

India Country paper

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1. Introduction

India is one of the most 'disaster-prone' countries in the world. On account of its unique geo-climatic conditions, geographic size, vast population and socio-economic circumstances, the country is acutely vulnerable to natural disasters, which continue to cause colossal losses to lives, livelihoods and property, both public and private. There is an undeniably strong relationship between disaster management (DM) and sustainable development, as ascertained not only from our past experiences but also internationally, by the UN International Strategy for Disaster Reduction and the Hyogo Framework.

The Government of India, in recognition of the importance of DM as a National priority, had earlier setup a High Power Committee on Disaster Management in 1999 for making recommendations on the preparation of DM plans and suggesting effective mitigation mechanisms. The 10th Five Year Plan (2002-2007) Document also had, for the first time, a detailed Chapter on DM. Similarly, the Terms of Reference of the 12th Finance Commission were changed and re-mandated to look at the requirements of mitigation and prevention, apart from the normal attention paid by it to matters relating to relief and rehabilitation.

The Government of India has, now created the National Disaster Management Authority (NDMA), headed by the Prime Minister, through an Act of Parliament, to be the Nodal Body to spearhead and direct holistic and integrated action for DM in India.

1.1 Disaster Risks in India

India is vulnerable in varying degrees to a large number of disasters. More than 57% of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12% of land)¹ is prone to floods and river erosion; 8% of the total area, including an 8,000 km coastline, is prone to cyclones and tsunamis; 70% of the cultivable area is vulnerable to drought. Further, hilly areas are also at risk from landslides.²

Many areas in India, such as the hill states prone to earthquakes, landslides and floods, and coastal states prone to cyclones, tsunamis, floods and droughts, are multi-hazard prone, thus complicating the use of management tools to reduce risk. Disaster risk in India is compounded by increasing vulnerabilities related to changing demographic, technological and socio-economic conditions, unplanned urbanization, development within high-risk zones, under-development, environmental degradation, climate variability, climate change, geological hazards, competition for scarce resources, and the impact of epidemics such as HIV/AIDS. Clearly, all this points to a future where disasters increasingly threaten India's economy, its population and its sustainable development.

The vast number of people who are socio-economically weak in India are the worst affected in any disaster. Their habitats are in vulnerable areas, and the quality of

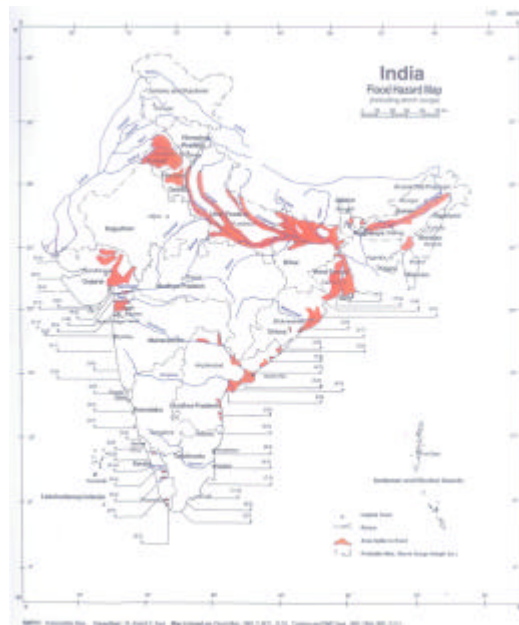
¹ IDNDR and Beyond, National Centre for Disaster Management, IIPA, India, 2000

