

***Country Disaster Risk Management Status Report***

***Towards identifying national and local priorities for the implementation of the Sendai Framework for Disaster Risk Reduction (DRR)***

***Government of India  
Ministry of Home Affairs***

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## ***Section 1: Introduction***

### **1.1 Context**

The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 was adopted during March 2015 by India along with 187 countries during the Third UN World Conference on Disaster Risk Reduction (DRR). The Sendai Framework aims at achieving substantial reduction of disaster risk losses in lives, livelihoods, environment and assets of persons, businesses, communities and countries. Government of India is has been fully committed towards implementation of the Hyogo Framework for Action 2005-2015 and is also committed to implement present Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030.

The SFDRR has outlined 7 global targets and 4 Priorities for Action. The implementation of the Sendai Framework would supplement and complement the efforts of nations and community in preventing vulnerability to disasters, increasing preparedness for response and recovery, strengthening their resilience and promoting risk sensitive sustainable development.

The Sendai Framework requires that member countries “adopt and implement national and local disaster risk reduction strategies and plan across different timescales with targets, indicators and timeframes”. In adopting the framework, India has committed to the global targets to be measured against the 2005-2015 baseline. Hence, the need for a comprehensive understanding the current status of disaster risk management in the country to prepare, implement and monitor the national strategies, plans with targets and priorities.

### **1.2 Purpose of the Report**

Since 2005, the Hyogo Framework for Action (HFA) had become the guiding framework for the work on DRR of not only the National Governments and international organizations but also the civil society organizations and the academia. The National policy documents for DRR formulated by various countries since 2005 including India had increasingly referred to the five priority areas of HFA. By following the Hyogo Framework, over the years, we have improved the national monitoring and reporting of DRR progress. Nevertheless, information is scattered across the country, across different levels and across stakeholders, which needs to be effectively captured and reported.

The Sendai Framework for Disaster Risk Reduction 2015-2030 sets the outcome of “**substantial reduction of disaster risk and losses**”, to be measured against seven global targets that are both quantitative and qualitative, against the baseline of 2005-2015 period. The Sendai framework also requires us to take the primary responsibility to prevent and reduce disaster risk and at the same time disaster risk reduction become a shared responsibility of central government, state and local government, relevant sectors and other stakeholders. Understanding the progress and challenges at the national and local levels will be essential for fostering international cooperation and for contributing to the regional and global monitoring of the progress. Country Disaster Management Status Report as of 2015, therefore, is an attempt to help address the above gaps. The report mainly reflects the status of the DRM in India during the period 2005-2015.

### **1.3 Target Audience**

The target audience of the report includes the central ministries/departments, state governments, NGOs/CBOs, UN, academic institutions and private sector.

### **1.4 Methodology and structure of the report**

The report is based on the desk reviews, National HFA reports, and consultative meetings with different Ministries/departments.

### **1.5 Periodic Update**

The DRM status report would be updated every year.

## **Section 2: India's Disaster Risk Profile**

### **2.1 Introduction**

India is the largest country both in terms of size and population in South Asia Region. Due to this vast size there is high diversity in terms of geography, climate, socio economy and culture in the country. These make the country rank high in terms of reported number of disasters and risk to natural hazards.

India is located to the north of the equator between latitude 8°4' and 37°6' north and longitude 68°7' and 97°25' east. In south-west, India is bound by the Arabian Sea, Bay of Bengal in the south-east, and Indian Ocean in the south. Himalayas are in the north, northeast, and northwest. The climate of India is diverse ranging from arid desert in the west, alpine tundra and glaciers in the north, and humid tropical regions in the southwest supporting rainforests and the island territories. The rain fall distribution also varies across the country and some of the major rivers are being fed by glaciers in the Himalayan ranges. About 56 percent of the country's land area is arable along with rich mineral resources spread in different parts.

India is the world's second most populous country and almost 62 percent of country's population lives in rural areas. In recent years migration to larger cities has led to a dramatic increase in the country's urban population. India's largest cities are Mumbai, Delhi, Kolkata, Chennai, Bangalore, Hyderabad and Ahmedabad.

India is one among the top developing countries that is experiencing fast urbanization and economic growth with a GDP exceeding over USD 2 trillion. In relation to disasters, this fast growth increases the vulnerability and risk to hazards both natural and man-made due to immigration of large population, unplanned construction and encroachment into environmentally fragile areas and lack of adherence to mitigation standards.

Due to the vast size of the country, the number of disaster events and as well as the losses (death, total affected, and economic loss) are high for India when compared to other SAR countries. India is highly vulnerable to natural hazards, particularly earthquake, flood, drought, cyclone and landslides. The country has also experienced massive losses due to extreme temperatures and epidemics in the past. The geologic formation of the region along with the human activities accentuated the impact of natural hazards like earthquake and landslides. The lower Himalayan region experiences landslides due to loose debris, heavy rainfall, and human interventions like deforestation and cultivation on steep slopes, while in the Western Ghats region, intense intervention of human activities along with rainfall triggers landslides.

Since the Himalayan mountain ranges are the world's youngest fold mountain ranges, the subterranean Himalayas are geologically very active. The Himalayan frontal arc, bordered by the Arakan Yoma fold belt in the east and the Chaman fault in the west forms one of the most seismically active regions in the world. The country has experienced three great earthquakes (magnitude greater than 8) since 1900. These are Kangra earthquake of 1905, great Assam earthquakes of 1950, and the Bihar-Nepal earthquake of 1934. The other recent large damaging Himalayan earthquakes, which caused colossal loss of lives and property are: 1991 Uttarakashi earthquake of magnitude 6.5, 1988 Nepal–Bihar earthquake of magnitude 6.8, 1999 Chamoli earthquake of magnitude 6.8, 2005 Kashmir earthquake of magnitude 7.7 and the 2011 Sikkim earthquake of 6.9 magnitude.

Thus, peninsular part of the country comprises of continental crust regions, which were considered stable as they are far away from the tectonic activity of the boundaries. These regions were considered seismically less active, however, 1967 Koyna earthquake of magnitude 6.5, 1993 Latur earthquake of magnitude 6.3, 1997 Jabalpur earthquake of magnitude 6.0 and 2001 Bhuj earthquake of magnitude 7.7 are the few recent earthquakes in this region, which have caused considerable loss of life and property.

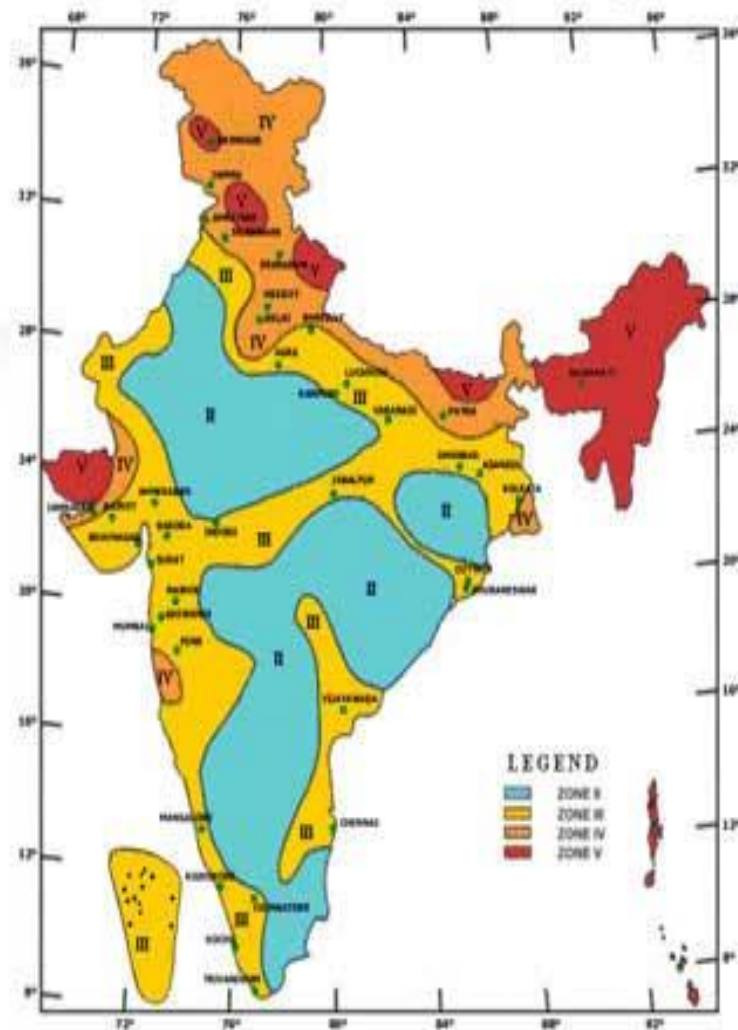
Thus, almost the entire country is prone to earthquakes of varying intensities. Based on the observed past damage and fault patterns (SEISAT, 2000), the country has been divided into four seismic zones (IS: 1893, 2002), seismic zone II (least seismic zone) to Zone V (most severe seismic zone). As per Vulnerability Atlas of India (BMTPC, 2006), 10.9 percent and 17.3 percent of the area of the country falls in very high and high damage risk zones respectively.

