and functions to different Government agencies to meet the requirements of the situation. During the time of emergency the Chief Secretary or the Commissioner of Revenue Administration who is the State Emergency Manager (SEM) would act as the focal point for control and coordination of all activities.

His responsibilities would be:

1. Get in touch with the local Army/ Navy/ Air force units for assistance in rescue, evacuation and relief
2. Requisition resources, materials and equipment from all Departments / Organizations of the government and also from private sector
3. Direct industry to activate their onsite and off -site disaster management plan
4. Set up Site Operations Centre in the affected area with desk arrangements
5. Arrange establishment of transit and/ or relief camps, feeding centers and cattle camps.
6. Send Preliminary Information Report and Action Taken Report to the Government.
7. Arrange immediate evacuation whenever necessary

State Emergency Control Room (SECR)- The need for directing the operations at the affected site, the need for coordination at the district headquarters and the need for interaction with the State Government to meet the conflicting demands at the time of disaster is the responsibility of the Relief Commissioner and his team. A well-equipped State Emergency Control Room (SECR) in terms of manpower and equipment should be established to help the Relief Commissioner and his team and to perform the following functions:

- *Collection and compilation of information from the affected area
- *Documenting information flow
- *Decision making regarding resource management
- *Allocation of task to different resource organization
- *Supply of information to State Government

The SECR may have senior representatives in the capacity of Desk

Officers from the following key resource agencies:

- *Search, Rescue & Evacuation desk - Police and Fire Services
- *Logistics & Welfare desk
- *Medical desk
- *Infrastructure desk

The Desk Officers should maintain constant contact with the State Crisis Group members and the other district heads to ensure

quick decision-making.

Activities of State Emergency Control Room (SECR)

(a) Normal times- The responsibilities during the normal times will include:

- *Ensure all warning and communication systems, instruments are in working condition.
- *Collect information on a routine basis from the State departments on the vulnerability of areas to disasters.
- *Liaise with SEMPC
- *Develop status reports of preparedness and mitigation activities in the State.
- *Ensure appropriate implementation of State Emergency Management Plan
- *Maintain data bank with regular updating

Evaluation & updation of State Emergency Management Plan is the responsibility of SEMPC. However, SEMPC would keep an account of the amendments and accordingly review its response strategy. SECR will be responsible for activating the trigger mechanism in the event of receipt of a warning or occurrence of a disaster.

(b) Activities on occurrence of emergency

Issue Warning / Alert- On the basis of message received from the forecasting agencies, warning has to be issued for the general public and the departments which play a vital role during emergencies. Issue of correct and timely warning would be one of the prime responsibilities of SECR. For effective dissemination of warning SECR should have a well-planned line of communication. The Relief Commissioner would be the authoritative body to issue warning. Formulation of warning message should consider the target group for which it is issued.

(c) Post-emergency activities

After an emergency the main responsibility of a SECR would be:

*Evaluation of relief and rehabilitation activities in order to assess the nature of state intervention and support, suitability of the organization structure, institutional arrangements, adequacy of Operating Procedures, monitoring mechanisms, information tools,

equipment and communication system.

*Post -emergency impact studies for long term preventive and mitigation efforts to be taken.

Communication Room (Main Message Room)- The police wireless system should continue to be in contact with the SECR. In every district the police have a well-established wireless communication system; therefore, under any emergency the communication resources available with the police may be utilized. During disaster, SECR would be connected to Site Operations Centre and the facilities at various Desks.

Emergency Support Functions (ESFs) are how Emergency Management accomplishes many of the tasks of responding to an emergency.

List of Emergency Support Functions

ESF No. 1 – Communication

ESF No. 2 – Public Health and Sanitation

ESF No. 3 – Power

ESF No. 4 – Transport

ESF No. 5 – Donation

ESF No. 6 – Search and Rescue

ESF No. 7 – Public Works and Engineering

ESF No. 8 – Food

ESF No. 9 – Information and Planning

ESF No. 10 – Relief Supplies

ESF No. 11 – Drinking water

ESF No. 12 – Shelter

ESF No. 13 – Media

ESF No. 14 – Helplines

Planning Process

The Planning process for disaster management is based on the principle that response and level of preparedness required are dependent on the extent of vulnerability and the level of capacity to deal with situations. Disasters may be graded at three levels:

L1: District Level Disaster within the capabilities of the district administration to deal with