² Landslide Hazard Zonation Atlas of India, BMTPC, Government of India, 2004

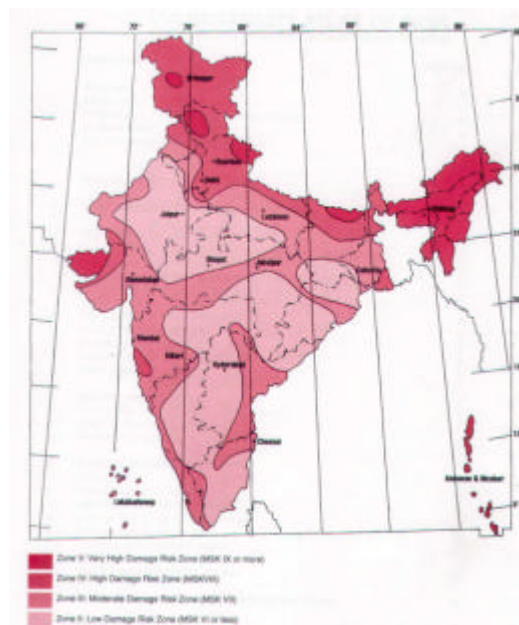
their habitats is such that they cannot withstand natural disasters for example, tribal communities, fisher folk and landless labour residing in coastal or drought prone areas of the country. Their asset base is marginal, which when wiped out by a disaster leaves these groups without any livelihood sources. Hence poverty eradication and DM are inextricably inter-related particularly in the context of the Millennium Development Goals. Further, within the worst affected groups, it is invariably the women and children that are marginalised most. Socio-economic conditions increase the vulnerability of the people to disasters.

Vulnerability Maps:

The Building Materials and Technology Promotion Council of the Government of India published a Vulnerability Atlas of India in 1997, giving the following three vulnerability maps of the country for earthquakes, floods, and wind and cyclone.



The Vulnerability Atlas of India, published by the Building Materials and Technology Promotion Council of Government of India, provides a wind and cyclone hazard map, a flood hazard map and an earthquake hazard map. The spread of the hazards is a clear indication of the multi-hazard nature of a majority of the land mass of the country. This also indicates the need for having comprehensive disaster management plans instead of event or hazard specific ones.



1.2 Paradigm shift in addressing Disaster Risks

The approach to DM has, hitherto remained largely relief-centric. It is now recognised that a far greater emphasis on measures pertaining to Prevention, Mitigation and Preparedness needs to be factored into the design of the future plans.

Traditionally, Indian systems have been 'reactive' rather than 'proactive' in its approach towards disasters, producing largely a set of knee-jerk mechanisms after the event. A serious lacuna in the Government's apparatus for DM has been the absence of dedicated and exclusive institutional entities at the National, State and District level that can pay long term and sustained attention to DM in all its aspects, especially in containing a hazard from manifesting itself into a serious disaster.

While natural hazards cannot be controlled, it is now recognised that vulnerability to these hazards can be substantially reduced by planned prevention, mitigation and preparedness measures. Today, India is witnessing a concerted effort toward creating a paradigm shift in the approach of the Government as well as communities toward dealing with disasters, from a response and relief orientation, to pre-disaster aspects such as preparedness, mitigation and prevention of disasters.

Another dimension of response in the current global situation is of international cooperation at regional and global level. Disaster impacts are increasingly becoming trans-national, and response mechanisms for large disasters need to be based on international cooperation.

1.3 Past Initiatives and Lessons Learnt

Traditionally, the system of disaster management has been based on response needs. India depended on a calamity relief system at the central level and relief codes and manuals as the state level. Very large scale disaster responses have been mounted in the past, with all stakeholders pitching in, but these were mostly knee jerk reactions, with little efforts going into mitigation and preparedness.

While contemporary imperatives may demand a paradigm shift from a "more" and "better" architecture of a DM system to one informed by a "different" approach, the enormous value of the pioneering, and on many occasions, heroic attempts made in the past will be factored into future action. It is recognised, and acknowledged, that those efforts were not merely in terms of organizing an effective and efficient response to disasters of all types, such as unprecedented droughts, violent super-cyclones, massive floods, land-slides and avalanches and hitherto unknown disasters such as Orissa super cyclone, Gujarat earthquake or 2004 Tsunami. They include sterling contributions made by the Armed Forces, CBOs, National and International voluntary agencies, apart from the traditional actors like the District, State and National administrative apparatus, the UN Agencies, the Red Cross, etc. These need to be built upon- as do the remarkable resilience of the Communities and the incalculable value of the Indigenous Technological Knowledge they have inherited.