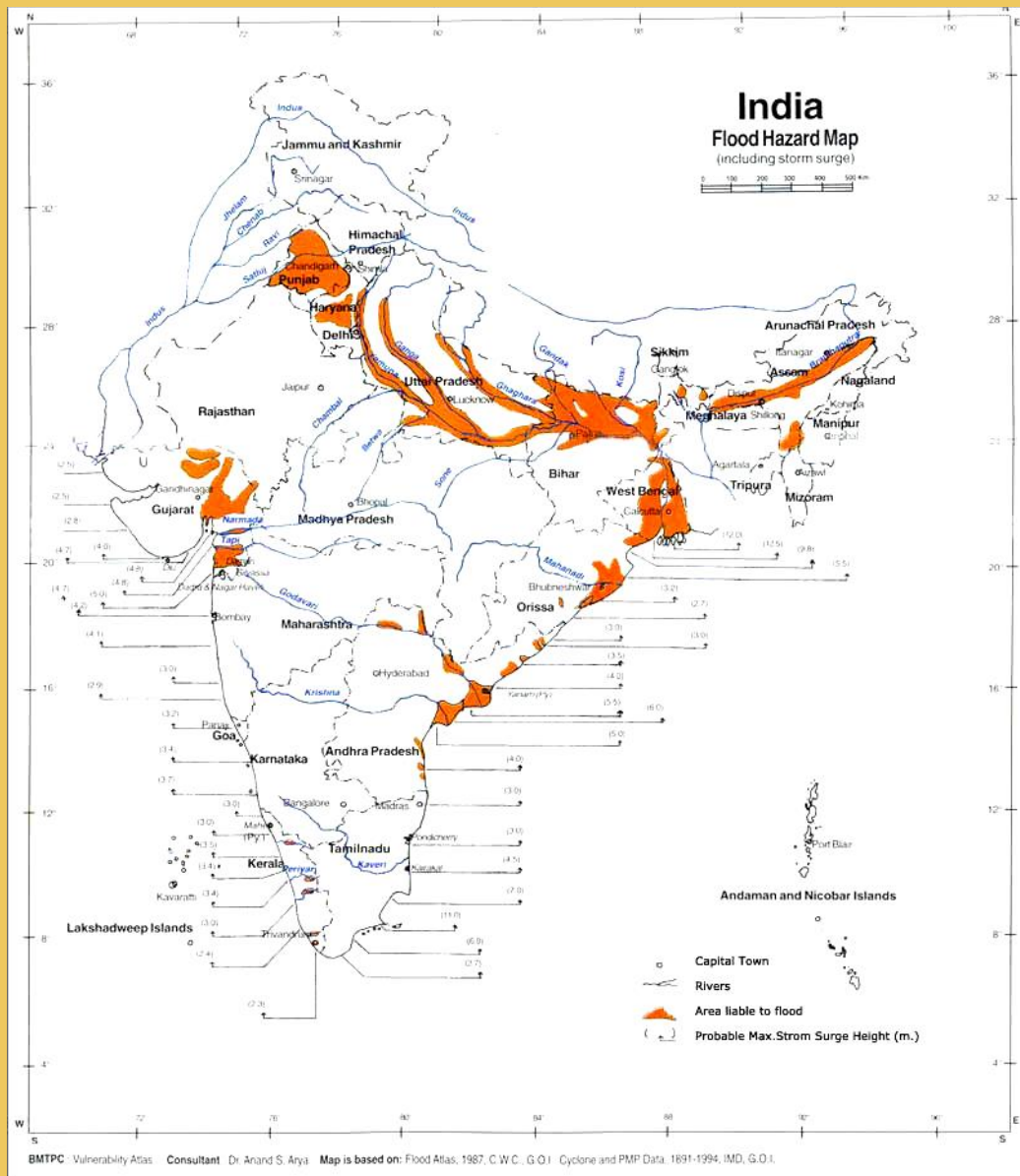
## Seismic Zone Map of India: -2002

About 99 percent of the  
land area of India is  
liable to seismic hazard  
damage

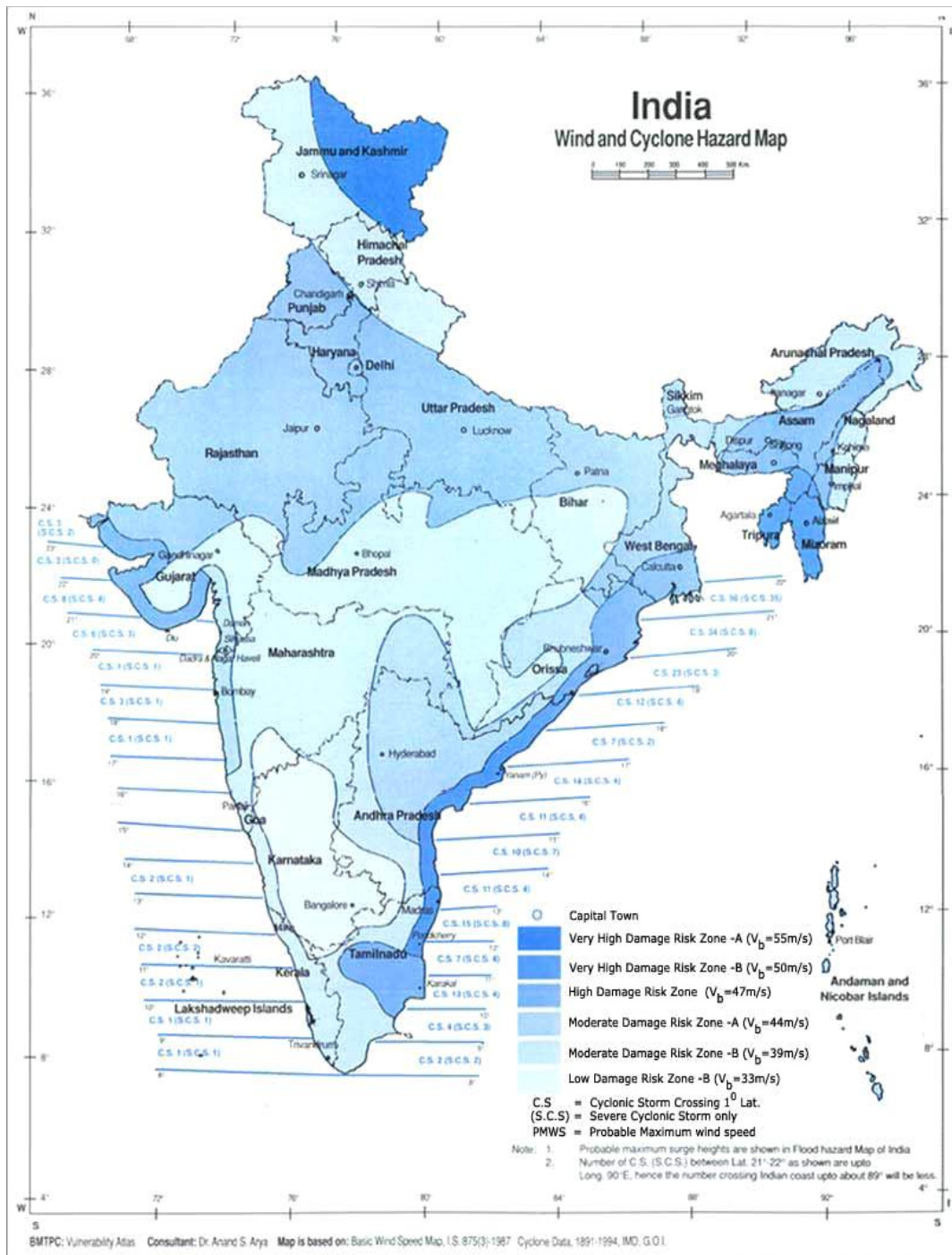
Source  
IS: 1893:2002

Figure - B









Flood is considered as a common natural hazard that recurs almost every year in many parts of India and more than once in certain parts of the country. The heavy southwest monsoon rains cause flooding in north, north eastern and southern parts of India. Flash floods resulting from extreme precipitation have become increasingly common in central India over the past several decades, coinciding with rising temperatures. On July 26,

2005 Mumbai has experienced a major flood, in which a record rainfall of 1011 mm occurred at the Vihar Lake area. This has exceeded the record of one day rainfall of 985 mm at Chirrapunjee in Meghalaya.

