

PART III C

Chapter 21

Disaster Management in India

by

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India is highly vulnerable to natural disasters. About 60% of the landmass is prone to earthquakes; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. In addition, man-made disasters due to terrorist activities using conventional weapons or nuclear, biological and chemical materials may also be a potential threat to national security. The basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of a disaster is that of the concerned State Government. The Central Government supplements the efforts of the State Governments by providing financial and logistic support in case of major calamities. Against this backdrop, this chapter provides an overview of the mechanisms in place in India to compensate and mitigate its large exposure to natural and man-made disasters.

* Under Secretary.

Introduction

India has been vulnerable to natural disasters on account of its geo-climatic conditions. About 60% of the landmass is prone to earthquakes; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. In addition, man-made disasters due to terrorist activities using conventional weapons or nuclear, biological and chemical materials may also be a potential threat to national security.

1. Role of Central and State Governments

The basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of a disaster is that of the concerned State Government. The Central Government supplements the efforts of the State Governments by providing financial and logistic support in case of major calamities.

Transfer of Subject

The subject of Disaster Management (excluding drought) was transferred from the Ministry of Agriculture to the Ministry of Home Affairs in February, 2002.

Change in Orientation

There has been a shift in focus from post disaster relief and rehabilitation to encompass the entire cycle of disaster management including mitigation, preparedness, response, relief and rehabilitation.

2. National Disaster Management Framework

In line with the change in orientation, a strategic framework has been drawn up covering institutional mechanisms; early warning systems; disaster prevention and mitigation; legal and policy framework; network of emergency operation centres; preparedness, response and human resource development. The framework has been shared with all the State and UT Governments.

3. Institutional and Policy Framework

The institutional and policy mechanisms for carrying out response, relief and rehabilitation have been well established since Independence. These mechanisms have proved to be robust and effective. The changed approach, however, mandates a priority to pre-disaster aspects of mitigation, prevention, and preparedness. New institutional mechanisms are being put in place to address this change in approach.

4. National Emergency Management Authority

Disaster Management involves multi-disciplinary functions encompassing a number of Ministries/Departments. Institutional mechanisms which would facilitate this inter-disciplinary approach are being put in place. A National Emergency Management Authority is proposed to be constituted, headed by Secretary/Special Secretary in the Ministry of Home Affairs and with representatives from various relevant Ministries/Departments as members.

The State Governments have also been requested to set up Disaster Management Authorities in States on similar lines.

5. National Policy on Disaster Management

A National Policy on Disaster Management is in the process of being finalized. The broad features of the Policy on Disaster Management are as follows:

- Adoption of a holistic and pro-active approach towards prevention, mitigation and preparedness.
- Incorporation of mitigation measures in the on-going schemes/programmes.
- Prioritisation of projects addressing mitigation, where there is a shelf of projects.
- Community involvement and awareness generation, particularly that of vulnerable segments of population.
- Interaction with the corporate sector, non-governmental organizations and media in the national effort for disaster prevention/vulnerability reduction.

- Formulation of Standard Operating Procedures and Disaster Management Plans at state and district levels as well as by relevant Central Government Departments.
- Compliance with construction designs laid down in the relevant Indian Standards.
- Evaluation and, where necessary, retrofitting of lifeline buildings such as hospitals, railway stations, airports, airport control towers, fire station buildings, communication network, major administrative buildings, etc. in high seismic risk zones.
- Conversion of relief codes into disaster management codes for institutionalising the planning process.

6. Disaster Management Act

The States have been advised to enact Disaster Management Acts to provide for adequate powers for authorities coordinating mitigation, preparedness and response as well as for various mitigation/preparedness measures required to be undertaken.

7. Disaster Mitigation

7.1. National Core Group for Earthquake Risk Mitigation

A Core Group for Earthquake Risk Mitigation has been set up with eminent experts in earthquake engineering and administrators as members. The Core Group has mainly been assigned the responsibility of drawing up a strategy and plan of action for mitigating the impact of earthquakes; and providing advice and guidance on various aspects of mitigation.

7.2. Review of building bye-laws and their adoption

An Expert Committee appointed by the Core Group on Earthquake Risk Mitigation has prepared a report covering appropriate amendments to the existing Town and Country Planning Acts; Land Use Zoning Regulations; Development Control Regulations and Building Byelaws which could be used by the State Governments and the local bodies to upgrade their existing legal instruments. These have been shared with the State Governments.