Things started changing during the nineties, which was also the international decade for natural disaster reduction. After the 1993 earthquake in Maharashtra, the state became the first to develop a comprehensive disaster management plan. Over the next decades many devastating disasters were experienced, but many states also

took up comprehensive disaster management planning exercises. State disaster management authorities were established in Orissa and Gujarat, and other states too joined in starting work on disaster management legislation. At the national level, the High Powered Committee drafted a National Disaster Management Plan in 2000. A national act on disaster management was passed in 2005. Work on national policy for disaster management, with focus on mitigation and preparedness has been going on and the policy is soon expected to be operationalised.

While there is every reason to be satisfied with the performance within the constraints of available mechanisms, the national policy on disaster management needs to be a statement of the desire to improve upon the existing mechanisms. It also needs to emphasise on carrying out a meaningful dialogue with the external environment through a process of constant scanning for threats as well as opportunities, and generates appropriate responses-consolidating on extant strengths while also addressing the weaknesses.

2. Institutional, Legal & Financial Arrangements

2.1 The Disaster Management Act, 2005 (DM Act)

The DM Act 2005 was enacted on 23rd December 2005 and notified on 26th December, 2005. The Act lays down institutional and coordination mechanism at National, State, District and Local level and provides for establishment of Disaster Mitigation Fund and Disaster Response Fund at National, State and District level.

2.2 NDMA

In order to coordinate National Central effort in prevention, mitigation, preparedness, response, and rehabilitation and for the adoption of a holistic proactive approach to DM, the *National Disaster Management Authority* has been established under the Chairmanship of the Prime Minister as the Nodal Body. The Act makes NDMA the 'prime' but not the 'sole organization' entrusted with the challenging task of 'managing' disasters.

Responsibilities of NDMA

The Authority shall have the responsibility for laying down the policies, plans and guidelines for DM for ensuring timely and effective response. The Authority shall be responsible to:

- Lay down the policies on disaster management.
- Approve the National Plan.
- Approve plans prepared by the Ministries and Departments of Government of India in accordance with the National Plan.
- Lay down guidelines to be followed by the State Authorities in drawing up the State plans.
- Lay down the guidelines to be followed by the different Ministries or Departments of India for integrating the measures for prevention of disasters or the mitigation of its effects in their development plans and projects.
- Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.
- Coordinate the enforcement and Implementation of the Policy and Plans for disaster management
- Recommend Provision of Funds for Mitigation and also apply the same.
- Take such other Measures for Prevention of Disaster or Mitigation or for Preparedness and Capacity Building for dealing with the threatening Disaster Situation or Disaster as it may consider necessary.
- General superintendence, direction and control of National Disaster Response Force shall be vested in and exercised by NDMA.
- Provide such support to other countries affected by major Disasters as may be determined by Central Govt.
- Recommend guidelines for the minimum standards of relief to be provided to persons affected by disasters.
- In case of disasters of severe magnitude, recommend relief in repayment of loans or for grant of fresh loans to the persons affected by disaster on such concessional terms as may be appropriate.

The Authority will adopt an inclusive, participatory and holistic approach that will promote synergy and understanding between and among the various partners (Central/State Ministries, PRIs, Municipalities, Academic/Scientific and Technical Institutions, Civil Defence, Fire Services, Police services and Home guards) and stake-holders (NGOs, NYK, NCC, NSS). The Authority will enunciate National policies for mainstreaming disaster reduction in planning and development. The State Governments, which have enacted their own laws would need to review their legislation so that these are in conformity with the central legislation. States may, therefore, frame their own rules to ensure that the structural linkages, role delineations and support systems as elements of the organizational design, are geared to help DM in its most comprehensive sense.

2.3 National, State, District and Local Institutional Arrangements

National Level Committees

At the Apex level is the Cabinet Committee on Natural Calamities (CCNC) to deliberate on the necessary institutional and legislative measures needed for an effective and long-term strategy to deal with major natural calamities in future and to look into the parameters that should define a National Calamity.