On the other hand, the variation of rainfall distribution also causes drought conditions in many parts of the country, particularly Gujarat, Rajasthan, southern and eastern Maharashtra, northern Karnataka, Andhra Pradesh, and Orissa. In the past, droughts have led to regular famines in India, including the Bengal famine of 1770, in which up to one third of the affected population died; the 1876–1877 famine, which led to the death of about five million people; the 1899 famine, with over 4.5 million fatalities; and the Bengal famine of 1943, with over five million starvation death and famine-related illnesses.

The oscillatory movement of Inter Tropical Convergence Zone in peninsular India, Bay of Bengal and Arabian Sea lead to cyclonic situations. Cyclones bring with them strong winds, heavy rains and storm surges that often affect life, livelihood and assets in the coastal areas. On an average, a major (Category 3 or higher) cyclone develops every other year. The 'Super Cyclone' that struck Orissa on 29 October 1999, was the worst in terms of damage and loss of life in the last 25 years.

The tsunami resulted from the 2004 Indian Ocean earthquake struck the Andaman and Nicobar Islands and east coast of India causing an estimated 10,000 deaths. Until then it was believed that India has negligible threat from tsunamis, though there are historical anecdotal evidences of tsunami occurrence in the past.

India has two active volcanoes: the Barren Island volcano which last erupted in May 2005 and the Baratang in Andaman Sea in 2005. The Narcondam volcano in Andaman Sea is considered as dormant volcano. No deaths or economic losses have been reported till now due to eruption of volcanoes in India.

## **2.2 Hazard Profile**

India is prone to multiple hazards due geo-climatic conditions, topographic features and environmental degradation. As per the hazard-proneness, the five distinctive geographic regions of the country are: (a) Himalayan region, (b) the Alluvial plains, (c) desert region (d) Coastal region and (e) Peninsular region. The region wise hazard distribution is as under:

- (a) The Himalayan region is prone to disasters like earthquakes and landslides. The plain is affected by floods almost every year. The desert part of the country is

affected by droughts and famine while the coastal zone is susceptible to cyclones and storms.

- (b) The Alluvial plains adjacent to the Himalayan region is susceptible to earthquakes, landslides, water erosion etc. The tectonic features, characteristics of the Himalayas are prevalent in the alluvial plains of Indus, Ganga and Brahmaputra too, as the rocks lying below the alluvial plains are just extension of the Himalayan ranges only. Thus this region, particularly plains of Uttar Pradesh, Bihar and the entire Brahmaputra valley of Assam and adjacent areas of North East are quite prone to seismic activities. Additionally, the major river systems flowing from Himalayas are also suffering from soil erosion, river channel siltation, resulting into frequent floods in these regions.
- (c) In the coastal region disturbance in the pressure conditions over oceans, results into cyclones and monsoon flood in coastal regions. The geo-tectonic movements going on in the ocean floor also makes the coastal region prone to tsunami disaster too.
- (d) The western part of the country, including Rajasthan, Gujarat and some parts of Maharashtra are hit very frequently by drought situation.
- (e) The peninsular India is considered to be the most stable portions, occasional earthquakes in the region show that geo- tectonic movements are still going on within its depth.

The extreme weather conditions, huge quantity of ice and snow stored in the glaciers etc. are other natural factors which make the country prone to various forms of disasters. Along with the natural factors discussed in the preceding text, various human induced activities like increasing demographic pressure, deteriorating environmental conditions, deforestation, unplanned development, faulty agricultural practices and grazing, unplanned urbanization, construction of large dams on river channels etc. are also responsible for accelerated impact and increase in frequency of disasters in the country.

### **2.3 Vulnerability Profile**

India has been vulnerable, in varying degrees on account of its unique geo-climatic and socio-economic conditions. Population growth, urbanization, industrialization, unplanned development practices etc expose the population to floods, droughts, cyclones, earthquakes, landslides, avalanches and forest fires. Out of 36 States and Union Territories in the country, 27 of them are disaster prone. Almost 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12 per cent of 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 per cent of the

cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches.

## 2.4 Disaster Loss Trend

Hydro meteorological disaster such as floods, cyclones and drought are of common occurrence and earthquakes, hailstorms, landslides occur suddenly causing damage based on their intensity. Table 2.4.1 presents details of the number of events related to different disaster events during 2005-2014.

**Table 2.4.1: Number of disaster events and damages in India from 2005-2014**

1	Maharashtra floods	July 2005	Maharashtra	1097 deaths 167 Injured
2	Kashmir Earthquake	2005	Jammu & Kashmir	86000 deaths (includes Kashmir & surrounding Himalayan region)
3	Kosi Floods	2008	North Bihar	527 Deaths 19323 Livestock Perished 222754 Houses damaged 3329423 person affected
4	Cyclone Nisha	2008	Tamil Nadu	204 deaths \$ 800 million worth damages
5	Flood	Sept. 2009	Bihar, Orissa, West Bengal	992 deaths 1886000 Total affected 220 US\$ million estimated damage
6	Flood	July 2010	Ambala district, Haryana	53 deaths 400000 Total affected

				447 US\$ million estimated damage
7	Flood	2011	Angul, Balasore, Bargarh districts of Odisha	239 deaths 3443989 Total affected 930 US\$ million estimated damage
8	Flood	Sept. 2012	Assam, Sikkim, Arunachal Pradesh	21 deaths 2000000 Total affected 98 US\$ million estimated damage
9	Cyclone Nilam	Nov. 2012	Andhra Pradesh, Tamil Nadu	40 deaths 70000 Total affected
10	Uttarakhand Disaster(Flood & Landslide)*	June 2013	Uttarakhand	680 deaths, Many millions people affected & 4117 people missing
11	Cyclone Phailin & Flood*	October 2013	Odisha and Andhra Pradesh	45 deaths (44 in Odisha & 01 in Andhra Pradesh) 13 million people affected
12	Malin Landslide	July 2014	Maharashtra	151 deaths

Source: NIDM (MHA, GOI) New Delhi

**Table 2.4.2– Losses due to natural disaster in India from 2005-06 to 2014- 2015**

Year	Loss of human lives	Lives of cattle Lost	Houses damages	Crops affected (in lakh hectares)
2005-06	2698	110397	2120012	35.52
2006-07	2402	455619	1934680	70.87
2007-08	3764	119218	3527041	85.13
2008-09	3405	53833	1646905	35.56
2009-10	1677	128452	1359726	47.13
2010-11	2310	48778	1338619	46.25
2011-12	1600	9126	876168	18.87
2012-13	984	24360	671761	15.34
2013-14	5845	102998	1210227	63.74
2014-15	1674	92180	725390	26.85

**Source: Ministry of Home Affairs, Government of India (Financial year ends on 31<sup>st</sup> March)**

2.4.3 This data shows that the average annual loss of human lives was 2,709 in first six years came down to 2,525 in the last four years. Similarly, the annual loss of cattle was 1,52,716 during 2005-2011 and was 57,166 during 2011-15. The average annual number of houses damaged due to natural disasters during 2005-11 was 1.98 and 0.87 million during 2011-15. The crop area affected due to natural disasters during 2006-11 was at 5.34 million hectares during and 3.1 million during 2011-15. The trend shows that there is a reduction in average annual loss of lives due to disasters between 2005-2006 and 2014-2015. Similarly, the average loss caused due to houses damaged and damage to crop area show declining trend.

## **2.4.2 Future Trends**

Climate change and rapid urban growth are the two most important factors that would contribute to the rising trend of disasters in India. Rapid increase in hydro meteorological disasters is attributed to the changing climate which is expected to further increase the frequencies as well as the intensities of flood, flash floods and cyclone. In the long run, this would reduce the net availability of surface and sub-surface water thereby increasing the incidence of droughts.

2.4.2.1 India is one among the least urbanized countries of the world with less than 30 percent of its population living in towns compared to the world average of more than 50 percent. Every analysis has projected an urban explosion in India from 285 million in 2001 to 550 million in 2021. Already India has the largest concentration of mega cities in

the world which are growing with an average rate of 4.5% per year. Much of this growth is induced by migration of poor labour force in search employment in the cities. With land prices soaring high the migrant population are settling down in dense unplanned settlements and unsafe buildings which are extremely vulnerable to disasters.

2.4.2.2 While prediction of every type of disaster over a short term period of 5-10 years may be extremely difficult, judging by the trend of the previous years and the average period of various types of disasters it can be anticipated that during the five year fiscal cycle of Thirteenth Finance Commission (2010-15) there is a very strong probability that the country may face both earthquake (last major earthquake was in 2001) and drought (last major drought took place in 2002), while the recurring phenomenon of flood, cyclone, landslide, fire, hailstorm, cloudburst, avalanche etc would continue as usual or with more frequencies and Intensities.

