CHAPTER-III

Present Scenario of Disaster Management: at International level, at National level and at State level

3.1 Introduction

In this chapter, the researcher has reviewed the present scenario of disaster and its management at international, national and state level.

This chapter will focus on the present status of disasters, their impact at international level, policy measures adopted by international agencies and institutional mechanism to implement these policies. The researcher has reviewed the flood disaster management systems of selected cities in the world.

The researcher has also taken a sufficient review of the national scene of disasters taking place in the country, policies adopted by central government to contain those disasters through legal and institutional mechanism.

On the same lines, the researcher has taken a review of the state scenario about disasters and policies and plans to control the same.

3.2 Population Growth in Urban areas:

Cities are developing at a fast speed, but at the same time, they have become places of unsafe living. Since 2007, the balance of the world’s population has shifted from rural to urban. The number of hypercities, or metacities (the UN’s term for urban centres of more than 20m people), is growing—Tokyo, with its 35m people, is the largest; others in the metacity club include Guangzhou, Seoul, Mexico City, Delhi and Mumbai, with New York and São Paulo close behind. In developing countries.

The United Nation’s (UN) Population Division’s projections suggest that almost all the population growth in the next few decades will be in urban areas and that too mainly in lower and middle income nations.
Table No.3.1  Growth in the world’s urban population (Millions of Habitants)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>World Urban Population</td>
<td>737</td>
<td>1332</td>
<td>2275</td>
<td>3495</td>
<td>4965</td>
</tr>
<tr>
<td>High Income Nations</td>
<td>427</td>
<td>652</td>
<td>818</td>
<td>925</td>
<td>1016</td>
</tr>
<tr>
<td>Low and Middle Income Nations</td>
<td>310</td>
<td>680</td>
<td>1456</td>
<td>2570</td>
<td>3949</td>
</tr>
<tr>
<td>Africa</td>
<td>33</td>
<td>86</td>
<td>204</td>
<td>412</td>
<td>759</td>
</tr>
<tr>
<td>Asia</td>
<td>237</td>
<td>485</td>
<td>1015</td>
<td>1770</td>
<td>2669</td>
</tr>
</tbody>
</table>

*Source: United Nations (2008), World Disaster Report, 2010*

The above table shows that all over the world the population is shifting to urban areas posing challenges before the administration of the local governments.

3.3 Increasing Vulnerability of Cities:

It is of common knowledge that cities are the engines of growth. Naturally, a large number of job seekers are attracted to the cities. This creates a new challenge for administration—how to provide for the basic needs of those who are living in vast unplanned settlements. The growing numbers of urban dwellers demand new housing and transport facilities, put increasing pressure on resources, and threaten the sustainability of the city. As a result, without considering long term planning, investment and innovative government measures, the rapid growth of urban centres threaten to damage the very quality to which people were drawn to cities in the first place—their liveability. This situation is very much conducive for any type of disaster.
Due to this, it has been observed that the frequency of disasters such as earthquake, floods, cyclones, landslides, droughts etc. has increased in cities in the last few years. We face such calamities so frequently that we have become immune to them. We express our concern and anxiety when such events occur, but generally expect that the suffering community should do the needful. At the time of disaster, we wholeheartedly support the victims but after an event we lack in follow-up in terms of reconstruction and rehabilitation, as a consequence, the affected people are rendered further vulnerable to such events, which leads to tremendous loss of human resources.

*(Liveable cities: Challenges and Opportunities for Policymakers. Economist Intelligence Unit Reports, Commissioned by Philips, 2010.)*

### 3.4 Need for Sound Disaster Management Mechanism:

Making disaster management more effective and efficient, on this background, is not just a pressing concern, but an encompassing problem facing the stakeholders in disaster management. Efforts at both the, governmental and non-governmental levels have been initiated in this direction. Many committees, forums and organizations, both national and international, have underlined the pressing need of managing disasters. There is no dearth of literature in the form of reports, books, articles and manuals on the subject. From relief and response to preparedness and long-term recovery, all major facets of disaster management have been covered. But still there is a dire need to set a robust system or mechanism to deal with different types of disasters, particularly in developing countries and megacities.

### 3.5 International Scenario in Disaster Management- Current Status:

A report on World Conference on Disaster Reduction, 2005 held in Japan states that disasters have been affecting humans since the evolution of mankind. The loss from disasters is increasing continuously with grave consequences. The very survival, dignity and livelihood of individuals, particularly of the poor have come in danger. The hard-earned development gains get severe setback. Disaster risk has become a subject of international concern as its impact in one region can have impact in another region. This has been compounded by increasing vulnerabilities due to changing demographics, technological and socio-economic
conditions, unplanned urbanization, development in high-risk zones, environmental degradation, effects of climate change etc.

Disaster risk intensifies when hazards interact with physical, social, economic and environmental vulnerabilities. Events of floods, tsunami, cyclones constitute the large majority of disasters. Despite the growing awareness and acceptance of the importance of disaster risk reduction and increased disaster response capacities, disasters and in particular the management and reduction of risk continue to pose a global challenge.

Now the governments all over the world have realized that the disaster risk reduction efforts must be properly blended into policies, plans and programmes for sustainable development and poverty reduction and it should be supported through bilateral, regional and international cooperation. Sustainable development, poverty reduction, good governance and disaster risk reduction are mutually supportive objectives.

The governments, societies and individuals have been attempting to reduce the effects of disasters. In order to do this, regardless of the approach, they adopt measures to contain the initial impact, as well as post-disaster response and recovery needs. All these efforts lead to the same goal ‘disaster management’. (Damon P. Coppola, 2010).

3.6 Evolution of International Disaster Management

Since 1960s there has been a constant evolution in the common understanding of international disaster management. Various measures and structures were created to plan for emergency relief and the management of disasters. Despite all these efforts aimed at reducing the impact of natural and manmade disasters on communities, very little progress was made.

(Dewald Van Niekerk, 2005).

Governments were aware about the fact that no country in the world can stop occurring of disaster but if they plan and prepare properly, certainly to some extent the effects of it can be minimized. Despite this fact till 1970, the international community considered disasters as exceptional phenomena, when
coping with it is beyond the capacity of local community and external help or relief was required. The term disaster management was generally equivalent to disaster response and they used to assume that the help or assistance to affected people comes exclusively under the purview of organizations like Red Cross and Red Crescent or civil defense agencies.

(Sinha Prabhas S.).

It has been observed that the disasters- manmade or natural have devastated lives and resources all over the world. Within the first decade of the 21st century alone, incidents of tsunamis, earthquake, floods, chemical spillages, wild fires, explosions, tornadoes, hurricanes etc. have been reported with various degrees of destruction around the world. Institutional and individual observers of these incidents agree that there has been an increase in these occurrences over the past decade.

(Giuliani et al., 2009).

Another fact has been observed that not only the number of disasters increased but the experiences of disasters vary from country to country, as mentioned above, there are clear and serious indicators that no State on the earth is insulated from disasters (ICSU, 2008:9).

Table No. 3.2 Increase in disasters in world in the last hundred years

<table>
<thead>
<tr>
<th>Disaster Types</th>
<th>Decades</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28</td>
<td>72</td>
<td>56</td>
<td>72</td>
<td>120</td>
<td>232</td>
<td>463</td>
<td>776</td>
<td>1498</td>
<td>2034</td>
<td>3529</td>
<td>78.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>28</td>
<td>33</td>
<td>37</td>
<td>52</td>
<td>60</td>
<td>88</td>
<td>124</td>
<td>232</td>
<td>325</td>
<td>354</td>
<td>12.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>37</td>
<td>64</td>
<td>170</td>
<td>361</td>
<td>612</td>
<td>11.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Centre for Research on Epidemiology of Disasters (CRED)*
Recent Disaster Trends:

Because of information technology the possibility and accuracy of disaster reporting has increased. This has helped in visualizing and confirming of various disaster events easily and effectively. Governments, disaster experts have now realized that the nature of disasters is rapidly changing. These changes are generally the consequence of human actions and development patterns. It is observed that though the disasters are taking place everywhere and anywhere in the world, be it most advanced country or least developed country, the degree of impact or the intensity of disaster is different in different countries.

In short, recent trends indicate that:

1. The number of people affected by disasters is rising.
2. Overall, disasters are becoming less deadly.
3. Overall, disasters are becoming more costly.
4. Poor countries are disproportionately affected by disaster consequences.
5. The number of disasters is increasing each year.

(Damon P. Coppola, 2010).

3.7 International Initiatives on Disaster Management:

a. International Decade for Natural Disaster Reduction (IDNDR)-1990-2000:

The United Nations declared the 1990s as the International Decade for Natural Disaster Reduction (IDNDR) to contribute to technical and scientific buy-in and to make Disaster Risk Reduction imperative. The aim of IDNDR has been to concentrate on sustained international and multi-disciplinary commitment for disaster prevention through primary focus on hazard, vulnerability and risk assessment, disaster prevention and sustainable development, effective early warning, sharing of knowledge and transfer of technology.
The objectives of IDNDR have been that all countries should have:

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

b. Yokohama Strategy:

A major conference of the IDNDR programme was held to take the mid-review of IDNDR in Yokohama, Japan in May 1994, where a ‘Plan of Action for Disaster Reduction called the ‘Yokohama Strategy ‘was evolved.

The World Conference on Natural Disasters at Yokohama in May, 1994 has been a crucial landmark in Disaster Mitigation and Preparedness Planning. The focus of the Strategy remains on natural hazards being beyond the control of human beings, it has recognized risk assessment as a critical need and propagated a comprehensive prevention, mitigation and preparedness strategy along with developing a culture of prevention.

In this (Yokohama Strategy) policy document, the UN observed that:

1. The impact of natural disasters in terms of human and economic losses has increased. The poor and socially disadvantaged groups in the society are severely affected as they have no or inadequate resources to cope with.
2. The four elements- disaster prevention, mitigation, preparedness and relief if entwined and implemented with sustained development policies, nations will be benefited.
3. Disaster prevention, mitigation, and preparedness are better than disaster response in achieving [disaster reduction] goals.
4. The countries have realized their interdependence as natural disasters do not respect borders. Therefore countries will have to cooperate with each other to improve their ability to cope with any disaster.
5. Appropriate technology and data at low cost should be made available to developing countries at proper time.

6. Community involvement and their active participation should be encouraged to have greater insight into collective perception of development and risk.

(ISDR, 1994).

Yokohama Strategy proved as a Landmark in International Disaster Management Efforts.


At the end of the IDNDR in 1999, the United Nations General Assembly established the secretariat of the UNISDR to facilitate the implementation of the International Strategy for Disaster Reduction (ISDR) as the successor mechanism of IDNDR. The UNISDR was mandated “to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities of the United Nations system and regional organizations and activities in socio-economic and humanitarian fields”.

(UN General Assembly Resolution 56/195).

UNISDR vision is a world where the social, political and economic imperatives for reducing disaster risk are acted on. UNISDR mission is to connect governments and partners; to produce evidence for disaster risk reduction; to mobilize decision and opinion makers; and to support strengthening of the resilience of nations and communities to disasters and the impacts of climate change.

It aimed to provide a global framework to foster the resilience of communities to the effects of natural hazards through the implementation of risk management, hazard mitigation and sustainable development. The disaster risk reduction framework propagated by ISDR has focused on risk awareness and assessment, hazard analysis and vulnerability/capacity analysis, knowledge development, public commitment, institutional frameworks, environmental management, land-use and urban planning, protection of critical facilities, application of science and
technology, partnership and networking, financial instruments, early warning systems, research and development.

With the adoption of the” Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters” (HFA), the United Nations General Assembly tasked UNISDR with supporting its implementation. UNISDR also organizes the Global Platform for Disaster Risk Reduction. The HFA is an international strategy for disaster reduction. The ISDR System is the implementer, and the Secretariat (Geneva and Regional offices) are the facilitators

(UN General Assembly Resolution 61/198).