L2: State Level Disaster within the capabilities of State Government to deal with

L3: National Level Disaster requiring major intervention of the

Central Government

L0: No disaster situation- This is the level at which surveillance, preparedness and mitigation activities must be focussed on

Trigger mechanism

Trigger Mechanism is a quick response mechanism, which would spontaneously set the vehicle of management into motion on the road to disaster mitigation process. The trigger mechanism has been envisaged as a preparedness plan whereby the receipt of a single of an impending disaster would simultaneously energise and activate the mechanism for response and mitigation without loss of crucial time. This would entail all the participating managers to know in advance the task assigned to them and the manner of response. Identification of available resources, including manpower, material and equipment and adequate delegation of financial and administrative powers are prerequisites to successful operation of the trigger mechanism.

As and when a disaster takes place, be it natural or man-made, the managers struggle to mitigate its effects on human lives and material losses. The immediate response in all disasters has more or less the same parameters. These are to provide rescue and relief and save the precious human life. Thus, the emergency response of the disaster managers is a factor independent of the types of intensity of the disasters. As and when the disasters strike or take place, the managers are required to swing in action without losing time. Generally, in such situations, the managers start organising, planning and activating the mitigation process. On the other hand, the event had already taken place and the need of that hour is to start the mitigation process and virtually no time can be spared at that stage for the activities like organizing and planning. Time is the essence of the immediate relief and rescue operations to save human lives and mitigate human miseries for the next 48 to 72 hours. Thereafter, actually what is required to be done is a part of long term rehabilitation and reconstruction programmes.

The trigger mechanism in fact is a preparedness plan in which all the participating managers, and actors know in advance the task assigned to them and the manner in which they have to be prepared themselves to respond.

In fact the trigger mechanism is in essence the Standard Operating Procedure (SOP) in which the implementation of the efforts on ground is well laid down. Generally, the activities which include evacuation, search and rescue, temporary shelter, food, drinking water, clothing, health and sanitation, communications, accessibility, and public information which are very important components of disaster management, would follow on the activation of the Trigger Mechanism. All these major activities which are common in all types of disasters will require sub-division and preparation of sub-action plans by each specified authority. They will be required to list all requirements and their availability within the prescribed response time. Separate SOPs need to be in place for each front line agency like Police, Fire- Service, PWD, Highways, Health Departments.

The Trigger Mechanism requires the disaster managers to:

- *Evolve an effective signal / warning mechanism.
- *Identify activities and their levels.
- *Identify sub-activities under each activity / level of activity.
- *Specify authorities for each level of activity and sub-activity.
- *Determine the response time for each activity.
- *Work out individual plans of each specified authority to achieve the activation as per the response time.
- *Have Quick Response Teams for each specified authority.
- *Have alternative plans and contingency measures.
- *Provide appropriate administrative and financial delegations to make the response mechanism functionally viable.
- *Undergo preparedness drills.

Paradigm Shift towards Prevention and Reduction- Recognizing the rapidly rising world-wide toll of human and economic losses due to natural disasters, the UN General Assembly in 1989 took a decision to launch a far reaching global undertaking during the nineties to save human lives and reduce the impact of natural disasters. With this aim in mind, the decade 1990-2000 was declared as the International Decade for Natural Disaster Reduction (IDNDR).

The objective of the IDNDR was to reduce, through concerted international action, especially in developing countries, the loss of life, property damage and social and economic disruption caused by

natural disasters such as earthquakes, floods, cyclones, landslides, locust infestations, drought and desertification and other calamities of natural origin.

By the year 2000, as per the plan of the IDNDR, all countries should have had:

- a. Comprehensive national assessments of risks from natural hazards, with these assessments taking into account their impact on developmental plans,
- b. Mitigation plans at national and/ or local levels, involving long term prevention and preparedness and community awareness,
and
- c. Ready access to global, regional, national and local warning systems and widespread dissemination of such warnings.

Prevention, Mitigation and Preparedness Strategy

- *Development of a culture of prevention as an essential component of an integrated approach to disaster reduction.
- *Prepare and maintain in a state of readiness 'Preparedness and Response Plans' at National, State and District levels.
- *Adoption of a policy of self reliance in each vulnerable area.
- *Education and training in disaster prevention, mitigation and preparedness for enhancement of capabilities at all levels.
- *Identification and strengthening of existing centres of excellence in
 - *order to improve disaster prevention, reduction and mitigation capabilities.