7.3. National Programme for Capacity Building for Engineers & Architects in Earthquake Risk Mitigation

National Programmes for Capacity Building in Earthquake Risk Mitigation for engineers and architects have been launched to assist the State Governments in building up capacities for earthquake risk mitigation. Under these programmes, 10,000 engineers and 10,000 architects in States will be imparted training in seismically safe building designs and related techno-legal requirements, over a period of three years.

7.4. Inclusion of Earthquake Engineering at Undergraduate level in Engineering/Architecture curricula

Earthquake engineering aspects are expected to be included at the undergraduate level in engineering colleges/Institutes of Planning and Architecture from the academic year 2005-06.

7.5. Emergency Health Management for Medical Education

Emergency Health Management for dealing with disaster situations is proposed to be made a part of the course curricula of medical colleges at undergraduate level. Committees with representatives from several resource institutes have been constituted for the development of curriculum for Emergency Health Management for medical students at undergraduate level and training module for in-service Health Managers.

7.6. National Earthquake Risk Mitigation Project

An Earthquake Mitigation Project has been developed for detailed evaluation and retrofitting of lifeline buildings. The programme also includes training of masons in earthquake resistant constructions as well as providing assistance to the State Governments to put in place appropriate techno legal regime.

7.7. Accelerated Urban Earthquake Vulnerability Reduction Programme

An accelerated urban earthquake vulnerability reduction programme has been taken up in 38 cities in seismic zones III, IV & V with a population of over half a million. A large number of orientation Programmes have been organized for senior officers and representatives of the local planning and development bodies to sensitize them about the earthquake preparedness and mitigation measures. Training programmes have been organized for engineers and architects on seismic safe construction and implementation of BIS codes. Education programmes are being organized in schools, colleges

and other educational institutions. Awareness generation programmes for the community are also being undertaken in these cities. The cities are also being assisted to review and monitor their building byelaws to incorporate multi-hazard safety provisions and develop disaster management plans.

7.8. National Core Group on Cyclone Monitoring and Mitigation

A National Core Group on Cyclone Monitoring and Mitigation has been constituted with experts from Indian Meteorological Department, National Centre for Medium Range Weather Forecasting, Central Water Commission, National Remote Sensing Agency and Indian Space Research Organisation, besides administrators from relevant Ministries/Departments and State Governments. The Group has been assigned the responsibility of looking at warning protocols for cyclones; technology upgradation; coordination mechanism between Central and State Ministries/Departments/Organizations; mechanism for dissemination of warnings to local people and cyclone mitigation measures required to be taken for the coastal states. The cyclone warning formats have been revised to make them more meaningful and user friendly to the community at risk. A project has been taken up for upgradation of models for cyclone track prediction.

7.9. National Cyclone Mitigation Project

A project for cyclone mitigation has been drawn up in consultation with cyclone prone States. The project envisages construction of cyclone shelters, coastal shelter belt plantation in areas which are prone to storm surges, strengthening of warning systems, training and education, etc. The project is likely to be supported by the World Bank.

7.10. Landslide Hazard Mitigation

A National Core Group on Landslide Hazard Mitigation has been constituted with representatives from Departments of Science & Technology, Road Transport and Highways, Geological Survey of India and National Remote Sensing Agency as members. The Core Group has been assigned the responsibility of drawing up a strategy and plan of action for mitigating the impact of landslides; to provide advice and guidance to the State Governments on various aspects of landslide mitigation and landslide hazard zonation and to evolve early warning systems and protocols for landslide risk reduction. The Geological Survey of India (GSI) has been designated as the nodal agency. The States have been requested to share the list of habitations close to landslide prone areas in order to supplement GSI's on-going assessment of such areas.

8. Disaster Risk Management Programme

A disaster risk management programme has been taken up in 169 districts in 17 multi-hazard prone States with assistance from UNDP, USAID, European Union and few other international agencies. The programme states are being assisted to draw up State, District and Block level disaster management plans; village disaster management plans are being developed in conjunction with the Panchayati Raj Institutions and disaster management teams consisting of village volunteers are being trained in preparedness and response functions such as search and rescue, first-aid, relief coordination, shelter management plans etc., The State and District level multi-hazard resistant Emergency Operation Centres (EOCs) are also being set up under this programme including provision of equipments for EOCs. Orientation training of engineers, architects and masons in disaster resistant technologies has been initiated.

8.1. National Institute of Disaster Management

National Institute of Disaster Management (NIDM) undertakes training of trainers and organizes training programmes for planners, administrators and command functionaries. The Institute has also been entrusted with the responsibility of development of National level information base on disaster management policies, prevention mechanisms, mitigation measures and providing consultancy to various States in strengthening their disaster management systems and capacities and development of strategies for hazard mitigation and disaster response.