UNISDR has its headquarters in Geneva and implements its mandate through five regional offices based in Asia (Bangkok), Africa (Nairobi), Europe (Brussels), Arab States (Cairo) and Latin America and the Caribbean (Panama). UNISDR also maintains a UN HQ liaison office in New York, a liaison office in Bonn and presences in Kobe, (Japan), Suva, (Fiji), Incheon, (Republic of Korea), Almaty, (Kazakhstan) and Rio (Brazil). (ISDR)-2000-2010

d. The Hyogo Framework for Action for a Safer World:

The 2nd World Conference on Disaster Reduction of UN was held after the catastrophic event of the Indian Ocean Tsunami in January, 2005 in Kobe City, in the Hyogo Region of Japan. It was attended by than 4000 participants, including representatives from 168 governments, 78 UN specialized agencies and observer organizations, 161 nongovernmental organizations, and 562 journalists from 154 media outlets. The public forum attracted more than 40,000 visitors. The outcome of the conference was a 24-page “framework for action,” adopted by all member countries, that outlined members’ resolve to pursue “the substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries by 2015.

It brought the global disaster management community together once again to review the progress on the Yokohama Strategy and to plan a framework of action for the subsequent ten years. The result of the Conference, the Hyogo Framework for Action, highlights the following action:
Agenda for the decade 2005-15, as it aims to:

1) Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2) Identify, assess and monitor disaster risks and enhance early warning systems.
3) Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4) Reduce the underlying risk factors.
5) Strengthen disaster preparedness for effective response at all levels.

The process started by the Yokohama Strategy and the Hyogo Framework for Action is the basis for a global shift in disaster management approach from response towards preparedness.

(Damon P. Coppola, 2010).

e. The United Nations System

The role of the United Nations in disaster management is rapidly changing. A variety of policies need to be reached at a consensus amongst the agencies themselves for more effective assistance to disaster-affected people. There are already various established agency roles and functions in the realm of disaster management.

The following international agencies have functions that support the practical implementation of disaster preparedness plans:

f. United Nations Agencies:
   A. Office for the Coordination of Humanitarian Affairs (OCHA)

   The mission of the Office for the Coordination of Humanitarian Affairs (OCHA) is to minimize human suffering and material destruction caused by natural disasters and emergencies by mobilising and coordinating the collective efforts of the international community, in particular those of the UN system. Its main functions are to advise the Secretary General on emergencies and recommend appropriate actions.
B. Food and Agriculture Organisation (FAO)

FAO's mission is to raise levels of nutrition and standards of living and to improve the efficiency of production and distribution of food and agricultural products. In relief operations, it pays attention more to the provision of agricultural inputs, such as seeds and veterinary services. This includes working closely with NGOs active in this field, and in some countries with UNICEF.

C. United Nations Children's Fund (UNICEF)

To ensure a "first call for children" UNICEF mobilises both political will and material resources to help developing countries. UNICEF's niche in emergencies is its role as an advocate for children. Its general resources budget is over USD 500 million, 25 million of which is allocated to its Emergency Program Fund.

D. United Nations Development Programme (UNDP)

UNDP is the United Nations largest provider of grant funding for development and the main body for coordinating UN development assistance. UNDP provides logistic, communications and other support for the activities of the United Nations Emergency Relief Coordinator and to UN Disaster Management Teams. UNDP's annual budget is USD one billion. Five percent is allocated for disaster preparedness. The UNDP Resident Coordinator has the right to allocate up to USD 50,000 for emergency needs to a country in a disaster situation.

E. United Nations High Commissioner for Refugees (UNHCR)

UNHCR's main task is to provide protection and assistance to refugees and to seek permanent solutions to the problems of refugees. UNHCR's operations can be classified into two categories:
Protection of refugees from further persecution and violence, including being forced back into areas from which they have fled, while helping lay foundations for lasting solutions to refugee problems.

Meeting the physical needs of refugees—UNHCR works to supply refugees with food, water, health care, shelter and sanitation.

Each of the above have specialist technical literature for particular fields of competence. UNDP, UNICEF and UNHCR have excellent manuals on disaster preparedness and management that should be incorporated into preparedness planning exercises.

(Randolph Kent, UNDP, 1994)

g. Latest initiatives by UNISDR:


The Global Assessment Reports (GAR11 and GAR13) highlight the political will power economic support to reduce disaster risks, and the benefits to be gained from doing so. Over 130 countries are now reporting on their implementation progress in the HFA Monitor. This helps them to identify their own lacuna and requirements while reducing disaster losses and building the resilience of their communities. Information on progress against the HFA and other disaster risk reduction information is made available on the common portal www.preventionweb.org which helps countries to exchange their efforts and ideas with other countries and tally them with others.

The ‘Making Cities Resilient’ Campaign exemplifies the “multiplier effect” of UNISDR’s one more initiative
In 2012, the campaign exceeded its targets for mobilizing new members. 389 cities and municipalities joined the Campaign in 2012, bringing the total number of signatories to 1,289 in more than 85 countries since its launch in 2010. Many self-organized assessment missions and city-to-city learning events took place over the year. The Regional Platforms and other high-level regional gatherings proved very fruitful in evolving understanding and stimulated action around disaster risk reduction and development. This brought together diverse stakeholders who were earlier, addressing the issues in isolation.

The Fifth Asian Ministerial Conference on Disaster Risk Reduction, in October 2012, was the indicator of the determination and enthusiasm of these efforts by various countries for action. A large gathering (2,500 delegates from 72 countries) in this conference accepted a ‘Conference Declaration’ which appealed the countries to integrate local-level disaster risk reduction and climate change adaptation into national development planning, strengthen local risk governance and partnerships. The Declaration also emphasized to fix accountability measures for more effective implementation of a post-2015 disaster risk reduction framework.

Various regional platforms like the Regional Platform for the Americas, the European Forum for Disaster Risk Reduction and the Pacific Platform for Disaster Risk Management also assessed the implementation of existing regional mechanisms for disaster climate change risk management. In 2013 regional platforms were held in Africa and in the Arab States.

UNISDR, through its Regional Offices worked with UN Country Teams to integrate disaster and climate change risk management in UN Development Action Frameworks (UNDAF). In 2012, Bolivia, Cameroon, India, Jordan, Moldova, Nepal, Pakistan, Sri-Lanka, Sudan and Togo approved new UNDAFs that feature disaster risk reduction as critical for development planning.

**h. The Earth Summit:**

The Conference on Environment and Development, also known as Earth Summit was held at Rio de Janeiro in 1992. The United Nations initiated a dialogue on the
part of governments to rethink economic development and arrest environmental pollution through this Summit. The Summit made the governments realize the fact that economic policies needed to include the impact of development on the environment urgently. The adoption of United Nations Framework Convention on Climate Change (UNFCCC) in 1992 has been a major step in tackling the problem of global warming. The UNFCCC binds its 155 member states to:

Promote and cooperate in the development, application, diffusion and transfer of those technologies, practices and processes that control, reduce or prevent anthropogenic (manmade) emissions of greenhouse gases.

- Encourage sustainable development.
- Cooperate in adapting to climate change.
- Promote scientific and technological research in information dissemination on climate change.
- Impart/promote education, awareness and training related to climate change.

*(The Rio Earth Summit: November 1992)*

i. Kyoto Protocol

The Kyoto Protocol that came into existence in 2005 focuses on good governance, development and poverty eradication, reduction in emissions of greenhouse gases during a five-year period (2008-2012) by involving all major sectors of economy. **It commits industrialized countries to stabilize greenhouse gas emissions based on the principles of the convention.** At Cancun 2010, the countries have struggled hard to reach a consensus on cuts on emissions, which shows how different countries are weighing their stakes in their bid at ‘development v/s environment’ debate.

*(UN Framework Convention On Climate Change,1997)*

j. Montreal Action Plan 2005

The Plan has agreed to extend the life of Kyoto Protocol beyond 2012 and negotiate deeper cuts in greenhouse gas emissions, but at Cancun, no clear consensus has been reached towards its further extension.
k. Disaster Risk Management Programme (DRMP) with International Assistance:

A Disaster Risk Management Programme has been taken up by India with the assistance from UNDP, United States Agency for International Aid (USAID), Department For International Development (DFID), Disaster Preparedness European Commission’s Humanitarian Aid Department (DIPECHO), Government of Japan, United Nations International Strategy for Disaster Reduction (UNISDR) in 169 highly hazard prone districts in 17 States, including the North Eastern States during 2002-09. The programme aims to minimize losses of development gains from disasters and reduce vulnerability.

Disaster preparedness is an important component of this project. Other activities include awareness generation and public education, preparedness, planning and capacity building, developing appropriate institutional, administrative, legal and techno-legal policies at the state, district, block, village, urban local body and ward levels.

l. World Bank:

The World Bank expects a world in which societies can manage and adapt to emerging disaster risks and where the human and economic impacts of disasters are reduced. The World Bank therefore aims to incorporate risk reduction into development assistance in disaster-prone countries, leveraging investments that build resilience. The overarching objective is to mainstream disaster risk reduction and climate change adaptation in country development strategies, such as Poverty Reduction Strategies (PRSP), Country Assistance Strategies (CAS), and National Adaptation Plans (NAPs) to reduce vulnerabilities to natural hazards. This is done through providing analytical, technical and operational support to countries for disaster risk reduction and climate change adaptation.

World Bank, offers project loans for reconstruction and development to developing countries. In July 1998, a Specialist Disaster Management Facility (DMF) was set up at its headquarters in Washington, D.C. to promote disaster risk
management. The World Bank has also posted Disaster Management Specialists in some of its offices. Realizing the importance of disaster management in development projects, World Bank now incorporates disaster management component in many of its projects.

World Bank has financed many rehabilitation projects after the Latur Earthquake (1993), Odisha Super Cyclone (1999), and Gujarat Earthquake (2001).

**m. Asian Development Bank:**

Asian Development Bank (ADB), which is in Manila, is a Philippines based regional development bank for Asia and the Pacific. It provides long-term project financing. ADB has also financed rehabilitation projects in India, mostly in conjunction with IBRD. ADB undertakes research on disaster management and publishes them. Its activities encompass areas pertaining to preparedness, response, recovery and rehabilitation.

In 2015, two international frameworks will come to an end: the Millennium Development Goals (MDGs), and the Hyogo Framework for Action (HFA): Building the capacity and resilience of the community against disasters 2005–15 - a program focusing on DRM. International debate is taking place on current progress with both frameworks to define future ways to effectively manage disasters and establish critical links to development policy and practice in the coming decades.

**n. Nature’s Solutions to Reduce Disaster Impacts**

We have discussed human efforts to reduce the impact of disasters in the forgoing paragraphs, but the nature on its own has provided to mankind natural system to mitigate the effects of disasters following are few examples:

“The time has come to tap nature’s engineering techniques – using the services provided by healthy and resilient ecosystems. Dunes, barrier islands, mangrove forests, and coastal wetlands are natural shock absorbers that protect against coastal storms. Wetlands, floodplains, and forests are sponges that absorb
floodwaters. Nature provides these valuable services for free, and we should take advantage of them rather than undermining them.”

Source: Abramovitz, 2001

“Open space, greenways, and riverside parks serve as habitat for wildlife protect streams from pollutants, help maintain water temperatures, and keep people and development from the highest - risk floodplains. Trees can drastically reduce storm water management costs. American Forests studied Garland, Texas, and calculated that the city’s canopy reduced storm water runoff by 19 million cubic feet during a major storm. Annually, the trees save Garland $2.8 million in infrastructure costs and $2.5 in air quality costs and residential energy bills.”

(Source: Natural Hazards Research and Applications Information Center, 2001)

Around the village of Guarita in Honduras, local people practiced traditional Quezungal farming methods consisting of planting crops under trees, maintaining ground vegetation and terracing, in order to root the soil and reduce erosion. During hurricane Mitch, only 10 per cent of the crop was lost, leaving reserves that could be shared with more severely affected neighbouring areas

The Viet Nam Red Cross Society conducted an environmental preservation project in Thai Binh province to address different aspects of risk relating to typhoon occurrence that threatens the people living on the coast. Two thousand hectares of mangrove plantation were created along the coastline serving to reduce wind and wave velocity and action, thereby protecting landscape, human life and local development assets. Resource opportunities for improving livelihoods were provided by a healthier natural environment. The limited damage provoked by the worst typhoon in a decade provided the best possible indication of the effectiveness of the plantation in reducing risks and its ability to enhance the resiliency of local communities. Therefore, nature should be preserved properly.

In our Indian traditions, therefore, it is well said that nature’s ‘Dohan’(milking of nature)is allowed and not ‘Shoshan’(not exploitation).