The High Level Cabinet Committee (HLCC) processes requests received from the States. The National Executive Committee (NEC) is designed as the executive arm of NDMA to operationalise the National Policy and will therefore have the responsibility for implementing the policies and plans and ensure the compliance issued by the Central Government for the purpose of DM in the country. The National Crisis Management Committee (NCMC) with the Cabinet Secretary as the highest executive officers will give directions to Crisis Management Group (CMG).

The National Disaster Response Force

A National Disaster Response Force (NDRF) with an pro-active role, has been constituted for rendering effective response to any threatening disaster situation or disaster, both natural and man-made. The trained NDRF units will impart basic training to the State Disaster Response Forces (SDRF) in their respective locations.

State Level Arrangements - State statutes and constitution of SDMA's

Under the DM Act, 2005 States are not required any more to enact Legislations to facilitate furtherance of the objectives of that Act. It is sufficient for them to promulgate Statutory Rules under that Act applicable to their own territories and to put in place an effective forward planning mechanism for hazard mitigation, preparedness, awareness, education in DM, early warning dissemination system, establishing emergency communication network, professional search and rescue capabilities, efficient and well coordinated response, relief and rehabilitation in the aftermath of a disaster.

States, in which Acts in this regard are already in place, will review the provisions thereof to ensure compatibility and consistency in Laws with those of the DM Act, 2005. At the State-level, the Department of Relief/Revenue/Home has been enhanced with the subject of DM such that the Department has been renamed, and restructured to deal with all aspects of DM.

District Level Arrangements

At the District-level, the DDMA's constituting the very bed rock of entire DM apparatus, will be in charge of DM, including response, and will command, control and co-ordinate all line Departments, police, fire services and any other forms of support during response. In the planning stage, for all activity pertaining to DM, the Collector/District Magistrate will head all planning and preparedness exercises. DM Committees at Block/Taluka, Panchayat and Community levels will complete the DM

structure. Panchayati Raj Institutions will be actively involved in all planning stages as well as in response.

Coordination with civil society organisations

Disaster management in India needs to be based on a community oriented approach. The role of the community groups, community based organizations, local councils and non-government organizations is therefore of great importance. Systems will be put in place for the coordination of mitigation, preparedness, response and recovery aspects with this large sector.

Towards Mainstreaming

Though the roles of various stakeholder agencies within the above discussed groups are of critical importance, and so played during times of emergency, there are two areas of concern. The first, which has already been discussed, is that of response versus mitigation and preparedness. The second is of coordination and incorporation in ongoing work. The aspect of keeping the issue of disaster mitigation and preparedness alive even if there is no disaster for a long time can be taken care of only through effective mitigation. The current thrust of the National Disaster Management Authority is to encourage such mainstreaming wherein all line ministries, concerned departments, stakeholder agencies, civil society organizations, institutions of governance, academia and community groups include disaster mitigation and preparedness measures in their routine developmental and operational programming.

2.4 Financial Arrangements

National, State and District Funds

National Disaster Response Fund (NDRF), the National Disaster Mitigation Fund (NDMF) and the corresponding arrangements at the State/District level NDRF, NDMF at the National level; State Disaster Response Fund (SDRF) and State Disaster Mitigation Fund (SDMF) at the State-level; District Disaster Response Fund (DDRF) and District Disaster Mitigation Fund (DDMF) at the District-level will be created to fund projects exclusively for disaster response and mitigation. These funds will be used to fill gaps in the resources and request for financing the plans prepared, in accordance with the guidelines of NDMA, by various Ministries/Departments at the National-level and the State-level after dovetailing the funds available under all schemes and programmes.