8.2. Disaster Management Faculties in Administrative Training Institutes in States

Disaster Management Faculties have been created in 29 State level Training Institutes. These faculties are being financially supported by the Central Government. The State Training Institutions take up focused training programmes on disaster management for different target groups within the State.

8.3. All India Services

Training curricula have been drawn up and integrated in the syllabus of All India Services (IAS, IPS and Indian Forest Services). Training modules are being developed for other Civil Services at National and State levels.

8.4. Awareness Generation

A National programme for awareness generation as a part of overall disaster risk management strategy is being undertaken.

8.5. Disaster Management in School Education

Disaster Management as a subject in Social Sciences has been introduced in the school curricula for Class VIII and IX through Central Board of Secondary Education. The curricula for Class X are under preparation and will be introduced from the academic year 2005-06. Training of teachers for teaching the curricula has been undertaken. State Governments have also been advised to take similar steps through their school education boards.

8.6. Information, Education and Communication

In order to assist the State Governments in capacity building and awareness generation activities, the Ministry has compiled a set of resource materials developed by various organizations/institutions. This has been shared with State Governments for further dissemination down to the village level, in local languages.

9. Preparedness

9.1. Specialist Response Teams

Eight battalions of Central Para-Military Forces are being converted into Specialist Response Teams. Four of these will also be trained and equipped for responding to nuclear, biological and chemical emergencies. There will be a total of 144 Specialist Response Teams. Each team consists of 45 personnel. 18 Specialist Response Teams have already been trained to respond to natural calamities.

9.2. State Specialist Response Teams

The States have also been advised to set up their own Specialist Response Teams for responding to disasters. The Central Government will provide assistance for training of trainers. Since resources are an important constraint for the States, the State Governments have been advised that they may utilize 10% of the annual in-flow into the Calamity Relief Fund (CRF) for the procurement of search and rescue equipment and communication equipment.

9.3. Regional Response Centres

Fourteen Regional Response Centres have been identified and are being developed for storing a cache of essential search and rescue equipment to facilitate movement of such equipments quickly to the site of a disaster.

9.4. Incident Command System

In order to professionalize emergency response management, it is proposed to introduce an Incident Command System in the country. This system provides for specialist incident command teams with an Incident Commander and officers trained in different aspects of incident management – logistics, operations, planning, safety, media management etc. Training of trainers is being undertaken in different modules of the Incident Command System.

9.5. Emergency Support Function Plans

It has been observed that the relevant departments start constituting teams/mobilizing resources only after a disaster has struck which leads to delay. The relevant departments/agencies have been advised to draw up Emergency Support Function (ESF) Plans and constitute response teams and designate resources in advance for rapid response.

9.6. India Disaster Resource Network

A web-enabled centralised data base on disaster response resources has been operationalised. The India Disaster Resource Network (IDRN) is a nation-wide electronic inventory of essential and specialist resources for disaster response including specialist equipment and manpower resources. The IDRN lists out the equipments and resources by type and by the functions it performs and gives the contact address and telephone numbers of the controlling officers of the said resources. It has already been made use of during the flood situations last year and this year.

9.7. National Emergency Operation Centre

The control room at the national level has been upgraded as National Emergency Operations Centre (EOC) to coordinate the disaster/emergency operations.

9.8. State/District level Emergency Operation Centres

The States are being assisted to set up control rooms/emergency operation centres (EOCs) at the State and district level. Hazard zone-wise standard layout/structural and construction designs have been developed for

State and District EOCs and shared with all the States. Construction work has commenced in 6 States and 64 districts.

9.9. National Emergency Communication Network

The Communication network between the national and the state EOCs and the site of the disaster is currently based on conventional Department of Telecommunication network. It has generally been observed that in a calamity, communication is the first casualty. It has, therefore, been decided to put in place multi-mode multi-channel communication systems with enough redundancy. A National Emergency Communication Plan has been drawn up and Phase-I of the plan is currently under implementation. It will provide satellite based mobile voice/data/video communication between National EOC/State EOCs/mobile EOCs and remote disaster sites.

9.10. Development of GIS-based National Database

The GIS data base currently available with different agencies of the Government is being upgraded. The data base will provide multi-layered maps on district wise basis. These maps taken in conjunction with the satellite images available for a particular area enable the district administration/State Governments to carry out hazard zonation and vulnerability assessment as well as coordinate response after a disaster. It is proposed to establish a GIS database in the Ministry which will assist in hazard zonation, risk management, preparedness and emergency response management.

9.11. Strengthening of Fire Services

In order to further strengthen the capacity for response, the fire services in the country are proposed to be developed into multi-hazard response units. A project has been drawn up for this purpose.