(Source: IFRC, 2002).
Conclusion:

The researcher has taken a detailed review of the international disaster management policies, institutional framework and latest initiatives of important institutions.

Along with Governments- at central, state and local, NGOs, other private organizations are putting their efforts, relentlessly, to mitigate, prevent disasters and if they occur prepare to face them to reduce loss of human lives, property and environment. Nature, also has its own system to prevent calamities which we discussed.

3.8 International Examples to mitigate flood hazard

a. Flood Control Plan of Chicago:

The city of Chicago, USA is situated at the confluence of Chicago River and Lake Michigan. Lake Michigan provides plenty of water to the city. Chicago river used as a highway to transport goods and services which is vital for the growth of the city. To protect the water supply of the city, the Chicago Sanitary and Ship Canal was constructed in 1900 to divert the human and industrial waste away from Lake Michigan. In 1972 Chicago local authority started the use of deep tunnels to capture, convey and store the sewage and storm water during the peak periods of the storm for treatment and disposal later. The deep tunnel system developed by the Chicago authority has number of tunnels; some of them are as deep as 110 meter and extend over more than 200 km. They together serve as a large underground storage. They have been constructed utilizing a tunnel boring machine (TBM) which cuts a hole about 10 meters in diameter through bed rock beneath Chicago. Storing of the peak flows underground and then pumping them out at a convenient period later is an essential part of the sewage and storm water management system of Chicago. Such deep tunnels are used because there is no space available on the ground to store sewage and storm water. They had to adopt huge sizes for tunnel because the speed of treatment and cleaning up of the dirty waters cannot match with the run-off inflows. They are the holding spaces in the
system. Due to this system the cost of installation of huge capacity treatment plants is reduced considerably.

But in Mumbai this system is not workable because, Chicago citizens are very disciplined, there is no garbage problem, they do not throw garbage on the streets. Therefore, it does not get flown with the storm water. The garbage and other floating materials damage the pumping installations and choke the outfalls. In addition to this the intensity of rainfall is very high in Mumbai as compared to that in Chicago. Hence it is not possible to adopt the Chicago’s underground arrangement for Mumbai unless it improves the quality of its surface water runoff and the civic habits of people. On 26th July water logging remained as it is due to choke up of manholes and outfalls.

b. **London Experiment:**

London is situated on the banks of the Thames river. Floods in 1953 was a warning to the Londoners. In the next 30 years the London authority built a disaster management system on the river very carefully. Their disaster prevention system means construction of a barrier (a very large barrage (with gates) structure across the river Thames) and the raising of Thames banks. The barrier has four 60 meter wide openings to protect London from the high tides in the river. The barrier is constructed in such a way that in the worst scenario, a surge tide would exceed the height of the barrier only once in 1000 years. A similar defensive mechanism is necessary across the Mithi river. Such a barrage across Mithi has been recommended long back, but has not been constructed. Now this area has become a central business district and an important centre like Airport. Therefore, the protection is necessary. This barrage will have to consist of a barrier in the river channel, tidal control gates on it and a bridge on the top.

c. **Singapore Case:**

The Singapore flood management system is worth studying, as there are lot of similarities in Mumbai and Singapore. Singapore has a total land area of just 680 km2 and Mumbai has 437sq.km area. The annual rainfall averages 2400 mm. But it falls all the year round – mainly during November to January. They have
recently undertaken the construction of the Marina barrage as a tidal barrage across the 350 m wide Marina channel, which is located in the Southern tip of Singapore. Storm water within the Marina catchment is drained by 5 main streams into the Marina channel. With the help of this barrage it keeps sea water out of the 240 ha of the Marina basin. Marina catchment is about 100 Sq.Km – i.e. one and half times larger than that of Mithi in Mumbai.

Low lying pockets in the Singapore city like China town, Boat quay, Jalan Bizar and Geylang, are below or slightly above the high tide level. They are prone to flooding whenever heavy rains coincide with high tides. The barrage will keep out high tides. When heavy rains coincide with low tide, the crest gates will be operated to discharge the excess storm water to the sea. However when heavy rains coincide with high tide, gates will not be opened but the excess storm water will be pumped out into the sea- by six water pumps with a total capacity of 240 m3/sec (seventh additional pump acting as a standby). Such system is required for Mumbai also.

(Fact Finding Committee by Dr. Madhav Chitale, 2006).

3.9 National Scenario in Disaster Management

a. General Profile:

India is one of the oldest civilizations in the world with a kaleidoscopic variety and rich cultural heritage. She has achieved all-round socio-economic progress during the last 67 years after its Independence. India has become self-sufficient in agricultural production and is now one of the top industrialized countries in the world. We have successfully implemented all our plans and programmes to reach into the outer-space including Mangal Yaan (Mars Mission in the first attempt). Very few countries have this capacity. We are progressing and prospering in all directions in science and technology, economy, IT, industrialization etc. In short, India’s development graph in recent years appears to be ever ascending.

(National Institute of Disaster Management Publication-2014).

In spite of this, ironically, at the same time, the frequency of disasters has also gone up. Natural as well as human induced disasters (drought, earthquake,
epidemics, floods, bomb blasts, terror attack etc.) pose a growing threat to developing economies, both in terms of their frequency and of the damages associated with them. These shocks, in addition to causing death and injury, also give rise to long-lasting damage, as buildings, homes and infrastructure are destroyed and scarce resources are diverted to coping with reconstruction.

Recent decades have witnessed both natural as well as man-made disasters; blurring the distinction between them to a large extent. A more modern and social understanding of disasters, however, views this distinction as artificial because it is observed by experts that most disasters are a result of either action or inaction of human and their social and economic conditions. Another observation notes that the disasters are not bound by political, economic, social or geographic boundaries. When they occur, they affect all countries—be it a developed or developing or less developed country.

India is one of the most disaster prone countries in the world due to her geo-climatic conditions and high degree of socio-economic vulnerability. A disaster is a phenomenon which disrupts the functioning of the society that causes huge human, material or environmental losses that exceed the coping capacity of the affected society. India faces common disasters like floods, earthquakes, cyclones and landslides regularly. In the last thirty years the country has been hit by 431 major disasters resulting into enormous loss of life and property. According to the Prevention Web statistics, 143039 people were killed and about 150 crore were affected by various disasters in the country during these three decades. The disasters caused huge loss to property and other infrastructures costing more than US $ 4800 crore. As per the global database of disasters, India ranks third in terms of disaster events, second in mean annual number of victims (people killed and affected) per hundred thousand inhabitants and ninth in terms of economic damages due to disasters. A World Bank study had indicated that India may well be losing 2.15 percent of its GDP on account of natural disasters, which is significant considering that the country invests less than 2 percent of its GDP on public health infrastructure and facilities.

(Dhar Chakrabarti, Prabodh G. 2012).
It is, therefore, an urgent need to adopt such policies and practices at all levels, that will, though not hundred percent, but at least to some extent, can minimize the impact of these calamities.

For this, it is pertinent to treat disaster management as a part of the developmental process and not as an isolated event that takes place only when a disaster strikes. All disaster management phases and methods have to be mainstreamed into the larger development process. The onus of this important task rests on all the stakeholders in the process; namely the governmental, nongovernmental, international, national agencies and community organizations.

A few noteworthy endeavors at the governmental, non-governmental and community levels have created small hamlets of success in managing disasters. For example, mitigating the impact of cyclones after Tsunami in Indian Ocean in December, 2004. However, these efforts remain confined and sporadic; their dissemination and replication are yet to be fully realized. The voices that are clearly audible on disaster policy initiatives and their participatory execution get feeble when it comes to implementation level.

b. **High Powered Committee on Disaster Management, was set up by the Government of India in 1999, it has identified 31 disasters categorized in five major sub-groups given below:**

Table No. 3.3 Classification of Disasters

<table>
<thead>
<tr>
<th>Cause of Disasters</th>
<th>Name of Disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Water and climate related Disasters</td>
<td>a) Floods and drainage management</td>
</tr>
<tr>
<td></td>
<td>b) Cyclones</td>
</tr>
<tr>
<td></td>
<td>c) Tornadoes and hurricanes</td>
</tr>
<tr>
<td></td>
<td>d) Hailstorm</td>
</tr>
<tr>
<td></td>
<td>e) Cloud burst</td>
</tr>
</tbody>
</table>
| i. Meteorological related disasters | f) Heat wave and cold wave  
| | g) Snow avalanches  
| | h) Droughts  
| | i) Sea erosion  
| | j) Thunder and lightning  
| | k) Tsunami  
| ii. Geological related disasters | a) Landslides and mudflows  
| | b) Earthquakes  
| | c) Dam failures/ Dam bursts  
| | d) Minor fire  
| iii. Chemical, industrial and nuclear related disasters | a) Chemical and Industrial Disasters  
| | b) Nuclear Disasters  
| iv. Accident related disasters | a) Forest fires  
| | b) Urban fires  
| | c) Mine flooding  
| | d) Oil spills  
| | e) Major building collapse  
| | f) Serial bomb blasts  
| | g) Festival related disasters  
| | h) Electrical disasters and fires  
| | i) Air, road and rail accidents |
3.10 Impact of Disasters:

Disasters are not new to mankind. Since time immemorial disasters have been constant, though inconvenient, companions of human beings. 6% of India’s population has been affected by natural hazards and 24% of deaths in Asia caused by disasters have occurred in India. Around 2% of national GDP is lost because of these disasters. A study conducted by the World Bank in 2003 suggested that natural disasters are the major impediment in the way of economic development of India.

(Mr. Gopal K. Pillai, Home Secretary 2011).

Top 10 Natural Disasters in India for the period 2005 to 2014 sorted by numbers of killed:

Table No. 3.4

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Date</th>
<th>No Killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood</td>
<td>12/6/2013</td>
<td>6054</td>
</tr>
<tr>
<td>Earthquake (seismic activity)</td>
<td>8/10/2005</td>
<td>1309</td>
</tr>
<tr>
<td>Flood</td>
<td>24/07/2005</td>
<td>1200</td>
</tr>
<tr>
<td>Flood</td>
<td>3/7/2007</td>
<td>1103</td>
</tr>
<tr>
<td>Flood</td>
<td>11/6/2008</td>
<td>1063</td>
</tr>
<tr>
<td>Flood</td>
<td>Jul-09</td>
<td>992</td>
</tr>
<tr>
<td>Extreme temperature</td>
<td>Apr-13</td>
<td>557</td>
</tr>
<tr>
<td>Flood</td>
<td>25/09/2009</td>
<td>355</td>
</tr>
</tbody>
</table>
Flood | 28/07/2006 | 350
Extreme temperature | Jun-05 | 329

*Source: "EM-DAT: The OFDA/CRED International Disaster Database*

The above Table No.3.4 shows that in India during 2005 to 2014 period top 10 worst natural disasters killed thousands of people.

Top 10 Natural Disasters in India for the period 2005 to 2014 sorted by economic damage costs:

Table No.3.5

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Date</th>
<th>Damage (000 US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood</td>
<td>28/07/2006</td>
<td>3390000</td>
</tr>
<tr>
<td>Flood</td>
<td>24/07/2005</td>
<td>3330000</td>
</tr>
<tr>
<td>Flood</td>
<td>28/06/2005</td>
<td>2300000</td>
</tr>
<tr>
<td>Flood</td>
<td>25/09/2009</td>
<td>2150000</td>
</tr>
<tr>
<td>Flood</td>
<td>18/09/2010</td>
<td>1680000</td>
</tr>
<tr>
<td>Flood</td>
<td>12/6/2013</td>
<td>1100000</td>
</tr>
<tr>
<td>Earthquake (seismic activity)</td>
<td>8/10/2005</td>
<td>1000000</td>
</tr>
<tr>
<td>Flood</td>
<td>23/09/2011</td>
<td>930000</td>
</tr>
<tr>
<td>Storm</td>
<td>12/10/2013</td>
<td>633471</td>
</tr>
<tr>
<td>Flood</td>
<td>5/7/2010</td>
<td>447000</td>
</tr>
</tbody>
</table>

*Source: "EM-DAT:*

The above table reveals the economic damage that was caused by 10 severe most natural disasters in the last 10 years.