## **Section 3: DRM Status and Progress**

### **3.1 Understand Disaster Risk**

#### **3.1.1 National and local risk assessments**

The Disaster Management Act 2005 and the National Disaster Policy of India have clearly articulated the need of conducting hazard risk and vulnerability assessment. Several state governments are conducting such assessments. The scope of these assessments include analyzing exposure to various hazards, physical vulnerability, environmental vulnerability and socio-economic vulnerability based on which appropriate mitigation measures are formulated.

The Vulnerability Atlas prepared by BMTPC (Building Material Technology Promotion Council) provides macro scale hazard maps with risk statements of various housing types in different hazard zones. The National Flood Atlas has been prepared by Central Water Commission (CWC). The different State governments and organizations like Geological Survey of India (GSI), India Meteorological Department(IMD), National Remote Sensing Agency(NRSA), India Institute of Remote Sensing(IIRS), Indian Space Research Organization (ISRO),National Spatial Data Infrastructure (NSDI), National Agricultural Drought Assessment and Monitoring System (NADAMAS) are also generating database for disasters. Based on these available risks information, Disaster Management Plans are being prepared at state, district and local levels.

The two major Mitigation Projects (Cyclone Risk Mitigation Project and Disaster management support program of ISRO) undertaken for implementation by Government of India also provide scope to conduct in-depth risk analysis for disasters.

Geological Survey of India (GSI) has been designated as a nodal agency for conducting landslide risk analysis and state specific studies are already carried out by GSI. Seismic Micro-zonation study has also been carried out in select earthquake prone cities with support from Ministry of Earth Sciences.

The central government is also contemplating a multi hazard probabilistic risk assessment in selected states. In addition to this, a number of states (e.g. Gujarat, Himachal Pradesh) have already completed disaster risk assessments or are at an advanced stage of completing a disaster risk assessment. Further, a number of cities namely Shimla, Bhubaneswar, Vijayawada, Navi Mumbai, Gangtok, Madurai, Thruvananthapuram, Vishakhapatnam are undertaking disaster risk assessments.

However, limited understanding of the disaster and development realm exists, interdependencies across key sectors and socio-economic vulnerabilities arising out of



hazard risks. There is a need to further enhance the capacity of policy makers and development planners to formulate appropriate mitigation measures based on such assessment.

### **3.1.2 Collection, analysis, management and use of disaggregated data and information**

Nodal agencies have been identified for collection, analysis and management of data on various hazards. India Meteorological Department is the nodal agency for Cyclone, Earthquakes and Rainfall, strong wind and storm surge, Central Water Commission for floods, Geological Survey of India for landslide, Indian National Centre for Oceanic Information (INCOIS) for tsunami, Ministry of Agriculture for drought related information and Defence Research and Development Organisation (DRDO), Ministry of Defense for Avalanche information. Additionally, India acts as a Regional Specialized Meteorological Centre for monitoring, prediction and early warning of cyclone over North Indian Ocean as designated by World Meteorological Organisation (WMO). It provides advisories to the WMO/ESCAP panel member countries.

### **3.1.3 Develop, update periodically and disseminate location-based disaster risk information**

The National Policy on Disaster Management Policy, 2009 articulates the need to create a network of knowledge institutions in the field of DM to share their experiences and knowledge. Hazard Specific Mitigation Guidelines have been formulated, circulated and made available through website of National Disaster Management Authority (NDMA) <http://www.ndma.gov.in/en/> for easy access. India Disaster Knowledge Network is functioning for knowledge sharing and development among various stakeholders. State specific web portal are being developed by the State Disaster Management Authorities for information sharing and knowledge Management.

National Spatial Data Infrastructure, Indian National Centre for Oceanic Information Services (INCOIS), Indian Institute of Remote Sensing (IIRS), National Remote Sensing Centre (NRSC) and Indian Space Research Organization (ISRO) are other such organizations which provide spatial information on various hazards and disasters. The National Authority has constituted a committee to work out a detailed action plan on data sharing, coordination and issuing alerts and forecasts.

### **3.1.4 Regional/trans-boundary risks**

South Asia Region (SAR) nations have a history of devastating earthquakes, floods, landslides, droughts and cyclones that have caused economic and human losses. Due

to geographical characteristics, some of the natural hazards are such as earthquake, flood etc are trans-boundary in nature. Sometimes, hazard occurrence in one country has more impact on the neighboring country. Another characteristic of this region is that some of the countries like Bhutan and Nepal are mountainous and in the event of any major disaster can only be accessed through its neighboring country, India. Like any other part of the world, in SAR also natural hazards hurt the poor the most, both in terms of life and livelihood. This necessitates regional cooperation for disaster risk reduction planning.

### **Regional Initiatives to address Trans-Boundary Risks**

The country hosts the SAARC Disaster Management Centre which aims to put in place a regional disaster management system to reduce disaster risks. The Disaster Management Framework developed by SDMC tries to address the emerging disaster risks in the region through certain appropriate strategies like strengthening of Early Warning System, Regional Risk Assessment, Sharing of knowledge and information and Training and Capacity Building. SDMC is also promoting sharing of Knowledge and information among the SAARC countries and has set up the SAARC Disaster Knowledge Network.

National Working Group on SAARC Monsoon Initiative Programme has been constituted with representatives from the South Asian Association for Regional Cooperation (SAARC) Disaster Management Centre and Department of Agriculture & cooperation. The objective of the programme is for placing an Integrated Operational System (IOS) for monitoring and forecasting monsoon weather systems so that monsoon induced hydro meteorological disasters can be addressed effectively. The focus was on weather forecasting and warning services of summer monsoon for the benefit of the general public and socio-economic sectors, in particular agriculture and disaster management of the region.

INCOIS, the Tsunami Early Warning System, in fact, is a State-of-the-Art warning system and benefits not only India but also the littoral countries of Indian Ocean. India acts as a Regional Specialized Meteorological Centre for Monitoring, prediction and early warning of cyclone over North Indian Ocean as designated by WMO. It provides advisories to the WMO/ESCAP panel member countries.

A Crop Weather Watch Group (CWWG) meets regularly to monitor the parameters of rainfall situation, water availability in reservoirs, progress of showing crops, incidents of pest attacks and crop diseases, price movements of agricultural commodities etc. Similarly Mahalanobis National Crop Forecast Centre (MNCFC) of Department Agriculture & cooperation, Ministry of Agriculture under National Agricultural Drought Assessment and Monitoring Systems (NADAMS) project is carrying out monthly

assessment of agricultural drought and crop conditions in 13 agriculturally important states of the country.

However, there is a need to strengthen the inter-country coordination and cooperation mechanism to strengthen the establishing and maintaining regional hazard monitoring

### **3.2 Strengthen disaster risk governance to manage disaster risk**

#### **3.2.1 Legislative and Regulatory Framework prior to Promulgation of Disaster Management Act, 2005**

Although India did not have a comprehensive disaster management law for the country until 2005, and there was no such law even at the state level before the Gujarat Act of 2003, these were preceded by some legislations addressing specific aspects in a limited way. Such laws were enacted even after 2005 to address specific issues and challenges.

Triggered by the experience of the 1984 Bhopal gas disaster, the Environment (Protection) Act, 1986, was passed to ensure that developmental and industrial activities did not damage the environment or cause pollution. The Act prohibits a person operating an industry, operation or process from discharging or emitting any environmental pollutants in excess of the standards prescribed for this purposes. The Hazardous Wastes (Management and Handling) Rules, 1989, and the Hazardous Chemical Rules, 1989, were framed under the Act. However, it was only in 1996 that the Ministry of Environment and Forests published the rules on “Emergency Planning, Preparedness, and Response for Chemical Accidents”.

The Public Liability Insurance Act, 1991, makes it the responsibility of the owner of a unit producing hazardous substance as defined in the Environment (Protection) Act, 1986, to provide immediate relief where death or injury to any person or damage to any property results from any accident to the extent indicated in the Schedule to the Act. The owner is required to have one or two insurance policies so that the liability for providing relief is covered by the policy.

There are other Acts and rules addressing disaster mitigation related issues which are listed as under:

#### **Acts**

- The Indian Forest Act, 1927
- The Factories Act, 1948
- Civil Defence Act, 1968
- Water (Prevention and Control of Pollution ) Act, 1974

- Forest (Conservation) Act, 1980
- Air (Prevention and Control of Pollution) Act, 1981
- Environment (Protection) Act, 1986
- Factories Amendment Act, 1987
- The Public Liability Insurance Act, 1991
- The Biological Diversity Act, 2002
- Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
- Mines and Minerals (Development and Regulation) Act, 2010
- The National Green Tribunal Act, 2010

### **Rules**

- Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro-Organisms, Genetically Engineered Organisms or Cells, 1989.
- The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
- Dumping and disposal of fly ash discharged from coal or lignite based thermal power plants on land Rules, 1999
- Bio-medical Waste (Management and Handling) Rules, 1998
- The Hazardous Wastes (Management and Handling) Rules, 1989
- The Municipal Solid Waste (Management and Handling) Rules, 2000
- Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008
- Wetlands (Conservation and Management) Rules, 2010

### **3.2.2 Institutional and Legal framework for disaster management (including e.g. coordination mechanisms, responsibilities and authorities of sub-national governments, roles and task of community representatives)**

The Government has brought about a change in the approach to disaster management. The change is from a relief-centric to a holistic and integrated approach covering the entire gamut of disaster management encompassing prevention, mitigation, preparedness, response, relief, reconstruction and rehabilitation. The approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built in the developmental processes.