9.12. Handling of Hazardous Materials

Guidelines have been sent to States for industries handling hazardous materials. It has been prescribed that on-site and off-site disaster response plans in the industries dealing with hazardous materials be updated in consultation with District Administration and rehearsed once every year. It has also been prescribed that these industries will carry out awareness campaign for the population in the vicinity regarding the dos/don'ts to be observed in case of any accident involving hazardous materials.

10. Response Mechanism

In case of any major calamity, the Ministry of Home Affairs as the nodal Ministry coordinates response and provides necessary relief materials in conjunction with the relevant Ministries/Departments. Airlift facility is organized through the Ministry of Defence, medicines through the Ministry of Health, food supplies through the Ministry of Food & Public Distribution, etc. The developments are monitored on day to day and in major calamities on hour to hour basis.

11. Cabinet Committees

At the apex level there are two Cabinet Committees i.e. the Cabinet Committee on Natural Calamities and the Cabinet Committee on Security. Major issues relating to natural disasters are placed before the Cabinet Committee on Natural Calamities for decisions. In case of calamities which impinge on internal security or which may be due to the use of nuclear, biological and chemical weapons/materials, the matter is required to be placed before the Cabinet Committee on Security.

12. National Crisis Management Committee

There is a National Crisis Management Committee (NCMC) under the Chairmanship of Cabinet Secretary with Secretaries of all the relevant Ministries/Departments/organizations as members. The NCMC gives directions to the Crisis Management Group as deemed necessary. Home Secretary is responsible for ensuring that all developments are brought to the notice of the NCMC. The NCMC can give directions to any Ministry / Department/ organisation for specific action needed for meeting the crisis situation.

13. Crisis Management Group

The Central Relief Commissioner in the Ministry of Home Affairs is the Chairperson of the Crisis Management Group (CMG), consisting of senior officers (called Nodal Officers) from various concerned Ministries/Departments/Organisations. The CMG's functions are to review every year contingency plans formulated by various Ministries/Departments/Organisations in their respective sectors; measures required for dealing with natural disasters; coordinate activities of the Central Ministries and the State Governments for response and relief. The CMG, in the event of natural disasters, meets frequently to review the relief operations and extend all possible assistance required by the affected States to overcome

the situations effectively. The Resident Commissioner of the affected State is also associated with such meetings.

14. Funding Mechanism

The present scheme of financing response and relief is based on the recommendations of the 11th Finance Commission for the period up to 2004-2005. On the recommendation of the 11th Finance Commission, a Calamity Relief Fund (CRF) for each State for meeting the expenditure on relief operations has been created. CRF consists of 75% central contribution released in two half yearly installments every year (1st May and 1st November). The remaining 25% contribution is to be provided by the State Governments. The State Governments are required to meet the expenditure for providing immediate relief to the victims of natural calamities as per the approved norms prescribed under CRF. A Committee under the Chairmanship of Chief Secretary of the State has been authorized under the scheme of CRF to decide on all matters connected with the financing of relief expenditure. Where funds available in the CRF are not considered sufficient for meeting the expenditure on relief, in case of a calamity of severe nature, financial assistance is also provided to the States from the National Calamity Contingency Fund (NCCF). The State Governments are required to submit a detailed memorandum indicating the sector-wise details of damage and requirement of funds for the relief operations. On receipt of memorandum from the State Government, an Inter-Ministerial Central Team is deputed for an on-the-spot assessment of situation and requirement of funds. The Report of the Inter-Ministerial Central Team is considered by the Inter-Ministerial Group (IMG) headed by the Home Secretary. A High Level Committee (HLC) of Ministers, presently chaired by the Agriculture Minister, considers the request of the State Government and decides the quantum of assistance from the NCCF, based on the report of the inter-ministerial central team, recommendations of the IMG thereon, approved items/ norms of assistance and funds available in CRF with the State Governments.

Conclusion

While mitigation measures, which are the lasting solutions to ensure that hazards do not get converted into disasters, constitute the long-term strategy to be implemented over the next two decades, preparedness measures and professionalization of response mechanism is expected to yield fruitful results in the next three years. The objective is to build a safer and secure India through sustained collective efforts, synergy of national capacities, people's participation and knowledge/experience sharing in improved disaster management practices.