Top 10 Natural Disasters in India for the period 2005 to 2014 sorted by numbers of total affected people:

Table No. 3.6

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Date</th>
<th>No Total Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood</td>
<td>24/07/2005</td>
<td>20000055</td>
</tr>
<tr>
<td>Flood</td>
<td>3/7/2007</td>
<td>18700000</td>
</tr>
</tbody>
</table>
The above table reveals the total number of people affected in India by top 10 worst natural disasters.

From the tables given above it can be realized that how natural disaster affect the country.

**Note on Database:** A proper system for collecting accurate, complete and up to date data on various disasters in the country is yet to be developed. Under the Disaster Management Act, 2005, the National Institute of Disaster Management (NIDM) has been assigned this responsibility with research work in the field of disaster. It is expected that NIDM will develop a mechanism to gather such data on disasters including its effect on socio-economic life of the nation and GDP growth.

**At the global level:** There are three main institutions which are collecting the data

1. EM-DAT-International Data Base by the Center for Research on the Epidemiology on Disasters (CRED), A Belgium based institute has been collecting data from the countries all over the world since 1987.

2. Munich Reinsurance Company (Munich Re) maintains worldwide data on disasters in the name of Natcat.

3. Swiss Reinsurance Company maintains record in the name of Sigma.
3.11 Disaster Risk Profile of India:

a. Vulnerability Assessment of India:

Due to its unique geo-climatic and socio-economic conditions India has been vulnerable to a large number of disasters - natural as well as man-made, in varying degrees. India is highly vulnerable to floods, droughts, cyclones, earthquakes, landslides etc. Twenty seven out of its thirty five states and union territories are disaster prone. Almost 58.6% of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12% of the total land) are prone to floods and river erosion; of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis; 68% of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches.

(Disaster Risk Profile of India By NIDM, 2010)

Some of the key reasons for ever-increasing levels of vulnerability are:

- Rapid population growth, where disaster events can claim more lives.
- Environmental degradation due to poor land use, deforestation, over cultivation and overgrazing. These render the land more prone to floods, cyclones and landslides.
- Increased rate of industrialization and rapid urbanization without the necessary safeguards.
- Impoverished conditions.
- Blind adherence to cultural practices.
- Gender inequalities.
- War and civil strife.
- Lack of public awareness and information.
- Absence of preventive and preparedness measures for disasters in development planning; and
- Neglect of developmental issues and concerns.
### Table No. 3.7  
**Table showing different types of Vulnerability**

<table>
<thead>
<tr>
<th>Type of Vulnerability</th>
<th>Nature of Vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material/Economic Vulnerability</td>
<td>Inadequate access to resources</td>
</tr>
<tr>
<td>Social Vulnerability</td>
<td>Disintegration of local institutions and structures</td>
</tr>
<tr>
<td>Ecological Vulnerability</td>
<td>Degradation of environment and inability to protect it</td>
</tr>
<tr>
<td>Organizational Vulnerability</td>
<td>Lack of strong central, state and grassroots institutional structures</td>
</tr>
<tr>
<td>Educational Vulnerability</td>
<td>Insufficient access to information and knowledge</td>
</tr>
<tr>
<td>Attitudinal and Motivational Vulnerability</td>
<td>Low levels of public awareness and desire to change</td>
</tr>
<tr>
<td>Political Vulnerability</td>
<td>Limited access to political power and representation</td>
</tr>
<tr>
<td>Cultural Vulnerability</td>
<td>Blind faith in beliefs and customs</td>
</tr>
<tr>
<td>Physical Vulnerability</td>
<td>Weak buildings and other infrastructure, as well as physically weak or vulnerable people</td>
</tr>
</tbody>
</table>

(Source: IGNOU, PGDDM, Course MPA-004 on Disaster Preparedness)

#### b. Hazard Profile of India:

India is one of the ten worst disaster prone countries of the world. Disasters in India occur due to both natural and manmade reasons which include adverse geo-climatic conditions, topographic features, environmental degradation, population growth, urbanization, industrialization, non-scientific development practices etc.

There are five different regions of the country which are vulnerable to different disasters. e.g. Himalayan region is prone to disasters like earthquakes and landslides, the plain area is affected every year by floods, the desert part of the country is affected by droughts and famine, the peninsular part of India faces...
occasional earthquakes which shows that geo-tectonic movements are still going on within its depth. The coastal zone is susceptible to cyclones and storms.

*Types of Hazards*

Hazards can be classified by their origin namely: geological, hydro-meteorological or biological. Hazardous events can vary in magnitude or intensity, frequency, duration, area of extent, speed of onset, spatial dispersion and temporal spacing.

Figure No. 3.8 Classification of hazards

<table>
<thead>
<tr>
<th>TYPE OF HAZARDS</th>
<th>NATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geological Hazards</td>
<td>They include internal earth processes or are tectonic in origin. Such hazards include earthquakes, geological fault activity, tsunamis, volcanic activity and emissions, as well as external processes such as mass movements. These can be landslides, rockslides, rock falls or avalanches, surface collapses, expansive soils and debris or mud flows. These hazards can be single, sequential or combined in their origin and effects.</td>
</tr>
<tr>
<td>Hydro-meteorological Hazards</td>
<td>These hazards include: floods, debris and mud flows; tropical cyclones, storm surges, hunder/hailstorms, rain and wind storms, blizzards and other severe storms; drought, desertification, wild land fires, temperature extremes, sand or dust storms; permafrost and snow or ice avalanches. These hazards can be single, sequential or combined in their origin and effects.</td>
</tr>
<tr>
<td>Anthropogenic Hazards</td>
<td>They occur as a result of human interaction with the environment. They include technological hazards, which occur due to exposure to hazardous substances, such as radon, mercury, asbestos, fibers, and coal dust. Acid rain, contamination of the atmosphere or surface waters</td>
</tr>
</tbody>
</table>
with harmful substances, and the entire global warming are consequences of anthropogenic hazards.

The element of risk that can turn a hazard into a disaster is always present. Disaster Management thus involves minimization of the risk factor.

Figure No. 3.1 A multi-hazard map of India.
Further vulnerability to Nuclear, Biological and Chemical (NBC) disasters and terrorism has also increased manifold in recent years.

(Jha, Amit, and Brig (Dr) BK Khanna. 2010.)

Table No. 3.9 Disasters in the Last Decade in India

<table>
<thead>
<tr>
<th>PLACE</th>
<th>TYPE OF DISASTER</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttarkashi (Uttaranchal)</td>
<td>Earthquake</td>
<td>1991</td>
</tr>
<tr>
<td>Punjab</td>
<td>Floods</td>
<td>1993</td>
</tr>
<tr>
<td>Chamoli District (Uttaranchal)</td>
<td>Earthquake</td>
<td>1995</td>
</tr>
<tr>
<td>Odisha</td>
<td>Heat Wave</td>
<td>1998</td>
</tr>
<tr>
<td>Odisha</td>
<td>Super Cyclone</td>
<td>1999</td>
</tr>
<tr>
<td>Bhuj (Gujarat)</td>
<td>Earthquake</td>
<td>2001</td>
</tr>
<tr>
<td>Indian Ocean</td>
<td>Tsunami</td>
<td>2004</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>Earthquake</td>
<td>2005</td>
</tr>
<tr>
<td>Kumbakonam (Tamilnadu)</td>
<td>Fire Tragedy</td>
<td>2004</td>
</tr>
<tr>
<td>Kosi (Bihar)</td>
<td>Floods</td>
<td>2008</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>Floods</td>
<td>2010</td>
</tr>
</tbody>
</table>

Sources NIDM
3.12. Evolution of Disaster Management in India:

Disaster management in India has evolved from an event-based reactive set up to a proactive, multi-hazard, institutionalized structure. It has changed from relief-based approach to a multi-dimensional proactive holistic approach for reducing risk. The beginning of an institutional structure for disaster management can be traced back to British Rule. In the last century, the disaster management has undergone a paradigm shift in its composition, nature and policy.

(Disaster Management in India, MHA, GOI, 2011).

a. Disaster Management during British Period:

Government intervention in the form of relief measures in the years of droughts and famines has a long history in India. It goes back to the late 19th century, when the then British Government of India formulated a Famine Code. These Codes stated what is to be done, by whom and under what circumstances. Following the Famine Code, every State (then Provincial) government formulated its own relief manual. The relief manuals of the states provide for provision of employment or
relief only on ad hoc basis. The then rulers realized that the uncertainty in agriculture is a regular feature in India and therefore, deciding the accurate timing for intervention is difficult. They noted that due to very low wages affected people during these calamities cannot support themselves so they need some relief even if it is ad hoc. However, the ad hoc nature of relief has persisted. Since the Indian state provides no social security or unemployment relief, the official declaration of drought or flood continues to be the sole means of mitigating their harmful effects.

(Katar Singh and Vishwa Ballabh)

Because of a series of famine, droughts, epidemic, flood lacs of people died, crores of rupees property was damaged, therefore, the then rulers- British Government set up Relief departments. Relief Codes were developed. Relief Commissioners were appointed at various levels to provide relief materials and money to people during emergencies. Event based set up with a reactive approach was adopted only in post-disaster situation. The policy was relief oriented. Designing the relief code and initializing food for work programmes were the only activity in disaster management.

Post Independence, the responsibility was continued with the Relief Commissioners in the states. They functioned under the Central Relief Commissioner with a limited role of distributing the relief material and money to affected people. When Central Government adopted five year plans for the development of our economy, every five-year plan addressed flood disaster under “Irrigation, Command Area Development and Food Control.” Till then the disaster management structure was relief centered, functioning under Relief Departments.

b. High Powered Committee:

Till 2005, India did not have a separate administrative setup for disaster management issues. Government of India, realising the importance of disaster management as a national priority, after the horrific experience of Latur earthquake in 1993 and prior to the Odisha Super Cyclone in October 1999, had set up a High Powered Committee (HPC) in August 1999, under the Chairmanship of Shri J. C. Pant to undertake a comprehensive study of all the
aspects of disaster management and make suitable recommendations. This committee submitted its report in 2001 with several recommendations. It has ushered a new culture of disaster management in India with Culture of preparedness, Culture of Quick Response, Culture of Strategic Thinking and Culture of Prevention as its main components. Even while the recommendations of the HPC report were being analyzed by the Government, as an interim measure, the management of disasters was shifted from the Ministry of Agriculture to the Ministry of Home Affairs in 2002, but the structure at national level was to be finalized.

The Indian Ocean Tsunami acted as the catalyst and the Government of India (GOI) took a defining step in the legislative history of the country by enacting Disaster Management Act, 2005. 

(Disaster Management in India, MHA, GOI, 2011).

Even before enacting the Act, National Disaster Management Authority (NDMA), with Executive Order, established in September, 2005.

c. High Powered Committee (HPC) Report, 2001:

The HPC’s Report aimed at creating a new culture in the area of disaster management by focusing on:

- Preparedness
- Quick Response
- Strategic Thinking, and
- Prevention

It outlined pro-active measures for disaster preparedness and mitigation, capacity building in disaster management, recruitment of professionals, understanding of risk and long-term rehabilitation.

As per the HPC Report, disasters are graded at three levels:

L1: A District level disaster, within the capabilities of the District Administration.
L2: A State level disaster, within the capabilities of the State Government.

L3: A National level disaster, requiring major direct intervention of the Central Government.

In addition to the disaster situations, the following ‘peace-time’ situation has also been identified:

L0: A ‘no-disaster’ situation. This is the level at which surveillance, preparedness, prevention and mitigation activities must be focused on.

(HPC Report, 2001)

3.13. The Disaster Management (DM) Act, 2005

The National Disaster Management Act was passed in the Parliament in 2005. It was enacted under the Social Security and Social Insurance subject of the Concurrent List of the Constitution of India. The Act provides for the pre-requisite institutional mechanism for monitoring and implementation of the plans, and ensuring measures by various wings of the Government for disaster prevention and mitigation aspects. In tune with the paradigm shift, the State Governments have been advised to amend their Relief Codes to incorporate the changed provisions. The revised codes will ensure that the process of drawing up disaster management plans, and mitigation and preparedness measures get institutionalized.