Insurance

An important feature of DM has been the extensive use of disaster insurance in most countries. Insurance has been effectively used as an instrument of transferring risk in most countries and it also helps to ensure peoples' awareness towards vulnerability and provides an incentive for implementation of mitigation strategies. An Earthquake Commission in New Zealand provides insurance against fire and domestic property losses, insurance against flood and earthquake are popular in the USA, insurance pools are in practice in Turkey and so on. NDMA will initiate efforts to promote the

concept of disaster insurance with a view to decreasing the losses suffered by the affected population.

Private and international funds

The humanitarian sector sees substantial amounts of funds received and spent in the country from private and international humanitarian sources. These are complementary to the national efforts on disaster management and cooperation among the various agencies handling these funds will be encouraged.

3. Techno-Legal & Techno-Financial Regime

3.1 Techno-Legal Regime

The DM Act, 2005 lays down institutional and coordination mechanisms at National, State, District and Local level and provides for establishment of Disaster Mitigation Fund and Disaster Response Fund at National, State and District level.

3.2 Preparation of Guidelines

National Standards for Relief, Rehabilitation and Reconstruction will be drafted through a consultative process. These Standards will help to protect lives and livelihood-systems in the aftermath of a disaster, avoid controversies relating to relief and rehabilitation measures, discourage rebuilding of risks during reconstruction and aim to improve risk reduction strategies of the affected people. The Disaster Management Authorities at the National and State-levels will prescribe guidelines for commonly engaged rehabilitation schemes to ensure uniformity whether being implemented by the Government or external agencies. Guidelines will ensure that there is no gender bias during the implementation of rehabilitation or reconstruction schemes. All public buildings and public housing projects will automatically incorporate DM elements in to the design and construction protocols.

3.3 Physical Planning Systems

The Indian Codes/Standards relevant to multi-hazard designs and construction of building and structures would be reviewed and updated regularly (at least once in five years) and enforced vigilantly. The easy availability of codes, including their on-line availability will be ensured by Bureau of Indian Standards (BIS). All development control regulations and zoning regulations will be reviewed and enforced by the relevant Departments of the State Governments and urban Local administration bodies to ensure that future development of cities and towns do not contribute to increasing the risk to people living in those areas. The State Governments will put in place appropriate legal framework to review the adoption and enforcement of requisite construction norms and zoning regulations by appropriate regulatory

authorities responsible for issuing completion certificates. Urban and regional plans, development zoning regulations, building bye laws, codes, guidelines will be appropriately amended to incorporate principles of disaster management.

3.4 Techno-Financial Regime

Where any Governmental scheme provides for funding of construction, wholly or partly, the guidelines of the scheme shall stipulate the need adhering to zoning regulations and construction norms laid down for the hazards to which that area may be prone. All Financial institutions will review their lending guidelines to provide for adoption of safe construction practices and zoning regulations as also the requirement for insurance. Incentive schemes through tax rebates on borrowings from banks for undertaking retrofitting of residential and lifeline buildings will be encouraged.

3.5 Compliance Regime

The national government is concerned to ensure that monitoring, verification and compliance arrangements are in place at both the State and National level for all partners and stakeholders. There needs to be a sound compliance regime with binding consequences to ensure the effectiveness of legally binding commitments. It is essential to ensure the development of a strong and effective compliance system through a combination of self certification, external performance reviews by accredited agencies and by random structural safety audits of lifeline structures and public infrastructure by competent teams of engineers. The Central Government will assist the State Governments in awareness generation, training and capacity building of the municipal authorities, engineers, architects and planners for compliance of the techno-legal regime.³

3.6 Process documentation and lessons learnt exercises

Disaster experiences are great opportunities to learn lessons. Often there are no evidences or records of past experiences that can be used to learn lessons and improve systems. Process documentation systems will be put in place and exercises will be conducted to learn lessons from disasters.

4. Managing Disasters through Five-Year Plans

Five Year Plan documents have, historically, not included consideration of issues relating to the 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

³ Disaster Risk Management Programme, Government of India, www.ndmindia.nic.in

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. 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 or 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.

Accordingly, the Tenth Five Year Plan (2002-2007) included a chapter on Disaster Management that 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.