Annex 1

List of Speakers and Presentations at the Conference*

Session 1 - Insurability of catastrophic risks

- Economics of catastrophe risk insurance, *Christian Gollier (University of Toulouse)*.
- Insurability of terrorism risk: challenges and perspectives, *Howard Kunreuther and Erwann Michel-Kerjan (Wharton School, University of Pennsylvania)*.
- Industrial, technological and other catastrophes, *Christian Lahnstein (Munich Re)*.
- Recent trends in the catastrophe risk insurance/reinsurance market, *Patrick Murphy O'Connor (Benfield)*.
- Role of the reinsurance industry in the management of weather related risks, *Peter Zimmerli (Swiss Re)*.
- Issues and options in the management of terrorism risk through insurance, *Robert Reville (Rand Corporation)*.
- Current state of the coverage for war and terrorism risks - including NBC - in the aviation sector, *Eugene Hoeven (IATA)*
- Free market solutions for terrorism risks coverage, *Ben Garston (MAP Underwriting and Lloyd's Terrorism Panel)*.

* Power point presentations summarising papers included in this publication as well as other presentations made at the conference are available on the OECD Insurance homepage: <http://www.oecd.org/daf/insurance>.

- Improving insurability and affordability: the role of insurance in hazard identification, risk assessment, risk prevention and mitigation for industrial/chemical accidents, *Satyananda Mishra, IAS, Disaster Management Institute, Bhopal - Government of Madhya Pradesh, India*).

Session 2 - Financial market solutions to manage catastrophic risks

- International financing solutions to catastrophic risk exposures, *Torben Juul Andersen (Copenhagen Business School)*.
- The use of risk linked securities to manage catastrophic risks, including terrorism, *Christian Mumenthaler (Swiss Re)*.
- Current challenges in terrorism risk securitization, *Gordon Woo (RMS)*.
- Financing catastrophic risks in non-OECD countries: challenges and perspectives, *Reinhard Mechler (IIASA)*.
- Current market trends for catastrophe bonds and risk linked securities, *Christopher McGhee (MMC Securities, Guy Carpenter)*.
- The potential for new risk transfer instruments to cover terrorism risks, *Michele David (The Bond Market Association)*.
- Rating agency's perspective on catastrophe bonds and risk linked securities, *Rodrigo Araya (Moody's)*.

Session 3 - Role of governments and development of public-private partnerships for catastrophe risk management

- Role of governments in natural catastrophe risk management and financing in OECD countries, *Paul K. Freeman (University of Denver)*.
- Catastrophe insurance programs in emerging countries: field experience, *Eugene Gurenko (World Bank, Financial Sector Operations and Policy Department)*.
- Potential role for governments in terrorism coverage, *Dwight Jaffee (Haas School of Business, UC Berkeley)*.
- Public-private partnerships to cover terrorism risks in OECD countries, *John Cooke (International Economic Relations Consultant, London)*.

- Role of the US government in the prevention and mitigation of terrorism risks, *Robert Liscouski (Infrastructure Protection Office, Department of Homeland Security, USA)*.
- Disaster risk management policy in Japan, *Kazuhiro Kawachimaru (NIPPONKOA Insurance Company Ltd)*.
- The Spanish experience in the management of extraordinary risks, including terrorism, *Ignacio Machetti (Consorcio de Compensación de Seguros)*.
- A stakeholder approach for developing a public-private partnership: the Hungarian case, *Reinhard Mechler (IIASA)*.
- Disaster risk management policy in China, *Yuanchang Zheng and Jianguo Mu (Department of Disaster and Social Relief, Ministry of Civil Affairs)*.
- The French experience in natural catastrophe risk management, *Suzanne Vallet (Caisse Centrale de Réassurance)*.
- Earthquake risk management policy in Indonesia, *Werner Bugl (PT Asuransi, MAIPARK Indonesia)*.
- Disaster risk management policy in Mexico, *Carlos Bayo Martinez (FONDEN)*.
- Disaster risk management policy in the Philippines, *Ronald I. Flores (Department of National Defense, Office of Civil Defense, National Disasters Coordinating Council)*.
- Disaster management in India, *D. Madan (Under Secretary, National Disaster Management Division, Ministry of Home Affairs, Government of India)*.
- Management of extraordinary risks, including terrorism, in India: achievements and perspectives, *C. S. Rao (Indian Insurance Regulatory and Development Authority)*.

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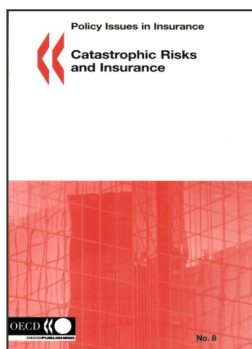
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* Background Note of Mr Kawachimaru's presentation (NIPPONKOA Insurance Company Ltd), based on *Governmental Earthquake Insurance System in Japan*, from *Earthquake Insurance in Japan*, written and published in March 2003 by Non-Life Insurance Rating Organization of Japan.



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