The Disaster Management Act, 2005 addresses all phases of disaster management, including pre-disaster aspects of prevention, mitigation and preparedness, as well as post-disaster aspects of response, relief, rehabilitation and recovery, including reconstruction: For this the following mechanism has been prescribed by the act:

a) **Institutional mechanism** by introducing various institutions at national, state, district as well as local levels;

b) **Planning mechanism** by providing for development of Disaster Management Plans at national, state and district levels;

c) **Training and capacity building mechanism** through establishment of National Institute of Disaster Management for planning and promoting
training and research, documentation and development of national-level information base, prevention mechanisms and mitigation measures, as well as the formation of the National Disaster Response Force;

d) **Funding mechanism** by mandating that all Ministries/Departments shall make adequate financial provision for implementation of Disaster Management Plans. They shall create Disaster Response Funds and Disaster Mitigation Funds at national, state and district levels; and

e) **Coordination mechanism** by providing horizontal and vertical linkages from national to local levels, covering all stakeholders for synergized efforts to integrate disaster risk reduction with the development process.

In the light of the above mandate the important features of the Act can be summarized as follows:

**Salient Features of the Disaster Management Act, 2005:**

- Setting up of a National Disaster Management Authority, under the Chairmanship of the Prime Minister with such other ministers, not exceeding nine, to be nominated by the Prime Minister.
- The Chairman of the National Authority may designate one of the members as the Vice-Chairman of the National Authority.
- The Authority shall be assisted by an Executive Committee of Secretaries to be constituted by the Central Government.
- The National Authority may set up all Advisory Committee of Experts.
- The National Authority shall have the responsibility for laying down the policies, plans and guidelines for disaster management.
- There shall be a State Disaster Management Authority in each state/Union Territory under the Chairmanship of Chief Minister or Lt. Governor, Administrator as the case may be.
- The Vice Chairman and Members of the State Disaster Management Authority will be nominated by the Chief Minister or Lt. Governor, Administrator as the case may be.
- The State Authority shall have the responsibility for laying down the policies, plans and guidelines for disaster management in the State.
3.14. Policy Measures To Reduce Disaster Risk:

a. **Disaster Management- National Vision:**

The national vision of our disaster management has been formulated as follows:

“To build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for Disaster Management. This will be achieved through a culture of prevention, mitigation and preparedness, to generate a prompt and efficient response at the time of disasters. The entire process will centre-stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies and Non-Governmental Organizations (NGOs)”.

b. **National Policy on Disaster Management:**

The National Policy framework has been prepared by NDMA after due deliberation and keeping in view the National Vision. While translating this vision
into policy and plans, the NDMA has involved various institutions operating at the national, state and local levels. Central ministries, States and other stakeholders have been involved in the participatory and consultative process of evolving policies and guidelines.

While formulating national policy, NDMA has also paid attention to the contemporary important issues, the lessons learnt from the past, the notable work done by the Armed Forces in disastrous situation, importance of selfless work by NGOs, the natural capability of the communities to deal with disasters, the significant role of the corporate sector in providing relief, the capacity of academic & scientific institutions in providing innovative inputs.

The national strategy for Disaster management is based on six pillars of prevention, mitigation, preparedness and capacity development, awareness generation, rapid operationalization of National Disaster Response Force (NDRF). It was also decided to keep the community at the focal point which is the first responders. They are to be made aware about their vulnerability and necessary training to them also to be given. This will help them to save their own and their families lives before specialized response is activated.

The NDMA has seen to it that our national policy is perfectly in tune with the International Strategy for Disaster Reduction, the Rio Declaration, the Millennium Development Goals and the Hyogo Framework 2005-2015. The policy is based on certain themes which are:

- Community-based disaster management, including last mile integration of the policy, plans and execution.
- Capacity development in all related areas.
- Consolidation of past initiatives and best practices.
- Cooperation with agencies at the national, regional and international levels.
- Compliance and coordination to generate a multi-sectoral synergy.

From the national vision and the theme mentioned above, the objectives guiding the policy formulation have been finalized on October 22, 2009 and communicated to all concerned.
c. The major objectives of National Disaster Management policy are:

- Promoting a culture of prevention and preparedness – by centre-staging DM as an overriding priority at all levels and at all times.
- Encouraging mitigation measures based on state-of-the-art technology and environmental sustainability.
- Mainstreaming DM concerns into the development planning process.
- Putting in place a streamlined institutional techno-legal framework in order to create and preserve the integrity of an enabling regulatory environment and a compliance regime.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology (IT) support.
- Promoting a productive partnership with the Media, NGOs and the Corporate Sector in the areas of awareness generation and capacity development.
- Ensuring efficient response and relief with a caring humane approach towards the vulnerable sections of the society.
- Making reconstruction an opportunity to rebuild back better and construct disaster-resilient structures and habitats.

*(NDMA Policy Document, GOI)*

d. Disaster Management and Federal Structure of the Constitution:

The Seventh Schedule of the Constitution does not include the Disaster Management as a subject. Our Constitution lays down clear division of powers under three lists – Union (with Centre), State (with States) and Concurrent (with both Centre and State, but in case of disputes, powers of resolution lie with the Centre). According to this arrangement, dealing with the natural disasters is the responsibility of the State Governments. Even in this also, the district is the focal point for implementation of all government schemes. District Collector is the captain of relief work in the disaster-hit area. The Collector has all powers of supervision, coordination and preparation of contingency plans. Since district is the nodal point of action, the Panchayat Raj Institutions( PRIs) and Urban Local
Bodies (ULBs) have the major responsibility of carrying forward all disaster related works at the village, block levels.

e. **73rd and 74th Amendments to the Constitution:**

Article 243(G) of the Constitution provides powers and functions to Panchayats. In turn the State legislature empowers them to function as institutions of self-government and transfer powers and responsibilities to Panchayats at an appropriate level with respect to plan and implement for economic development and social justice. The 73rd and 74th Amendments to the Constitution have reiterated the spirit of decentralization by giving substantial powers to PRIs and local urban development bodies. The idea is very close to Gandhiji’s concept of ‘Swarajya’ in which people involve themselves in self-governance and grassroots planning. The Amendments empower the local self-government institutions in rural areas to plan and implement developmental activities in their areas, by providing an action agenda or an indicative list of 29 items in the Eleventh Schedule for PRIs and 18 items in the Twelfth Schedule for Municipalities. These local bodies can be effective instruments in tackling disasters through early warning system, relief distribution, providing shelter to the victims, medical assistance etc.

*(Constitution of India, Article 243(G).*

f. **Eleventh Schedule of the Constitution:**

The Eleventh Schedule of the Constitution has 29 items in which Disaster Management is not directly mentioned, though there are many subjects in the Schedule, which have direct or indirect link with managing disasters. These subjects include: agriculture, land improvement, minor irrigation, fisheries, social forestry, khadi, village and cottage industries, drinking water, fodder, non-conventional energy sources, poverty alleviation programmes, and market and fairs among others. *(Constitution of India, Article 243(G).*
g. **Twelfth Schedule of the Constitution:**

In this schedule also 18 items for transfer to the Urban Local Bodies (ULBs) are given. These items cover urban planning, roads, fire services, public health, roads and bridges, burial grounds, public amenities, and regulation of slaughter houses.

*(Constitution of India, Article 243(W).*

h. **Panchayat (Extension to Scheduled Areas) (PESA) Act, 1996:**

The Panchayat (Extension to Scheduled Areas) Act, 1996 is a landmark legislation, and has certain mandated provisions empowering the Gram Sabha and the Panchayats. The Gram Sabha has been empowered to approve programme and projects of economic development before it is implemented, and exercise control over local plans and resources. They also have control over water bodies and available natural resources in their area.

i. **Tenth Five Year Plan (2002-2007)**

The Tenth Five Year Plan, prepared in the backdrop of Odisha super cyclone, Gujarat earthquake and end of International Decade of Natural Disaster Reduction (IDNDR), has for the first time, recognized disaster management as a development issue. The Tenth Five Year Plan Document has incorporated a detailed chapter on Disaster Management. From a mitigation point of view, the Plan has also promulgated a nationwide ‘Culture of Prevention’, through community preparedness, introduction of disaster management in school curriculum, including relevant aspects of disaster management in professional courses, enhancing the capacity of disaster managers by better training facilities, and creating mass awareness at all levels.

**Some of the steps towards preventive planning are:**

- Introducing a comprehensive process of vulnerability analysis and objective risk assessment.
- Building a robust, comprehensive and sound information database.
- Creating state-of-the art infrastructure based on frontline research.
• Establishing linkages between all knowledge based institutions and developing a National Disaster Knowledge Network suitable to the felt needs of a multitude of users like disaster managers, decision makers, community etc.

j. Eleventh Five Year Plan (2007-12):

The Eleventh Five Year Plan has an objective of strengthening the process initiated by the Tenth Five Year Plan. It planned to support such projects and programmes that will inculcate the culture of safety. It has emphasized the need for entwining of disaster prevention and mitigation into the development process.

The Plan expects that the NGOs should play an important role in planning, implementing and consulting in the projects/programmes in the Eleventh Five Year Plan. The Plan further calls for activities delivering best practices and demonstrating projects, promoting employment based mitigation, capacity building and vigorously spreading the culture of safety in the community. of communities in spreading the culture of safety.

k. Thirteenth Finance Commission:

The Thirteenth Finance Commission (FC) recommended that the National Disaster Response Fund (NDRF) be created by merging the previous National Calamity Contingency Fund (NCCF) into it, with effect from 1 April 2010, and that the balances in the NCCF account at the end of 2009-10 be transferred to the NDRF. NDRF will be financed by the Central Government as per the Act. It also recommended that the Calamity Relief Fund or CRF be merged with the State Disaster Response Funds (SDRFs) of the respective states. The contribution to the SDRFs is to be shared between the centre and states in the ratio of 75:25 for general category states and 90:10 for special category states. The Thirteenth FC emphasized the need for trained manpower to deal with complex situations effectively, especially when effective and speedy handling is required to reduce the impact of a disaster on human life and property. The need was mentioned in this Finance Commission’s report for undertaking continuous measures to build capacity of those who handle response and create awareness amongst people. It
recommended an additional grant of Rs. 525 crore, on the basis of the overall size of the SDRF of a state. This amount may be used for taking up activities for building capacity in the administrative machinery for better handling of disaster response and for preparation of district and state level disaster management plans, as envisaged in the DM Act 2005. It also recommended an assistance of Rs. 250 crore to National Disaster Response Force to maintain an inventory of items required for immediate relief. It suggested that mitigation and reconstruction activities to be kept out of the schemes funded through FC grants and be met out of overall development plan funds of the Centre and the states.

After taking a detailed review of the **policy measures** now the researcher takes the review of the **Institutional arrangement** to deal with different types of disasters.

### 3.15 Institutional Mechanism for Disaster Management:

In the Central Government there are existing institutions and mechanisms for disaster management while new dedicated institutions have been created under the Disaster Management Act of 2005.

**a. The Cabinet Committee on Management of Natural Calamities** (CCMNC) oversees all aspects relating to the management of natural calamities including assessment of the situation and identification of measures and programs considered necessary to reduce its impact, monitors and suggests long term measures for prevention of such calamities, formulates and recommends programs for public awareness for building up society's resilience to them.
b. The Cabinet Committee on Security (CCS) deals with the matters relating to nuclear, biological and chemical emergencies.

c. The National Crisis Management Committee (NCMC) under the Cabinet Secretary oversees the Command, Control and Coordination of the disaster response.

The Disaster Management Act 2005 has provided the legal and institutional framework for disaster management in India at the national, state and district levels. In the decentralized federal polity of India the primary responsibility of disaster management lies with the State Governments. The Central Government lays down policies and guidelines and provides technical, financial and logistic
support while the district administration carries out most of the operations in collaboration with central and state legal agencies.

Under the Disaster Management Act, 2005 the National Disaster Management Authority (NDMA) was set up as the apex body for Disaster Management, at the Centre. Similar arrangements came up at the State level under the Chief Minister. The same way, District Disaster Management Authority (DDMA) headed by the District Collector was established.