**Institutional Framework:** An institutional and legal framework has been developed with the promulgation of the Disaster Management Act, 2005. In pursuance of the Disaster Management Act, 2005, the National Policy on Disaster Management (NPDM) 2009 has

been issued. It aims to build a safe and disaster resilient India by developing a holistic, proactive, multi-disaster oriented and technology driven strategy through a culture of prevention, mitigation, preparedness and response.

The Disaster Management Act 2005 provides for the effective management of disaster and for matters connected therewith or incidental thereto. It provides institutional mechanisms for drawing up and monitoring the implementation of the disaster management. The Act also ensures measures by the various wings of the Government for prevention and mitigation of disasters and prompts response to any disaster situation.

The Act provides for setting up of a National Disaster Management Authority (NDMA) under the Chairmanship of the Prime Minister, State Disaster Management Authorities (SDMAs) under the Chairmanship of the Chief Ministers, District Disaster Management Authorities (DDMAs) under the Chairmanship of Collectors/District Magistrates/Deputy Commissioners. The Act further provides for the constitution of different Executive Committee at national and state levels. Under its aegis, the National Institute of Disaster Management (NIDM) for capacity building and National Disaster Response Force (NDRF) for response purpose have been set up. It also mandates the concerned Ministries and Departments to draw up their own plans in accordance with the National Plan. The Act further contains the provisions for financial mechanisms such as creation of funds for response, National Disaster Mitigation Fund and similar funds at the state and district levels for the purpose of disaster management. The Act also provides specific roles to local bodies in disaster management.

Further the enactment of 73rd and 74th Amendments to the constitution and emergence of local self- government, both rural and urban, as important tiers of governance, the role of local authorities becomes very important. The DM Act, 2005 also envisages specific roles to be played by the local bodies in disaster management.

The Disaster Management Policy 2009 covers all aspects of disaster management including institutional and legal arrangements; financial arrangements; disaster prevention, mitigation and preparedness; techno-legal regime; response; relief and rehabilitation; reconstruction and recovery; capacity development; knowledge management; and research and development. It not only focuses on the areas where action is needed and the institutional mechanism through which such action can be channelized but also addresses the concerns of all sections of society and calls for involvement of community, community based organizations, Panchayati Raj Institutions (PRIs), local bodies and civil society.

*National Plan on Disaster Management:* The National Disaster Management Plan containing national response plan, national mitigation plan and national capacity building plan has been considered and recommended by the National Executive Committee (NEC) on 21<sup>st</sup> October, 2013 for approval by National Disaster Management Authority.

### **Institutional Framework**

**Role of Central/State Government in Disaster Management:** Ministry of Home Affairs, after the transfer of the subject from Ministry of Agriculture in 2002, is the nodal Ministry for management of natural disasters except drought, hailstorm and pest attack which continue to be handled by the Ministry of Agriculture. The basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of a disaster rests with the State Government, concerned. The Central Government supplements the efforts of the State Governments by providing logistic and financial support in case of severe natural calamities. The logistic support includes deployment of aircrafts and boats, specialist teams of Armed Forces, Central Para-military Forces and personnel of National Disaster Response Force (NDRF), arrangements for relief materials & essential commodities including medical stores, restoration of critical infrastructure facilities including communication network and such other assistance as may be required by the affected States to meet the situation effectively.

**National Disaster Management Authority (NDMA):** The NDMA, initially created under an administrative order, was notified in 2006 under the Disaster Management Act. The Prime Minister is the Chairperson of this Authority. The Authority is responsible for laying down policies, plans and guidelines on Disaster Management. NDMA, under section 6(2) of the Act, is mandated to- lay down policies on disaster management; approve the National Plan; approve plans prepared by the Ministries or Departments of the Government of India; lay down guidelines to be followed by the Ministries/ Depts., State authorities in drawing up the State Plan, coordinate the implementation of the policy and plan for disaster management including preparedness and capacity building.

**State Disaster Management Authorities (SDMAs):** State Disaster Management Authorities have been set up for disaster management in states and are in the process of becoming operational. 33 States/UTs have constituted SDMAs as per the provisions of the Act and Gujarat and Daman & Diu have established SDMAs prior to enactment of DM Act, 2005.

**District Disaster Management Authorities (DDMAs):** District Disaster Management Authorities have been set up as planning, coordinating and implementing bodies for disaster management and to take all measures in the district in accordance with the

guidelines laid down by the National and State Authorities. DDMA's have also been constituted in 32 States/UTs as per provisions of the DM Act, 2005 (except the States/UTs of Tamil Nadu, Gujarat and Daman & Diu).

**National Executive Committee (NEC):** A National Executive Committee is constituted under Section 8 of DM Act, 2005 with Home Secretary as its Chairperson, *ex-officio* and Secretaries of different Ministries concerned including the Chief of Integrated Defence Staff of the Chiefs of Staff Committee as *ex-officio* Members. It is to act as coordinating and monitoring body for disaster management. It is mandated to prepare the National Plan, coordinate and monitor the National Plan, National Policy, guidelines, mitigation and preparedness measures, response etc.

**State Executive Committee (SEC):** DM Act, 2005 envisages establishment of State Executive Committee under Section 20 of the Act, to be headed by the Chief Secretary of the State government with four other Secretaries. It has the responsibility for coordinating and monitoring the implementation of the National Policy, the National Plan and the State Plan as provided under Section 22 of the Act.

**National Disaster Response Force (NDRF):** The National Disaster Response Force has been constituted for the purpose of specialist response to a threatening disaster situation or disaster. It has 10 battalions drawn from BSF, ITBP, CISF and CRPF and these are located at Guwahati, Kolkata, Mundali, Arakkonam, Pune, Gandhinagar, Bhatinda/Ludhiana, Ghaziabad, Patna and Vijayawada. The general superintendence, direction and control of the NDRF is vested with and exercised by NDMA and the command and supervision of the force is vested with the Director General Civil Defence and National Disaster Response Force.

**State Disaster Response Forces (SDRF):** The States/UTs have also been advised to set up their own Specialist Response Force for responding to disasters on the lines of National Disaster Response Force vide Ministry of Home Affairs letter dated 26.7.2007 and 8.3.2011. As per available information State Government of Arunachal Pradesh, Nagaland, Tripura, Mizoram, Jammu & Kashmir, Bihar, Tamil Nadu, Odisha, Assam, Andhra Pradesh, Maharashtra, Gujarat, Kerala, Rajasthan have constituted their Disaster Response Force.

**National Institute of Disaster Management (NIDM):** The National Institute of Disaster Management came into existence in October, 2003 and subsequently achieved a statutory status under Section 42 of the DM Act, 2005. It also has a 14 member Governing Body with Vice- Chairperson of NDMA as its Chairperson. NIDM is headed by an Executive Director. It is entrusted with the responsibility of developing training modules; to undertake research and documentation in disaster management; organize

training programmes, conferences and seminars etc. and provide for publication of journals, research papers and books. NIDM conducts both in-campus and off campus training programmes.

Gujarat has got a dedicated Gujarat Institute of Disaster Management. Rest of the States has constituted Disaster Management Cells with dedicated faculties for training and capacity building of officials and other stakeholders.

**Civil Defence:** Civil Defence includes any measure not amounting to actual combat, for affording protection to any person, property, place or thing in India or any part of the territory thereof against any hostile attack whether from air, land, sea or other places or for depriving/mitigating the effect of any such attack: whether such measures are taken before, during or after the time of such attack. Civil Defence Act was enacted in 1968 and is in force throughout the country. The Act has since 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.

**Civil Defence Set up in the country:** Directorate General of Civil Defence 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. The DG, NDRF & CD heads the organisation.

In the states, Director of Civil Defence is appointed to head the CD organisation and he may also constitute, for any area within the state, a body of a person to be called the Civil Defence Corps. As on date, 225 towns from 35 states have been notified as CD towns. 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 on different aspects of disaster management.

**National Civil Defence College (NCDC), Nagpur:** The National Civil Defence College (NCDC) at Nagpur is one of the main centres for disaster relief and management training and a nodal centre for radiological, nuclear, biological and chemical emergency response. The College has been upgraded to an Institute of Excellence at national level in order to train a professional cadre of trainers for disaster response & recovery management.