5. Environment, Disaster Risk Reduction and Development

In the Constitution of India it is clearly stated that it is the duty of the state to 'protect and improve the environment'. It imposes a duty on every citizen 'to protect and improve the natural environment'. Reference to the environment has also been made in the Directive Principles of State Policy as well as the Fundamental Rights. The Department of Environment was established in India in 1980 to ensure a healthy environment for the country. This later became the Ministry of Environment and Forests in 1985.

The constitutional provisions are backed by a number of laws – acts, rules, and notifications. The EPA (Environment Protection Act), 1986 came into force soon after the Bhopal Gas Tragedy and is considered an umbrella legislation as it fills many gaps in the existing laws. Thereafter a large number of laws came into existence as the problems began arising. These included the Environment Protection Act, the Coastal Regulation Zone Notification, the Biological Diversity Act and others.

The Indian experience with relation to the environment highlights the need for effective implementation mechanisms once the appropriate laws and policies have been put in place. Besides the laws listed above, there are sectoral policies that have environment as a cross cutting theme. These include the national policies on urban development, slums, environment, disaster management and others. However, the ground realities show that the impact of the extensive legislation and policy initiatives has been less than desired. The primary reason for this is the inadequacy of strong mechanisms of implementation and enforcement. Implementation and enforcement require public awareness and education, adequate institutional capacity of institutions of enforcement, and strong political will. All these three areas still require substantial attention.

This is in spite of the fact that there are robust systems in place for getting prior clearances for any mega-projects that may have a detrimental impact on the environment. This applies to both industrial as well as developmental projects. Detailed Environmental Impact Assessments (EIA) have to be carried out, based on which the No Objection Certificate (NOC) is granted from the competent environmental authority, without which the project cannot take off. Such arrangements have not yet started taking shape in the area of disaster management. Though the 'Do no Harm' principle has existed in theory for a long time, it is yet to take the shape of legislation and processes that ensure the study of risk impacts of mega projects and decision systems based on this. The need of the hour is to introduce systems that make it mandatory for mega-projects to undergo risk scrutiny – looking at the risk they would pose to their own target group, to the settlements in their vicinity, and to the environment.

6. The Way Forward: Linking Disasters And Development

6.1 Current Concerns

There has been a strong discourse in the past decade for viewing disaster management from a developmental lens, but this is yet not reflecting in developmental processes on the ground. Disaster risk assessment and reduction is not an integral part of planning. Rather, many developmental projects are caught in heated debates due to their perceived role in enhancing risks. The Tehri Dam in Uttaranchal is one mega project that has been in the eye of a storm due to concerns with its environmental and earthquake risks. It is located in a highly seismic part of the fragile Himalayan mountain range, and fears have been raised of a) its contribution to triggering earthquakes due to water mass accumulation, and b) devastating impacts of failure of the dam or any of the abutting hillsides in the eventuality of a large earthquake. The Konkan Railway along the western coast, and many highway and canal projects in the country have created risks due to cutting off of natural drainage channels. Devastating floods in Punjab in 1993 were attributed to the highways and the Yamnua Sutlej Link canal that had obstructed the flow of natural channels from the Himalayas across the plains of Punjab.

On the other hand, sensitive developmental approaches can ameliorate situations from the environmental and disaster perspective. Extensive rainwater harvesting programmes across states have resulted in various case studies of drought management. In areas of chronic drought, such as parts of Maharashtra, the concept of water-harvesting, combined with equitable distribution through water councils has totally changed the landscape for better. What has not yet been measured, but is sure to be found, is the positive impact on public health as a result of improved socio-economic conditions. However, in general it has been observed that it is not the mega-projects, but the small scale yet widespread community based initiatives that have a greater potential for contributing to risk reduction.

6.2 Sustainable Urbanization

Nearly 28 percent of India's population live in cities : a total of 285 million of a total population of a billion people. The growth in these numbers between 1991 and 2001 has been 30 percent or 68 million, a growth more than the total population of countries such as the UK or France.