Various other institutions are also established according to the Disaster Management Act, 2005, such as National Institute of Disaster Management (NIDM), National Disaster Response Force (NDRF), National Disaster Response Fund (NDRF) and so on.

d. National Disaster Management Authority (NDMA):

The National Disaster Management Authority (NDMA) was initially constituted on May 30, 2005 by an executive order. Following enactment of the Disaster Management Act, 2005, the NDMA was formally constituted in accordance with Section-3(1) of the Act on 27th September, 2006 with Prime Minister as its Chairperson and nine other members, and one such member to be designated as Vice-Chairperson. The NDMA has been mandated with laying down policies on disaster management and guidelines which would be followed by different Ministries, Departments of the Government of India and State Government in taking measures for disaster risk reduction. It has also to laid down guidelines to be followed by the State Authorities in drawing up the State Plans and to take such measures for the management of disasters, Details of these responsibilities are given as under:-

a. Lay down policies on disaster management;
b. Approve the National Plan;
c. Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan;
d. Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
e. Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;

f. Coordinate the enforcement and implementation of the policy and plan for disaster management;

g. Recommend provision of funds for the purpose of mitigation;

h. Provide such support to other countries affected by major disasters as may be determined by the Central Government;

i. Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with the threatening disaster situation or disaster as it may consider necessary;

j. Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

Besides the nine members nominated by the Prime Minister, Chairperson of the Authority, the Organisational structure consists of a Secretary and five Joint Secretaries including one Financial Advisor. There are 10 posts of Joint Advisors and Directors.

The Vision of NDMA is to build a safer and disaster resilient India by developing a holistic, pro-active, multi-disaster-oriented and technology-driven strategy through a culture of prevention, mitigation, preparedness and response. To operationalize the National Vision and the objectives, the strategy evolved by the NDMA.

NDMA is based on certain pillars, which are as under:

- Pre-Disaster Phase-
  Prevention, Mitigation, Preparedness, Capacity Building, Community Based Disaster Management (including Public Awareness).

- Post-Disaster Phase-
  Prompt and Efficient Response – Proactive.
Culture of Preparedness – An Initiative by NDMA

NDMA is mandated by DM Act 2005, to lay down national policy and plan on DM and issue guidelines for various types of natural & manmade disasters. One of the tasks also envisages monitoring and coordinating the implementation of the policies & plans. It is in this regard, an initiative has been taken by NDMA to conduct the mock exercises on various types of disasters, initially in the most vulnerable areas of the country. The aim of the initiative is to inculcate a culture of preparedness and secure effective participation of the community and other stakeholders.

Some of the objectives for conduct of the mock exercises are, to highlight the roles and responsibilities and enhance the coordination among the stake-holders, identify gaps in the resources, communications & systems, identify areas for public-private partnership and empower the community to face disasters squarely. Mock exercises on natural and manmade disasters (except chemical industrial disasters) are conducted at district/s level. The chemical (industrial) disaster mock exercises are organized in most accident hazardous industries.

(NDMA, 2005)

e. National Executive Committee (NEC):-

A National Executive Committee is constituted under Section 8 of DM Act, 2005 to assist the National Authority in the performance of its functions. NEC consists of Home Secretary as its Chairperson, ex-officio, with other Secretaries to the Government of India in the Ministries or Departments having administrative control of the agriculture, atomic energy, defence, drinking water supply, environment and forest, finance (expenditure), health, power, rural development science and technology, space, telecommunication, urban development, water resources. The Chief of Integrated Defence Staff of the Chiefs of Staff Committee, ex-officio, is also its Members. NEC may as and when it considers necessary constitute one or more sub-committees for the efficient discharge of its functions. For the conduct of NEC, Disaster Management National Executive Committee (Procedure and Allowances) Rules, 2006 has been issued which may be visited at www.mha.nic.in. NEC has been given the responsibility to act as the coordinating
and monitoring body for disaster management, to prepare a National Plan, monitor the implementation of National Policy etc. vide section 10 of the DM Act.

f. National Institute of Disaster Management (NIDM):

In the backdrop of the International decade for Natural Disaster Reduction (IDNDR), a National Centre for Disaster Management was established at the Indian Institute for Public Administration (IIPA) in 1995. The Centre was upgraded and designated as the National Institute of Disaster management (NIDM) on 16th October 2003. It has now achieved the status of a statutory organisation under the Disaster Management Act, 2005. (Section 42 of Chapter VII of the Act). The Disaster Management Act entrusts the institute with numerous responsibilities, namely to develop training modules, undertake research and documentation in disaster management, organise training programmes, undertake and organise study courses, conferences, lectures and seminars to promote and institutionalize disaster management, undertake and provide for publication of journals, research papers and books.

Management Structure: The Union Home Minister is the President of the Institute. It was constituted on 23rd February, 2007 and has a general body of forty two members comprising of secretaries of various ministries, departments of the Union Government and heads of national level scientific, research and technical organizations. In terms of Section 42(4) of the Disaster Management Act, 2005 vide order dated 3rd May, 2007, the Government also constituted a 14 member Governing Body.

NIDM Performs Following Functions:

a. Develop training modules, undertake research and documentation in disaster management and organize training programmes;
b. Formulate and implement a comprehensive human resource development plan covering all aspects of disaster management;
c. Provide assistance in national level policy formulation;
d. Provide required assistance to the training and research institutes for development of training and research programmes for stakeholders including
Government functionaries and undertake training of faculty members of the State level training institutes;

e. Provide assistance to the State Governments and State training institutes in the formulation of State level policies, strategies, disaster management framework and any other assistance as may be required by the State Governments or State training institutes for capacity building of stakeholders, Government including its functionaries, civil society members, corporate sector and people's elected representatives;

f. Develop educational materials for disaster management including academic and professional courses;

g. Promote awareness among stakeholders including college or school teachers and students, technical personnel and others associated with multi hazard mitigation, preparedness and response measures;

h. Undertake, Organize and facilitate study courses, conferences, lectures, seminars within and outside the country to promote the aforesaid objects;

i. Undertake and provide for publication of journals, research papers and books and establish and maintain libraries in furtherance of the aforesaid objects;

j. Do all such other lawful things as are conducive or incidental to the attainment of the above objects; and undertake any other function as may be assigned to it by the Central Government.

(Disaster Management Act, 2005)

g. National Disaster Response Force (NDRF):

The National Disaster Response Force (NDRF) was established under Section 44 of the DM Act, 2005, for the purpose of specialist response to a threatening disaster situation or actual disaster. As a rapid action and specialized force during disasters, the NDRF is working under the control of the NDMA. It is a multi-disciplinary, multi-skilled, high-tech force for all types of disasters, capable of insertion by air, sea and land. The NDRF comprises eight standard battalions of Central Para Military Forces i.e. two battalions each from Border Security Force (BSF), Indo-Tibetan Border Police (ITBP), Central Industrial Security Force (CISF) and Central Reserve Police Force (CRPF). All the eight battalions (1 battalion comprised of nearly 1000 person) of NDRF consist of 144 specialised
teams trained in various types of natural, manmade and non-natural disasters. 72 of such teams are designed to deal with the Chemical, Biological, Radiological and Nuclear (CBRN) calamities besides natural calamities. Each NDRF battalion consists of 1149 personnel organised in 18 teams, who are being equipped and trained for rendering effective response to any disaster, either natural or manmade. All these eight battalions are being trained in natural disasters while four of them are being additionally trained for handling CBRN disasters.

Based on vulnerability profile of different regions of the country, these specialist battalions have been presently stationed at the following ten places as may be seen from the map in

Figure No. 3.4  NDRF Battalions Locations in India

(Source: NIDM Publication, 2010)
h. **National Disaster Response Fund (NDRF):**

Section 46(1) of DM Act 2005 provides for constitution of NDRF for meeting any threatening disaster situation or disaster. Accordingly, DM Division issued notification for the constitution of NDRF on 28th September 2010. The Finance Ministry has also issued guidelines to the state for operation of NDRF.

**Sourcing of National Disaster Response Fund (NDRF):** The Government of India raised this Fund by levying the “National Calamity Contingency Duty” on imported petrol and products, crude oil, motor cars, imported multi utility vehicles, two wheelers, mobile phones, pan masala and certain specific tobacco products. The collection for year 2009-10 was ₹3160.00 crore and was expected to be around ₹3900.00 crore in the financial year 2010-2011. For the year 2011-12, the estimate is ₹4525.00 crores.

**Additional Financial Assistance:** In addition to the provisions of the SDRF, funding is provided from the NDRF in the wake of calamities of severe nature. On receipt of the memorandum from the affected states, an Inter Ministerial Central Team comprising of representatives of the central ministries/ departments is constituted and its report after examination by the Inter Ministerial Group (IMG) headed by Home Secretary is placed before the High Level Committee (HLC) for their consideration and approval of funds from NDRF. The composition of HLC is given in the Policy and Guideline, Chapter-2, which at present are headed by Finance Minister with Home Minister, Minister for Agriculture and Vice Chairman of Planning Commission as its member on the committee.

i. **Civil Defence:**

**Disaster Management and Civil Defence:** Until 1962 the Civil Defence Policy of the Government of India was limited to make the states and UTs aware of the need of civil protection measures and to keep civil protection plans ready for major cities and towns under the Emergency Relief Organisation (ERO) scheme. The act on Civil Defence (CD) known as Civil Defence Act was enacted in 1968 which is in force throughout the country.
The Act has been amended in 2010 to cater to the needs of disaster management so as to utilise the services of Civil Defence volunteers effectively for enhancement of public participation in disaster management related activities in the country.

**Role of Civil Defence:** During times of war and emergencies, the CD organisation has the vital role of guarding the hinterland, supporting the armed forces, mobilising the citizens and helping civil administration for saving life and property, minimising damage, maintaining continuity in production centers and raising public morale. The concept of CD over the years has shifted from management of damage against conventional weapons to also include threat perceptions against nuclear weapons, biological and chemical warfare and environmental disasters.

**Directorate General of Civil Defence (DGCD):** DGCD was established in 1962 with its headquarters at New Delhi in the Ministry of Home Affairs to handle all policy and planning matters related to Civil Defence, Home Guards and Fire Services including the functioning of National Civil Defence College, and National Fire Service College, Nagpur. An IPS officer in the rank of Director General of Police heads the organisation. He has dual charge of D.G. National Disaster Response Force and Civil Defence (DG, NDRF & CD).

**Civil Defence Setup in the States:** The state government for the purpose of coordinating the activities of the Controllers of Civil Defence within the state appoints a Director of Civil Defence and also may constitute, for any area within the state a body of a person to be called the Civil Defence Corps. Out of 225 towns from 35 states notified as CD towns, currently the CD organisations at only 130 towns have been activated. Each town has nucleus of four Permanent Staff along with 400 CD Volunteers for a two lakh population. It is expected that each state will have one CD Training Institute with permanent strength of 36 personnel, five vehicles and other equipments. The District Magistrate is designated as a Controller for CD Towns. The present strength of CD volunteers is 5.72 lakhs, out of which 5.11 lakhs are already trained. The target strength of CD volunteers has been fixed at 13 lakhs based on the population of CD towns as per 2001 census. In accordance with the directions issued by Hon’ble Home Minister, one member
high powered committee was constituted on 7th February, 2006 under the chairmanship of one of the member of NDMA to analyse the existing functions of Civil Defence Organisations and suggest changes required to enlarge its role to include Disaster Management.

**Civil Defence at district level:** The state government may appoint a person, not being in its opinion, below the rank of a District Magistrate to be known as the “Controller”. Under certain conditions, the state government may also appoint a Deputy Controller of Civil Defence in appropriate rank up to that of Deputy Collector, but not inferior to that of a Sub- Divisional Magistrate.

### 3.16. Evaluation of National Policies, Programmes and Institutional Framework

#### a. Evaluation of policies and programmes:

After almost ten years of implementing the provisions of the Disaster Management Act, 2005, setting up an infrastructure suitable to deal with disasters and implementing various programmes for the development of socio-economic aspects of our people, it is time to evaluate these efforts. The scholars, Disaster Management experts have their own observations which are useful for future improvements in policies and functioning of the Institutions in the field. These observations and criticism have been summarized below:

The Government of India implements number of ambitious programmes in key sectors like agriculture, rural and urban development, drinking water, rural roads, health, education and food security, with huge budget, to improve the quality of life of our people. These programmes have, to some extent, contributed to disaster risk reduction but as a specific component and intervention for disaster risk reduction (DRR) have largely been missing in many of these important programmes. Now attempt should be made to introduce DRR component consciously in these programmes.