**Fire Services:** Presently fire prevention and fire-fighting services are organized by the States and Union Territories through Urban Local Bodies. The Ministry of Home Affairs,



Govt. of India, renders technical advice to the States and UTs on Fire Protection, Fire Prevention and Fire Legislation.

**National Fire Service College, Nagpur:** The National Fire Service College (NFSC) at Nagpur is a national level institution mandated to train the personnel of state fire services/brigades in all spheres of fire engineering.

**Home Guard:** The role of Home Guards is to serve as an auxiliary to the police in the maintenance of law and order, internal security and help the community in any kind of emergency such as air-raid, fire, cyclone, earthquake, epidemic etc. They are also expected to help the police in maintenance of communal harmony, assist the administration in protecting weaker sections, participate in socio-economic and welfare activities and perform Civil Defence duties.

### **3.2.3 Policy environment and list of key policies related to DRR**

The National Disaster Management Authority, under the Disaster Management Act 2005, has been mandated with the responsibility for laying down the policies, plans and guidelines for disaster management to ensure timely and effective response to disasters. It is further required to approve the plans prepared by the ministries or departments of the Government of India in accordance with the national plans. The guidelines laid down by the National Authority have to be followed by State Authorities in drawing up their State Plans and the same is applicable to different ministries and 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.

The National Institute of Disaster Management (NIDM) has to follow the broad policies and guidelines set by the NDMA. The National Executive Committee, under the Act has to prepare the National Plan, coordinate and monitor the implementation of the National Policy.

Similarly, the State Authority viz., State Disaster Management Authority, of each state has been given the responsibility for laying down policies and plans for disaster management for their state, under the Act.

### **National Policy on Disaster Management**

The National Policy on Disaster Management (NPDM) 2009 covers all aspects of disaster management including institutional and legal arrangements, financial arrangements, disaster prevention, mitigation and preparedness, techno-legal regime, response, relief and rehabilitation, reconstruction and recovery, capacity development, knowledge management, research and development. It focuses on the areas where action is needed and the institutional mechanism through which such action can be channelised.

The NPDM addresses the concerns of all the sections of the society including differently abled persons, women, children and other disadvantaged groups in terms of granting relief and formulating measures for rehabilitation of the persons affected by disasters. The issue of equity and inclusiveness has been accorded due consideration. It aims to bring in transparency and accountability in all aspects of disaster management through involvement of community, community based organisations, Panchayati Raj Institutions (PRIs), local bodies and civil society.

NDMA is engaged in the formulation of guidelines through a consultative process involving multiple stakeholders, including the government, non-government organisations, academic and scientific institutions, the corporate sector and community. Since its inception, NDMA has so far released various disaster specific and thematic guidelines. These may be visited at the site [www.ndma.gov.in](http://www.ndma.gov.in).

### **3.3 Invest in DRR for resilience**

#### **3.3.1 National, local and sectoral budget allocation for DRR**

The Ministry of Finance issued Guidelines in 2009, advising all Ministries / Departments of the central government to ensure that the revised formats for submission of Detailed Project Reports (DPRs), Memoranda for Expenditure Finance Committee (EFC) for plan schemes, proposals to be submitted to Committee on Non-Plan Expenditure (CNE) for Non-Plan schemes and the Standing Finance Committee (SFC) address disaster management concerns. The guidelines also directed that if the project involves creation or modification of structural/ engineering assets including land reclamation or changes to existing land use plans, the cost involved in prevention/ mitigation of disaster(s), natural and man-made, would need to be included fully in the project cost.

The 13th Finance Commission (Finance Commission is a constitutional body that recommends sharing of central taxes, principally governing grant-in-aid to states and transfer of resources to local bodies) has earmarked dedicated funds for capacity building on Disaster Response (US\$ 88 million) for a period of five years (2010-2015)

and for strengthening of Fire Services(US\$ 80 million) to seven states. In addition, funds for State Disaster Response Funds have also been earmarked (US \$5.6 billion)

There are a number of Projects like Revamping of Civil Defense (US\$50 million), National Cyclone Risk Mitigation Project (US\$300 million), Strengthening of Fire Services (US\$150 million), National School Safety Program (US\$ 8 million), Upgradation of National Fire Service College Nagpur (US\$ 31 million), Disaster Management Support program (ISRO), National Emergency Communication Plan for NDRF (US\$14 million) for which dedicated funding have been provided.

Every Ministry at the National level as well as the State Governments across the country is engaged in mainstreaming disaster risk reduction elements in their overall development plans.

Ministry of Water Resources has launched the Flood Management Programme (US\$1.6 billion) for assisting state governments in river management, flood control, anti-erosion, drainage development, flood proofing works, anti-sea erosion and restoration of damaged flood management works along with infrastructure development for more precious flood forecasting through Central Water Commission (CWC) under the ministry.

The GOI-UNDP Programme (2013-2017), “Enhancing Institutional and Community Resilience against Disasters and Climate Change” is currently under implementation for mainstreaming DRR and CCA in development planning, urban risk reduction, capacity building, knowledge management and enhancing resilience of vulnerable communities to cope with disasters and climate variability by implementing scalable demonstrative pilot initiatives as components (US \$ 6.5 million).

The Government has recently approved upto 10 % flexi-funds in all centrally funded schemes, which would be used for innovation and disaster mitigation/restoration. For the Financial Year 2014-2015, the 10% funds i.e., US\$5.6 billion is potentially available to the states for DRR purpose.

### **3.3.2 Disaster risk transfer and insurance, risk sharing and retention and financial protection mechanisms.**

Government of India has adopted a holistic approach for ensuring sustainable development of the nation and a number of social development policies have been formulated and programs are being implemented to address the vulnerable groups in the society. Some of the major development programs are MNREGS (Mahatma Gandhi National Rural Employment Guarantee Schemes), JNNURM (Jawaharlal Nehru Urban Renewal Mission), National Rural Health Mission, Swarna Jayanti Shahari Rojgar Yojana, National Social Assistance Program (Indira Gandhi National Old Age Pension

Scheme, Indira Gandhi National Widow Pension Scheme, Indira Gandhi National Disability Pension Scheme, National Family Benefit Scheme), Indira Awas Yojana, and Rajiv Awas Yojana.

MGNREGS has already shown its potential to transform the rural areas into disaster resilient villages and habitations through construction of water conservation and water harvesting structures, drought proofing including afforestation and tree plantation, flood control and protection, debris clearance and so on.

Under Watershed Management Programme (IWMP) and Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) several in situ and ex situ water conservation technologies are being up-scaled through the integrated. The demonstration of best practices will be later upscaled in 131 districts in the XII Five Year Plan. These practices cover four areas i.e., natural resource management, crop production, livestock and fisheries and institutional interventions.

National Crop Insurance Programme (NCIP) has been formulated by the Department of Agriculture & Cooperation by merging Modified National Agricultural Insurance Scheme (MNAIS) and Count Palm Insurance Scheme (CPIS) to provide appropriate insurance protection to farmers against natural hazards.

Government of India has constituted a Task Force on Risk Transfer Mechanism led by the Joint Secretary (Disaster Management), Ministry of Home Affairs. As per the recommendation made by the Task Force, Government is working with the Insurance Regulatory Authority of India to develop appropriate insurance products starting with insurance of vital installations such as ports, airports, power stations etc, raising awareness and advocacy for risk insurance among different ministries and State Government and community at large.

### **Context & Constraints:**

The burgeoning population affects the mission of Government of India to ensure sustainable development. However efforts are being continuously made to reduce socio-economic vulnerabilities through adequate poverty reduction and livelihood generation programs.

### **3.3.3 Incentive and regulatory frameworks for resilient public and private investments i.e. the use of the principles of universal design and the standardization of building materials, etc.**

For ensuring structural safety from natural hazards the National Building Code provides guidelines and lays down a set of minimum provisions relating to structural safety, fire safety and health safety to ensure safe habitat for public. In addition, there are hazard

specific codes designed by Bureau of Indian Standard to ensure structural safety against natural hazards like floods, Cyclone, Landslides and Earthquakes. BMTPC has issued useful guidelines for flood, wind and cyclone resistance housing.

New Companies Act 2013 mandated that profitable companies must spend every year at least 2 per cent of their average net profit over the preceding three years on Corporate Social Responsibility works (including disaster preparedness and mitigation).

The Reserve Bank of India has issued guidelines on ensuring disaster resilient construction of buildings and infrastructure financed through banks and other lending institutions.