Ushering in a New Culture of Disaster Management

Culture of Preparedness- Hitherto, the approach towards coping with the effects of natural disasters has been post-disaster management involving many problems such as law and order, evacuation and warnings, communications, search and rescue, fire-fighting, medical and psychiatric assistance, provision of relief and sheltering, etc. After the initial trauma of the occurrence of the natural disaster is over within the first few days or weeks, the phase of reconstruction and economic, social and psychological rehabilitation is taken up by the people themselves and by the government authorities. Soon thereafter the occurrence of the

disaster is relegated to historic memory till the next one occurs either in the same area or in some other part of the country.

It is not possible to do away with the devastation of natural hazards completely. However, experience has shown that destruction from natural hazards can be minimized by the presence of a well-functioning warning system, combined with preparedness on the part of the vulnerable community. Warning systems and preparedness measures reduce and modify the scale of disasters. A community that is prepared to face disasters, receives and understands warnings of impending hazards and has taken precautionary and mitigatory measures, will be able to cope better and resume their normal life sooner.

Culture of Prevention- One of the many lessons learnt by victims of various natural disasters is that the aftermath of a disaster can be even worse than the disaster event itself. Thus, there is a need to acknowledge the necessity for efforts towards disaster prevention. However, people are often surprised by the concept of reducing disasters. How, it is often asked, can a natural disaster such as an earthquake or a cyclone be reduced or prevented? Natural occurrences such as floods, earthquakes, cyclones, etc., simply cannot be avoided altogether, they are a part of the environment we live in. What can be done, however, is to take preventive measures at various levels of society in order to make the impact of such natural hazards as harmless as possible for people and people's properties. The impact of a natural hazard can be reduced, its worst effects can be prevented.

Early Warning- Building codes do not exist against storm surge inundation. Prescribed means today to save life and properties against storm surge inundation is to evacuate people to safer places as quickly as possible on receipt of warnings. Coordinated early warning systems against tropical cyclone are now in existence around the globe and it is possible to warn the affected population at least 24 to 36 hours in advance about the danger from a tropical cyclone. By taking advantage of early warning systems, it is now possible by prepared and knowledgeable communities to minimize the loss of lives and properties.

Development Planning- There is a need to integrate development plans and regulations with disaster-mitigation. The construction of roads, railways lines, bridges, etc., should be according to the topography and geology of that area in terms of risk and vulnerability. All development projects (engineering and non-engineering) including irrigation and industrial projects should be targeted towards disaster-mitigation.

Environmental protection, afforestation programmes, pollution control, construction of earthquake-resistance structures should have priority for implementation. What is important is to introduce a culture of prevention in disaster managers and all communities, at all levels: action to save lives must be taken before disaster strikes. For instance, most of the deaths and casualties in an earthquake are caused not by the earthquake itself but due to the collapse of buildings and concrete structures. Hence earthquake proof features need to be planned and incorporated at the structural design itself. Retrofitting of existing structures will also mitigate the effects of an earthquake. Such preventive measures are essential also in a State like Tamil Nadu considering that much of the State has been upgraded to Zone III in the revised seismic Zonation map of India, on par with Latur in Maharashtra. The building control regulations need to be revised accordingly.

Financial Arrangements

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 percent 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.

The initial corpus of the National Fund is Rs.500 crores, 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. Assistance provided by the Centre to the States from the National Fund is to be financed by levy of a special surcharge on the central taxes for a limited period. 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. There are a number of important ongoing schemes that specifically help reduce disaster vulnerability. Some of these are: Integrated Wasteland Development Programme (IWDP), Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), Flood Control Programmes, National Afforestation & Eco-development Programme (NA&ED), Accelerated Rural Water Supply Programme (ARWSP), Crop Insurance, Sampurn Grameen Rozgar Yojana (SGRY), Food for Work etc.

The High Power Committee (HPC) constituted by GOI on Disaster Management which submitted its report in October 2001 recommended that at least 10 percent 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.

In order to move towards safer 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.

Sources: (1) Draft Tenth Five Year Plan – Union Planning Commission
(2) Report (October 2001) of High Powered Committee on Disaster Management set up by GOI (Dept. of Agr. & Coopn., Ministry of Agr.)
(3) Disaster Mgm. Plan, Institute of Disaster Management, M.P. & notes of Prateep V. Phillip, IPS (TN).