1. **The Rashtriya Krishi Vikas Yojana (RKVY)** is a very important programme of the Ministry of Agriculture which has great potential in reducing the impact of disasters like droughts and famines. DRR component can be easily included in it to take care of extreme weather events. Creating reserves of
seeds, pest controlling systems, providing water storage devices (in combination with MGNREGS) etc could be taken up as DRR components.

2. **The Pradhan Mantri Gram Sadak Yojana** (PMGSY) under the Ministry of Rural Development provides rural connectivity to habitations. These could also facilitate twelve months connectivity in the case of disasters to hospitals, food distribution centres, schools, etc. Villages with no connectivity at all due to seasonal or perennial rivers and nallas can be provided access to economic activity, education and health by constructing small foot bridges by suitably modifying the scheme.

3. **The Indira Awas Yojana** (IAY) and the Rajiv Awas Yojana (RAY) provide housing for the poor. Normally the Ministry provides a small amount for quick construction of houses to those affected by natural disasters. However, with this meager amount disaster resilient house cannot be constructed. A change in design of the house and matching cost can provide disaster resistant houses. This will strengthen the house vis-à-vis the vulnerability of the region.

4. **The Jawaharlal Nehru National Urban Renewal Mission** (JNNURM) provides for strong infrastructure in selected large cities in the country. Though this has improved the urban infrastructure remarkably, attention to removing vulnerabilities and strategy for disaster free city development plans is missing. The urban population in India is growing at a rapid pace is the fact and naturally, due to this, vulnerability of such region is increasing. Therefore, disaster reduction policies should included in the planning and implementation of the urban development projects.

5. **The Rajiv Gandhi National Drinking Water Mission** (RGNDWM) provides safe and potable water to all the villages. During the natural disaster, drinking water and food is the immediate need of the affected people. Under this scheme some amount is provided to keep tube-well in operational condition during disaster. While this is a welcome step, care should be taken while designing and developing new water sources and locations that they will remain usable even during any calamity..

6. **National Rural Health Mission** is another vital programme. Now we are expert in handling epidemics and pandemics. Still there is a need to keep our hospital clean and free from infections. More attention is to be given to trauma care, management of mass causalities, etc.
7. **Curricula of schools and Colleges** should include Disaster Risk Reduction as a topic to inculcate the culture of safety and prevention among the children. Presently some of the schools up to XII standards and some Universities and Colleges have included Disaster Management in their syllabi, but it should be a compulsory subject in the educational institutions in the entire country. In addition, a thorough review of the safety of the School buildings needs to be undertaken. To ensure safety of all the Schools in the country, a legislative framework will have to be set up. There is also a shortage of qualified professionals in many areas related to DRR. This needs to be addressed on priority.

8. **Early warning systems** is to be set up suitably and it should be ensured that the system is functioning all the time. While we have substantially stepped up our capabilities for Tsunami warning the same cannot be said for other efforts.

9. **Systems for weather forecasting**, though have improved substantially over the last five years, still needs higher investments, equipments and man power. It should be possible to warn communities in any part of the country about the ensuing disaster well in advance so that they can save their lives and property. Satellite imagery has proved as an important tool in situation of pre and post disaster. These capabilities need further refinement and intensification to enable functionaries at the district level to take appropriate and timely decisions. Therefore, the three departments viz., Science & Technology, Earth Sciences and Space and the organisations under them viz., IMD, INCOIS, NRSC, and SOI need to step up their investments in equipments and human capabilities to provide advance and effective information on disasters. These have to be supported by other scientific departments and organisations like ICAR, ICMR, CWC, GSI etc.

10. **Use of satellite imagery**: It is also necessary to create a national platform for sharing, using and disseminating the data. (for example the data on heavy rainfall needs to be combined with the data on river flows to develop flood inundation models and early warning systems. This could be supplemented by satellite imagery).

11. **Adherence to Building Code**: It is often said that “earthquakes do not kill, but buildings do”. In spite of this, our adherence to norms in the case of
buildings in seismic zone-IV and V has been quite poor. In fact building collapse even without an earthquake.

12. **Our compliance with fire safety norms** has also been found to be awfully inadequate. While it is necessary to strengthen inspections and management by Government agencies it is also important for the citizens to be aware of the danger and be responsible for some of these activities. It is public awareness and pressure which brings in the desired results in such situations. Our preparedness regime needs strengthening both at the Government level and at the community level. In fact community preparedness is still an alien concept in the country. An intensive campaign to strengthen community preparedness will have to be undertaken.

13. **Systematic Response to Rescue and Relief**: Our traditional response in any disaster has been one of rescue and relief with a series of quick but ad hoc actions. Rescue and relief cannot remain ad hoc actions but have to be systematic and well planned. This will require proper planning and standard operating procedures for all eventualities that could be foreseen.

14. **Responsibilities for each of the functionaries** who are expected to deliver in such a situation. If effective systems could be put in place at the National, State, District, Municipality and Panchayat levels, many lives can be saved and the economic damage reduced.

**Conclusion:**

The important message, therefore, is that all hazards need not become disasters. With better planning, preparedness awareness and mitigation measures we can significantly reduce the impact of disasters for our people in the near future.

*(T Nanda Kumar, March 2012.)*

**b. Evaluation of Institutions:**

The performance of **NDMA** has been evaluated by various scholars and critics which can be summarized as follows:

a) Any agency’s functioning becomes successful only when its members meet regularly, discusses some agenda, plans to implement it and monitors
the implementation. The Comptroller and Auditor General (CAG) has noted its observation that NDMA’s National Executive Committee has not convened a single meeting between 2008 and 2012. Even now the NDMA doesn't have a working plan.

b) The committee of NDMA thought of many projects immediately after its inception but could not materialized.

c) Number of good projects like earthquake, flood, and landslide risk mitigation, though were approved, could not be activated or those started, were abruptly left incomplete due to poor planning.

d) A very senior bureaucrat points out that the absence of a strong leadership is the reason of unsatisfactory performance of NDMA. He further explains that the Prime Minister is the chairman of NDMA, obviously, he cannot devote sufficient time for NDMA.

e) There is a lack of coordination in the chain of command of NDMA. The members of NDMA are senior retired bureaucrats, to canalize their efforts a capable Vice Chairman is required.

f) Disaster preparedness was not found at any level of government, The Uttarakhand flood tragedy proves this lacuna. NDMA chief M. Shashidhar Reddy doesn't agree to this conclusion but he blames NDMA's latest failure in this regard on the meteorological department.

g) Several critical posts in NDMA are vacant and consultants were used for day to day working.

h) The Expert in the field are of the opinion that had the NDMA prepared the national vulnerability atlases of landslides, floods and earthquake in a proper manner, the damage in Uttarakhand could have been much less.

i) The overall problem is that, that no Central or State Governments have a robust decision-support system. If the meteorological department indicates ‘heavy rainfall’, what are the implications? Who should we evacuate, and from where to where? are the problems. It means there is no clarity about many things.

j) We need to move from simple forecasting to impact forecasting, also, we must ensure information flows faster than the floodwater. In such situations, the communication system is the first to collapse.

(Anand Sharma, director of India Meteorological Department, Dehradun).
It is, therefore, necessary to provide effective leadership to put new life in the functioning of NDMA.

c. **National Disaster Response Force: Observations and analysis**
   
a) This institute is not having basic infrastructure like adequate space for office, facilities for training.
   
b) The office space has been taken on rent basis.
   
c) Even the Director General of NDRF has no dedicated office.
   
d) There is no separate provision for room to sit and address the grievances of people suffering from various natural calamities.
   
e) A small room has been converted into Crisis Command Centre.
   
g) Inadequate manpower, only 16 posts at Headquarter are sanctioned.
   
h) NDRF owns no dedicated vehicles like trucks and jeeps, not even a car for its DG.
   
i) Only two battalions have permanent building to stay, remaining eight battalions are living in the temporary structures or tents.
   
j) A simple management principle that a subordinate should have only one superior, but NDRF has two bosses- MHA and NDMA. This situation affects the morale of officers working in that institute.
   
k) A discriminatory treatment is given to NDRF Jawans. During the Uttarakhand disaster last year, 9 NDRF men were killed in an Air Force helicopter crash along with five airmen. While the IAF crew were honoured with posthumous gallantry medals and called “martyrs”, not a single NDRF personnel received any medal.
   
l) NDMA has a budget of Rs.387.46 crores for 2014-15. But NDRF has no separate budget. According to one estimate NDRF’s budget can be somewhere around Rs. 200 crores.

*(Mr. O P Singh, Director General, NDRF and CAG Report, 2011)*

The researcher, up till now has taken a detailed review of the policies and Institutional mechanism at the national level and evaluation of them, as it was one of the objectives of the study mentioned in the objectives.
3.17 Disaster Management Scenario in Maharashtra

Now in the following pages Maharashtra State policies and institutions related to disasters in the state and their assessment has been discussed:

a. General Profile of Maharashtra:

Maharashtra is the second largest state in India on two counts- population and geographical area (3.08 lakh sq. km.). The State has a population of 11.24 crore (Census 2011) which is 9.3 per cent of the total population of India. The urban population of the state is 45.2 per cent. The State has 35 (Now Palghar is a new district) districts which are divided into six revenue divisions viz. Konkan, Pune, Nashik, Aurangabad, Amravati and Nagpur for administrative purposes. The State has a long tradition of having statutory bodies for planning at the district level. For local self-governance in rural areas, there are 33 Zilla Parishads, 351 Panchayat Samitis and 27,906 Gram Panchayats. The urban areas are governed through 26 Municipal Corporations, 219 Municipal Councils, 7 Nagar Panchayats and 7 Cantonment Boards. Mumbai, the capital of Maharashtra and the financial capital of India, houses the headquarters of most of the major corporate & financial institutions. India's main stock exchanges & capital market and commodity exchanges are located in Mumbai.

(Economic Survey of Maharashtra 2012-13).

b. Disaster Risk Profile of Maharashtra:

Vulnerability of the State:

Disasters such as drought, floods, cyclones, earthquake and accidents are the regular features of the state. While low rainfall areas of the state face constant risk of droughts, high rainfall zones of eastern and western Maharashtra are prone to flash floods and landslides. The Koyna reservoir and surroundings fall under the high risk of earthquake hazards. Similarly, Industrial belt of Pune, Mumbai and Nashik are prone to the risk of accident and industrial hazards. Other disasters like fire and road accidents occur in congested areas due to inadequate infrastructure. The state has suffered huge losses, both direct and indirect, caused by various
disasters. For example, the infamous Latur earthquake of 1993, resulted in the loss of several thousands of human and animal lives. In addition, it caused damage to entire infrastructure such as buildings, roads, railways, pipelines, and electricity network, etc. In order to avoid such losses due to disasters, the Government of Maharashtra has established a mechanism for disaster preparedness and mitigation by integrating science and technology with communication network facilitates.

Many areas of the State have faced droughts for consecutive years, which damaged agriculture and caused water shortage in more than 20,000 villages. Every year immediately after monsoon those villages are to be supplied drinking water by tankers. Special provisions are to be made to feed cattle in number of camps. There are three main disasters which are troublesome to Maharashtra almost every year. These are:

**Floods:** The Tapi, Wardha and sometimes Painganga rivers cause the flood in the state. The eastern parts of the state suffer frequently from floods. In the last few years due to flood the state had to face severe loss of crops and lakhs of hectar of land was destroyed, killing thousands of people and cattle.

**Drought:** Fifty percent of Deccan area of the state is drought-prone. 12% of the population lives in drought-prone areas. In this area at least once in five years shortage of rain is reported. Severe drought conditions are experienced by those people once in 8-9 years. During this periods lakhs of people suffer from shortage of food, water etc. therefore, heavy migration takes place. People move around in search of jobs.