### **3.3.4 Policies, plans and investments to reduce risk in key development sectors**

Government of India has considerable political commitment to issues of integrating disaster risk reduction measures in development planning. Strong references to these issues animate in the Tenth, Eleventh and Twelfth Five year Plan documents. **73<sup>rd</sup> and 74<sup>th</sup> constitutional amendments** devolved financial and administrative powers to institutions of local self-governance, which ensure disaster vulnerability reduction through poverty reduction and social empowerment. There is a noticeable commitment at the policy level for reducing vulnerabilities through different development programmes aimed at the poorer sections of society. Government of India initiatives to increase public facilities, use clean fuel in mass transportation system to reduce carbon footprint, improve infrastructure, undertake research relating to agriculture and food production in a context of adverse impacts of climate change, efforts to increase forest cover and promote green buildings, all of which do address the issues of DRR/CCA.

- a. Policies and plans existing in the concerned sectors that promote risk sensitivity and risk reduction measures

Central Ministries/Departments are required to prepare disaster management plans under Section 37 of the Disaster Management Act 2005. Sector-wise interventions by the Central Ministries/Departments have demonstrated their commitments and risk sensitivity in decision making are reflected as under:

- (i) The Ministry of Finance has introduced the Disaster Resilient Audit on Self Certification Basis which will be applicable right from the inception and the Planning stage of all new centrally sponsored schemes. The Ministry has issued instructions to all Ministries to include disaster risk reduction features into all new projects and establish a check mechanism at project formulation, appraisal and approval stage. It is also planned to selectively revisit some of the old development schemes.

- (ii) Ministry of Agriculture have observed a significant need to address disaster risk arising from climate change as a matter of concern;
- (iii) The Ministry of Rural Development has also made special provisions for communities affected by disasters such as increasing the number of days of work under MGNREGA and providing financial support under Indira Awas Yojana (IAY) for reconstruction of houses;
- (iv) The Ministry of Roads and Highways has well -accepted quality benchmark fixed by the Bureau of Indian Standards (BIS) in infrastructure building;
- (v) The BIS benchmarks are also followed by the Central Public Works Department (CPWD) in the infrastructure building projects. BIS codes are periodically review and updated. These departments as well as programs such JNNURUM go by standard practices related to Environment Impact Assessment and rehabilitation of displaced populations wherever required;
- (vi) The Ministry of Human Resource Development (MoHRD), which provides for the repair of dilapidated schools under Sarva Shiksha Abhiyan, has a policy that construction of SSA schools should be undertaken by the community rather than by contractors, and it emphasis the need to involve the community in school development planning; similarly, the Rasthriya Madhyamik Shiksha Abhiyan (RMSA), another flagship programme of MoHRD, promoting secondary school education addresses various disaster risks through its environment Management Framework.
- (vii) The Ministry of Finance has made a provision for 10 percent of the Centrally Sponsored Schemes (CSS) funds to be converted into a flexi fund in order to introduce plot innovations, improve efficiency in meeting overall objective and undertake mitigation/restoration activities in line with the activity of the respective CSS in case of a natural calamity.

- b. Sectors promoting investment or allocate resources to effectively take the risk reduction measures.

There is no separate sector specific allocation of budget for DRR. Nonetheless, the sectors have got in-built provisions to address some of the risk and vulnerability. Besides, the 10 percent flexi-fund is meant for disaster mitigation, restoration and innovation, which the sectors could utilize for undertaking various risk reduction measures.

- c. Sectoral awareness of DRR awareness (based on evidence in the policy and plans)

The sectors, though aware and do capture some elements some elements to assess and mitigate disaster risks, they do not comprehensively study, assess and respond to issues relating to existing disaster risks.

- d. Entry points to bring risk sensitivity and disaster risk reduction in the concerned sector, challenges and constraints

In order to improve the disaster risk awareness and risk sensitive planning the entry point activities are listed as under:

- (i) Risk identification and awareness among public through Information. Education and communication activities.
- (ii) Include DRR mainstreaming and Climate Change Adaptation as one of the objectives of sectoral development plans including the Centrally Sponsored Schemes.
- (iii) DRR and CCA experts should provide inputs at the design stage and at the stage of updating project guidelines and frameworks as well as during appraisals, reviews and monitoring
- (iv) Include a chapter on DRR and CCA mainstreaming in State and District Disaster Management Plans for programmes funded by the Central Government, State governments as well as those started under the Public-Private Partnership model
- (v) Inclusion of DRR in higher education curriculum
- (vi) Design a generic training module introducing concepts of DRR and CCA and their mainstreaming to train field level PRI functionaries/volunteers, of all flagship programmes
- (vii) Identify and train suitable NGOs at the state and district levels for curriculum development and translation of manuals in different languages, training, project design, social audit, review and monitoring
- (viii) Initiate a scoping study to establish a shared services unit for DRR and CCA mainstreaming at all levels; widely disseminate lessons and good practices
- (ix) Identify specific changes/additions in the guidelines and actions of earmarked CSS programmes to promote DRR and CCA mainstreaming
- (x) Identify low cost, green building models suitable for disaster-prone areas and popularize them using flexi-funds
- (xi) All flood zone areas should initiate a programme to increase the bore well pump heights to ensure that they remain operational during flood
- (xii) There should be a standardized management mechanism for emergency shelters and commitment of funds to manage them in normal times and during emergency response
- (xiii) An acceptable trigger mechanism

**Risk Sensitive Planning** : There is an increasing emphasis on Land Use Planning to incorporate hazard safety measures at the settlement planning level in Master Plans and City Development Plans.

For ensuring structural safety from natural hazards the National Building Code provides guidelines and lays down a set of minimum provisions relating to structural safety, fire safety and health safety to ensure safe habitat for public. In addition, there are hazard specific codes designed by Bureau of Indian Standard to ensure structural safety against natural hazards like floods, Cyclone, Landslides and Earthquakes.

Ministry of Home Affairs has also developed a Model guidelines providing necessary recommendations for amendments of Zoning Regulations, Development Control Regulations, Town and Country Planning Act and building byelaws to ensure structural safety natural hazard prone areas. The selected ministries have been requested to mainstream DRR in their development programs.

Many State governments have revised their land use zoning regulations and amended their byelaws to incorporate disaster risk reduction elements and developed compliance mechanism to ensure implementation of the building codes. BMTPC has issued useful guidelines for flood, wind and cyclone resistance housing.

#### **Context & Constraints:**

The implementation of the provisions prescribed in the building codes and compliance to the building byelaws is an area of concern. We have regulations to control unplanned development in urban areas, what is lacking is the enforcement of such regulations. Further, lack of technical man power, lack of capacity of the local self governments, lack of political will at the local level are the some of the reasons behind non-compliance of building regulations. Also despite creating an enabling environment there is an apprehension among people that adding disaster resilient features into the structural design may be costly and not much effective.

### **3.3.4 Enhance disaster preparedness for effective response and to “Build Back Better”**

#### **3.4.1 Disaster preparedness and contingency policies, plans, relief funds and capacity preparedness and response**

National Disaster Management Plan comprising of response, mitigation, and human resource aspects have been prepared in consultation with the line ministries/departments.

At the National Level –Crisis Management Plan, National Response plan and Mitigation Plan have been prepared. Ministries of Defence, Mines (Geological Survey of India), Department of Atomic Energy, Department of Agriculture and Cooperation, Railways,



Civil Aviation and Water Resources have developed their sectoral specific mitigation plans which are under final stage of approval. Government of India has also prepared guidelines for State Disaster Management Plans and District Disaster Management Plans. As on date 21 states /UTs have prepared their State Disaster Management Plans and others are different stages of preparation.

Demonstrative mock drills (hazard specific) are regular feature at national and state level by NDMA/SDMA respectively. So far 500 Mock Exercises have been undertaken in 35 States/UTs across the country by NDMA.

A three tier disaster response mechanisms has been put in place. National Disaster Response Force (NDRF) is at the apex level to handle disasters of level of III, State disaster Response Force (SDRF) to the first responder for level I & II disasters at State level and at the district level personnel of Civil Defence, Home guards and Fire & Emergency Services are to be included. At present 16 States have in-principally approved and constituted SDRF. NDRF is also engaged in community capacity building and awareness generation programmes. Since 2011, NDRF personnel have trained and sensitized about 29.50 lakh people including community members, school children NCC, NSS volunteers, and PRI members.

#### **Context & Constraints:**

Although institutional mechanism has been put in place from national to local level to coordinate all activities relating to disaster preparedness, response, mitigation and risk reduction, there are capacity gaps which need to be addressed to make these institutions more functional. Mainstreaming Disaster Risk Reduction into ongoing development plans and programs requires strong advocacy at all levels, political willingness, understanding of disaster risks and cost benefit analysis.

#### **3.4.2 Early Warning**

Designated Central agencies such as IMD, CWC, Geological Survey of India, INCOIS etc are making are making continuous efforts to capture, analyse and disseminate hazard specific data. Further, the these nodal agencies so as to strengthen the last mile connectivity are imparting adequate trainings to community volunteers, Civil Society Organizations and Local Authorities besides up-gradation of technical infrastructure by respective organizations for more accurate prediction generation and warning dissemination.