The Eight Five Year Plan (1992-1997) explicitly recognized the role and importance of the urban sector in the national economy, much however remains to be done in terms of reducing vulnerabilities of over 41 million urban people living below the poverty line. The growth rate in employment in the cities has averaged around 3.8 percent per annum as against 1.6 percent in the rural areas. The poor occupy precarious locations such as landfill sites, river flood plains, dangerous slopes etc making them vulnerable to disasters.

There have however been significant developments that have had a positive impact at the city level consisting of notification of rules such as the Hazardous Wastes (management and Handling) Rules 1989; the Biomedical Waste (Management and Handling) Rules, 1998; and the Recycled plastics Manufacture and Usage Rules, 1999 and the Batteries (Management and Handling) Rules, 2000. A Committee constituted by the Supreme Court to look into Solid waste Management in Class 1 cities i.e those with a population of more than 1 lakh submitted it's detailed recommendations in 1999. The judiciary too, in cognizance of the situation has delivered a number of judgements supportive of urban environmental concerns.

6.3 Disaster Mitigation: Structural and Non-Structural measures

Mitigation measures involve both structural and non-structural measures. Structural measures involve construction work such as embankments along rivers as a flood control measure , check-dams and bunds as water shed development initiatives to improve ground-water availability within the region, bridges, cyclone shelters, hazard resistant housing and other community buildings etc. Non-structural measures would include measures such as appropriate development policy and practice, building codes, systems of forecasting and warning, education, awareness creation, training, and creation of community awareness.

The Eleventh Finance Commission⁴ (EFC) notes the positive impact of programs on watershed development, rain water harvesting etc on mitigation of severity of droughts. Further, the EFC has identified the need for devising medium as well as long-term strategies in order to reduce the frequency of occurrences of natural calamities and their impact.

6.4 Standards in construction and status of Building Codes

Currently, building codes are not enforced within the country through a national or state law. Although the enforcement responsibility of these codes is the sole responsibility of local governments/ municipal bodies/ local development authorities, few municipal corporations have managed to do that so far. Their enforcement also leaves much to be desired. Over eighty percent of the housing stock in Delhi is sub-standard, and more than half of Mumbai is a designated slum area⁵. As such no standard practice is followed in terms of verifying of the structural stability of the building to natural disasters or towards quality control of building materials used. In the rural areas, traditional construction practices have eroded over a period of time and there has been an overall out-migration of skilled manpower for building construction. Many of the traditional practices for construction were based on climatically and structurally sound principles. This poses one of the most serious challenges as a large number of engineered and non-engineered houses in the rural areas have no seismic resistance. Building codes do not exist against storm surge inundation. There is no designated authority or mechanism for enforcement of building codes in these areas. Further, concerted efforts have not been made to undertake a strong cost benefit analysis of mitigation investment even on a selective basis.

6.4 A holistic, coordinated, prevention based approach

The diversity in the nature of hazards, geographical settings, socio-cultural and political contexts, and economic situations makes it imperative to have a national disaster management approach that is comprehensive yet sensitive to the specific needs of various people. The need for mitigation and preparedness has been increasingly emphasised over the past decade, but much work remains to be done for turning this into a ground reality with sustainable programmes that can be rapidly scaled up. The way forward is to have comprehensive planning, taking into account response capabilities as well as mitigation and preparedness interventions. For efficient response, systems of coordination are essential. For effective mitigation, mainstreaming of disaster risk reduction in various sectors of developmental work is crucial. The trend of changes in the administrative, legislative and financial systems in India is pointing towards such a holistic, coordinated and prevention based disaster management system for the country in the near future. The one thing that will add to the impact of such a system is a cultural change – a change away from fatalism and towards a culture of preparedness and prevention.

⁴ The Finance Commissions are appointed on a five yearly basis for making recommendations to the government on the distribution between the Union and the States of the net proceeds of revenue

⁵ Delhi Environmental Information Report, World Wide Fund for Nature, 1995, and Census of India 2001