**Earthquakes:** Latur of Maharashtra experienced severe earthquake in 1993. Extensive damage took place causing heavy human death toll up to 7,938, injured people were 16000 and left 15,847 livestock dead. 52 villages were completely destroyed and approximately 27,000 houses were totally ruined. The Koyana dam is situated in one of the most active seismic zone of Maharashtra. In the last 35 years this area has received more than one lakh tremors. Severe earthquake took place in 1967 wherein 200 people died.
3.18. Institutional Setup In Maharashtra State:

Government of India enacted the National disaster management Act on 23rd Dec 2005, under which the National disaster management authority (NDMA) was created. According to the same act the state disaster management mechanism was constituted.

a) Maharashtra State Disaster Management Authority (MSDMA):

The Maharashtra State Disaster Management Authority was constituted on 24th May, 2006 under section 14 of the Disaster Management Act, 2005, with the Chief Minister as Chairperson, Deputy Chief Minister as Vice-chairperson, three Ministers, three unofficial members and the Chief Secretary as the Chief Executive Officer. It was stated by the Director (SDMA) that all members of the Authority hold position in their ex officio capacity. However, this position is apparently not correct since three unofficial members have been appointed by name and not by designation on ex officio basis. There is, however, no legal infirmity in the constitution of the State Authority which is in accordance with the provisions of the Act.

Figure No. 3.5. Organizational setup of MSDMA

![Organizational setup of MSDMA](Source: Maharashtra, NIDM Portal)

b) State Emergency Operation Centre (SEOC)

Emergency Operations Centre (EOC) is proposed with desk arrangements for specific activities during a disaster. The EOC will be linked to State
Emergency Operation Centre (SEOC) constituted at state level. Division Emergency Operations Centre will have very limited participation of people to avoid chaos and confusion. Therefore, the non-government agencies although having a role in the rescue and relief operations will not be represented in the Division Emergency Operations Centre. However, to ensure the utilization of the manpower and material resources of these agencies, the Plan advocates to constitute a Sub-Group comprising of representatives of only non-government agencies, which will be responsible for distribution of relief materials obtained from external source, and also to support the government's requirement of additional manpower and material. Emergency Support Functions (ESF) are the essentials of Emergency Management that provide the coordination mechanisms among the various agencies; they provide the organization and process to plan, manage and coordinate specific response and preparedness activities common to - any hazardous event that can result in an emergency from the most frequent one to the most extreme one. Each ESF is headed by a lead agency and is supported by identified support agencies. These ESFs form an integral part of the Emergency Operation Centers.

c) **State Executive Committee:**

Simultaneously, a State Executive Committee (SEC) was also constituted with the Chief Secretary as the Chairperson and Additional Chief Secretary (Home), Additional Chief Secretary (Finance), Secretary (Public Health), Secretary (Relief and Rehabilitation) as Members and a retired General as Member Secretary.

A composite secretariat has been established for SDMA, as well as SEC, under the Chairmanship of Additional Chief Secretary (Relief and Rehabilitation). He is supported by a full time Executive Director with two full time Directors, one each for mitigation and response. A post of Financial Advisor is in the process of being created. Likewise, there are six Desks already in position, two each for mitigation, response and finance.
d) District Disaster Management Authority (DDMA):

Institutionalisation of disaster management is very important to make it more effective and sustainable. For this purpose Under the Disaster Management Act 2005, where it is clearly given that a Disaster Management Authority to be formed at the district level. It will be the apex body at the district level. Disaster management would involve many layers of participating organization. The three focal levels would be State, District and the site of the disaster. The State level agencies would be involved in policy/decisions making, resource and budget allocation and monitoring through the State Emergency Operations Centre.

Similarly, at district level a District Disaster Management Authority is already formed and activated to mitigate any unexpected situation in the district. There are seven members included in this authority. In Maharashtra many districts have already prepared their disaster management plans.

The Institutional Framework for disaster management developed at the District, Taluka and Village level is as follows:-

At each level, apart from disaster management committee, each level has a disaster management plan along with the various task forces like search and rescue, first aid, early warning, shelter management, etc.

At taluka level every taluka in the district has a taluka disaster management committee headed by tahsildar. As said above all line departments at taluka level are its members. Also a search and rescue team as well as first aid team have been set up at every taluka.

At village level, every panchayat has a village disaster management plan as well as village disaster management committee. The VDMC chaired by Sarpanch includes talathi, gramsevak, teacher, health workers, etc. of 10 – 12 persons as member. Also a search and rescue team as well as first aid team have been set up and trained at every village.
e) **Revenue and Forests Department:**

The Relief and Rehabilitation Division under the Revenue and Forest Department in the Government of Maharashtra is the nodal agency for disaster management in the state.

f) **Mumbai Metropolitan and Region Development Authority (MMRDA):**

MMRDA was set up on the 26th January 1975 under the Mumbai Metropolitan Region Development Authority Act, 1974 Government of Maharashtra as an apex body for planning and co-ordination of development activities in the Region. This region comprises some parts of Mumbai, Thane and Raigad districts. It prepares plans, formulates policies and programs and helps in directing investments in the Region. It proposes, promotes and monitors the key projects for developing new growth centres. It ensures improvement in sectors like transport, housing, water supply and environment in the Region. Moreover, if a project is of particular significance, the MMRDA takes up the responsibility for its implementation. MMRDA functions in close coordination with MCGM. As for DRM related function, MMRDA considers the DRM plan while conducting review of the regional plan for the Mumbai Metropolitan Region, integrates risk reduction in the planning and implementation, e.g. recognition of proneness to natural hazards of each geographical location, site adaptation of construction, revision of building codes, etc.

g) **Maharashtra Housing and Area Development Authority (MHADA):**

MHADA was established by the State Government in 1977 under the Maharashtra Housing and Development Act, 1976. The main purpose of MHADA is to undertake the repairing of the tenanted buildings which are repairable, that number is over 19,642 and developing alternate housing units where these buildings are beyond repairs and may collapse. MHADA experts conduct visual inspections of buildings to determine their structural safety and carry out repairs where necessary. MHADA also undertakes vulnerability assessment in the context of these old buildings.
h) Maharashtra Fire Services:

The subject of Fire Services in the State of Maharashtra is under the control of the Urban Local Bodies. The Service was initially expected to focus on fighting fires, and the law constrained what they could do. Since then, the role of the Fire Service has changed a great deal. As a result, under the new Act, Fire and Rescue Authorities now have a range of statutory duties to:

- Promote Fire Safety;
- To prepare for fighting fires and protecting people and property from fires; rescuing people from Road Traffic Accidents; dealing with other specific emergencies, such as flooding or terrorist attack which are set out by Statutory Order and can be amended in line with how the role of the Service may change in the future. In addition, all Fire and Rescue authorities will be able to do other things to respond to the particular needs of their communities and the risks they face.

i) State Disaster Management Plan:

Maharashtra is the first state to prepare a comprehensive State Disaster Management Plan. The State has also undertaken risk assessment and vulnerability analysis of the state. These studies address the vulnerability of various districts, talukas within these districts, and clusters of villages in these districts to earthquakes, floods and cyclones, epidemics, road accidents and fire, and chemical and industrial disasters. A separate volume on Standard Operating Procedures (SOPs) details the manuals for various departments to be activated during an emergency.

j) District Disaster Management Plan:

The Government of Maharashtra identified one district from each of the six revenue divisions for preparing the multi-hazard response plans, with financial support from the UK.

This was also supplemented with the preparation of multi-hazard response plans for the remaining 25 districts, with financial support from the UNDP.
through the Centre for Disaster Management at YASHADA. These multi-hazard response plans include an exhaustive risk assessment and vulnerability analysis of the district, with reference to earthquakes, floods and cyclones, epidemics, road accidents and fire, and chemical and industrial disasters. They also contain the multi-hazard response structure, capability analysis, including an inventory of resources, and mitigation strategies.

k) Disaster Management Plan and Centre for Disaster Management (CDM)

As a part of overall preparedness of the State, the Government of Maharashtra has a State Disaster Management Plan to support and strengthen the efforts of district administration. The Centre for Disaster Management (CDM) of the Government of Maharashtra was set up in August 1996 with support from the Natural Disaster Management Division, Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India. Its infrastructure consists of Documentation Centre and a stand-by Control Room (with 30 seconds connectivity for Video Conferencing, VSAT, Email and Fax Communication (www.yashada.org).

The functions and activities of the CDM are-

- To co-ordinate the activities related to disaster management in Maharashtra, especially, at the State and District levels;
- To develop a set of training modules and case studies on disaster management; and
- To develop disaster preparedness and capacity building through preparation of district disaster management plans.

Under 1996 Disaster Management Council's mandate, the Government of Maharashtra prepared a plan, which involves:

- Scrutinising disasters like earthquakes, floods, cyclones, epidemics, road accidents, industrial and chemical accidents, and fires,
- Estimating their footprint and reach,
- Listing down the monitoring facilities and regulatory regimes,
• Tracing the counter measures available to handle the disasters.

To support and strengthen the efforts of district administration, every district has evolved its own District Disaster Management Plan (DDMP) that addresses the districts’ response to the disasters.

The objectives of DDMP are-

• To improve preparedness at the district level, through risk and vulnerability analysis of disasters and to minimise their impact in terms of human, physical and material loss.
• To ascertain the status of existing resources and facilities available with the various agencies involved in the district and make it an exercise in capacity building of district administration.
• To utilise different aspects of the disaster for development planning as a tool for location and area specific planning for development of district.

I) District Disaster Management program (DDMP):

The Disaster Management Program exclusively works for developing the disaster management plans, providing trainings, and strengthening the capacity of the different Disaster Management Teams (DMTs). It creates awareness among public on various disasters. Plan development is one of the vital objectives of this project. Proper attention has been paid by the district administration to develop the plan so that it will be more useful to handle the disasters timely in future.

Disaster Management has comprehensive cycle that includes preparedness, response, recovery and reduction phases. Based on this cycle, the response part is addressed with Incident Command System, (ICS) a best management tool, and linked with resource inventory connected to website India Disaster Resource Network, (www.idrn.gov.in) (IDRN). In fact, ICS and IDRN make it more effective.

District Disaster Management Plan (DDMP) has been developed and covered all relevant information related to human resources, equipments and critical supplies.
Objectives of DDMP:

- To prevent loss of human life and property damage.
- To study, analyze and evaluate the disasters.
- To identify the vulnerable locations and do the vulnerability and risk analysis.
- To improve preparedness, prevention and mitigation at district level.
- To ascertain the status of existing resources and facilities available.
- To recommend appropriate strategies and responses to deal with future disasters.

m) District Disaster Management Committee (DDMC):

Besides this, the Disaster Risk Management Programme also traced much to form Committees at the three levels with plans and task forces. A Disaster Management Committee exists to assist the Collector in -

- Reviewing the threat of disasters
- Vulnerability of the district to such disasters
- Evaluating the preparedness
- Considering the suggestions for improvement of the response document DDMP

The Committee meets once a year under the chairmanship of the Collector.

*(NIDM, Maharashtra, National Disaster Risk Reduction Portal)*

3.19. Initiatives by the Government of Maharashtra:

In 2007 Government of India and UNDP launched the ‘Disaster Risk Management’ (DRM) programme in 169 districts across 17 states in the country, including in Maharashtra.

In Maharashtra, the DRM is being implemented in 14 districts and seven Municipal Corporations. The Relief and Rehabilitation Department, Government of Maharashtra is the nodal agency for the implementation of this programme in the State. During the course of implementation of the programme, a number of innovative strategies and
processes have been adopted which in turn lead to very interesting and encouraging results.

(Best Practices and Case Studies on Disaster Management, March, 2008)

3.20 Observations on State Policies, Institutional Mechanism and its implementation:

The state disaster management system suffers from more or less same lacunae which we face at national level.

1) Due priority is not given to the subject of disaster management.
2) Preparing for disasters is a everybody’s concern, it is not a monopoly of those to whom it has been assigned.
3) Accordingly policies are to be formulated, programmes are to be planned and they are to be implemented with high spirit and zeal.
4) We all, community as well as government become aware only after the calamity takes place. For example the incidence at Malin village in Pune district. The entire village was vanished due to landslide. But before that many years the work of extracting earth, stone from the hill, deforestation of that area was going on, we did not care.
5) The same negligence and lack of foresight was seen in Uttarakhand- Kedareshwar Flood and in Himachl Pradesh 24 engineering college students from Hyderabad were flown away in the sudden flood in Byas river.
6) The State Disaster Management Plan which was prepared in 1990s is not yet up dated, the process is still going on.
7) Even all districts have not prepared their disaster management plans.
8) There are number of state government schemes to provide jobs to people, agriculture related schemes which have potential to mitigate the impact of disasters like flood, droughts. But consciously these schemes should be entwined with the disaster management of that area.

-------------xxxxxxxxx-------------