For strengthening community level preparedness, Non Governmental Organizations are contributing in considerable way at the local level. Many State Governments are in the process of setting up of Inter Agency Coordination Mechanism to accrue maximum benefits from all the efforts put in by various partners for disaster management.

The success of early warning and preparedness was demonstrated during the recent cyclones 'Phailin' 'Hudhud' in Odisha and Andhra Pradesh. Warning messages, including coordinates of the impending cyclone's location and intensity, were communicated in the days prior to the landfall of Phailin through constant news coverage via broadcast, print and online media, email and fax, telephone, text messages, and loudspeakers. Satellite phones were distributed to representatives in the 14 most vulnerable districts to ensure that warnings and information continued to be communicated during the storm.

**Context & Constraints:**

Though the institutional mechanisms for hydro meteorological hazards are in place the major challenge lies in establishing connectivity with the last mile. Efforts are being made to strengthen the capacity of the States and Districts in setting up local level early warning systems. Mechanism for interpretation of warnings as well as data sharing protocols need to be further improvised for effective early warning dissemination.

**3.4.3 Planning for post-disaster recovery and reconstruction**

Building Back Better has become the guiding principles for recovery and reconstruction programs in India. Adequate attention has been paid to mainstream disaster risk reduction into post disaster reconstruction and rehabilitation work in recent past.

Some major programs are:

- Bhuj Earthquake Reconstruction Program
- Latur Earthquake Reconstruction Program
- Tsunami Rehabilitation Program
- Kosi Flood Reconstruction Program
- Sikkim Earthquake reconstruction Program
- Uttarakhand Recovery Programme

Some of the essential features incorporated in post disaster reconstruction and recovery planning are:

- Construction of multi hazard resistant houses and other infrastructure
- Alternate Livelihood Programs
- Settlement Planning
- Joint ownership and equal rights to women

- Disaster Insurance
- Environment protection measures
- Community participation strengthening of Self Help Groups
- Adequate measures to address the needs of people with special needs.

The Government is contemplating for a National Disaster Recovery Framework to standardize and institutionalize the disaster recovery process.

### **Context & Constraints:**

Post-disaster reconstruction and recovery measures often leads to relocation, land acquisition, disruption of social fabric and livelihoods of a community. Biggest challenge is the conflict between the urgency of people to get back into normalcy vis-à-vis the time needed for building back better. Mainstreaming risk transfer mechanisms during recovery is still in a very nascent stage in India and there is a strong need to create more awareness and establish an enabling environment so that the risk bearers (banks and the insurance agencies) also get motivated to invest more on this agenda. There is a need to develop a standard guideline for Recovery Planning.

### **3.4.4 International Cooperation**

The country hosts the SAARC Disaster Management Centre which aims to put in place a regional disaster management system to reduce disaster risks. The Disaster Management Framework developed by SDMC tries to address the emerging disaster risks in the region through certain appropriate strategies like strengthening of Early Warning System, Regional Risk Assessment, Sharing of knowledge and information and Training and Capacity Building.

India hosts the SAARC Disaster Management Centre which is working towards putting in place a comprehensive regional disaster management framework to reduce disaster risks and promoting knowledge sharing among the SAARC countries. The Indian National Centre for Ocean Information Services, the Tsunami Early Warning System, in fact, is a State-of-the-Art warning system and benefits not only India but also the littoral countries of Indian Ocean. As a part of SAARC Monsoon Initiative, an integrated Operational System for monitoring and forecasting monsoon weather systems has been set up to address monsoon induced hydro-meteorological disasters in the region. We have developed a professional National Disaster Response Force which is not only doing a stupendous job in addressing national disasters but attends to disasters in the region and beyond. We are keen to share our expertise and help other countries in disaster response capacity building as we did during Japan Earthquake in 2011. We envisage a bigger role in capacity building in the Asia Pacific region and looking forward

to build sustained regional and international partnerships under the post-2015 Framework.

SDMC is also promoting sharing of Knowledge and information among the SAARC countries and has set up the SAARC Disaster Knowledge Network.

INCOIS, the Tsunami Early Warning System, in fact, is a State-of-the-Art warning system and benefits not only India but also the littoral countries of Indian Ocean.

National Working Group on SAARC Monsoon Initiative Programme has been constituted with representatives from the South Asian Association for Regional Cooperation (SAARC) Disaster Management Centre and Department of Agriculture & cooperation. The objective of the programme is for placing an integrated Operational System (IOS) for monitoring and forecasting monsoon weather systems so that monsoon induced hydro meteorological disasters can be addressed effectively. The focus was on weather forecasting and warning services of summer monsoon for the benefit of the general public and socio-economic sectors, in particular agriculture and disaster management of the region.

**Constraints:**

There is a need to strengthen the inter country coordination and cooperation mechanism to strengthen the early warning system, knowledge and data sharing.

## **Section 4: Achievements of India under HFA (2005-2015)**

### **4.1 Reduction in human loss and number of people affected due to disasters.**

4.1.1 It is about ten years since the catastrophic Indian Ocean tsunami hit the South Indian State of Tamil Nadu and parts of Kerala and Andhra Pradesh on 26<sup>th</sup> December

2004. Substantive improvement has since taken place in the overall disaster risk reduction scenario in India.

4.1.2 Following the 2004 tsunami, the Government of India has taken major steps to build early warning systems. At the national level, India's Ministry of Earth Sciences has established the National Tsunami Early Warning System at the Indian National Centre for Ocean Information Services (INCOIS) in Hyderabad, Andhra Pradesh. The Indian Meteorological Department has developed systems for issuing accurate warnings and generating real-time weather reports that are provided to disaster management agencies and emergency support service responders.

4.1.3 Community based disaster management was given priority by the National and State Governments. Communities have been empowered to handle emergency response equipment, understand warning alerts, and take action. Training manuals in English and local languages have been widely disseminated, ensuring that communities are alert to measures they can take to ensure their safety when disaster strikes.

4.1.4 Construction of 292 multi-purpose cyclone shelters has been taken up in two coastal cyclone prone States viz., Odisha and Andhra Pradesh. As of December 2014, 106 cyclone shelters have been completed. 539 roads connecting the habitations to the shelters were taken up. 428 have been completed. Work is going on full swing in the remaining cases.

4.1.5 There are a number of government initiatives which work towards disaster mitigation. For example, Mahatma Gandhi National Rural Employment Guarantee Act has completed during 2014-15, 16,663 flood control works, a large number of drought mitigation works including 14,700 water conservation and water harvesting measures, 35,858 works of renovating traditional water bodies and 46,020 drought proofing works.

4.1.6 In October 2014, a powerful Cyclone 'Hudhud' struck Andhra Pradesh and Odisha on the country's eastern coast. There was widespread destruction, and 46 lives were lost. Almost exactly a year earlier, Cyclone 'Phailin', the strongest storm to hit India in more than a decade, caused devastation to property. In comparison to previous cyclones, precious human lives could be saved. For instance, four days before Phailin struck the area was evacuated about 1.2 million people were moved to safer areas. Phailin's devastating blow caused hundreds of millions of dollars in damages, though the life loss could be minimised.

4.1.7 Such reduction of life loss was brought about by a combination of concerted measures put in by the National and the coastal State Governments in India namely, (i) systems that alert people early about disasters, (ii) preparing the communities through mock drills and rehearsals, (iii) creating physical infrastructure for multi-purpose cyclone shelters, (iv) involving different institutions to play their assigned roles and (v)

creating specialized force with training and equipments in search and rescue. have helped save millions of lives.

## **4.2 Integration of Disaster Risk Reduction in Socio-economic development policies and plans**

5.2.1 The Gol recognizes that integration of DRR and CCA in developmental processes is not only vital but essential for sustainable development. In order to consider and address risks emanating from natural hazards, the Gol has put in place strategic framework, policies and institutional structures. The strategy being adopted is as follows:

(i) The Disaster Management Act 2005 articulates the need for mainstreaming DRR into development planning. It mandates the Disaster Management Plans at the national and state levels to include measures to be taken for the integration of mitigation measures in the development plans at the respective levels. The Act also mandates every ministry/department at national and state levels to prepare disaster management plans and integrate disaster risk reduction elements in the ongoing development schemes.

(ii) The National Policy on Disaster Management 2009 seeks to build a safe and disaster resilient India. It categorically states that the NDMA will ensure mainstreaming of disaster risk reduction in the developmental agenda of all existing and new developmental programmes and projects which shall incorporate disaster resilient specifications in design and construction.

(iii) For the first time a separate chapter on disaster management was included in the Tenth Five Year Plan (2002-2007). The Eleventh Plan (2007-2012) as well as Twelfth Plan (2012-2017) reiterated the need for investing in prevention and mitigation which is economically and socially more beneficial than incurring expenditure in relief and rehabilitation. The Twelfth Plan also highlights the significance of mainstreaming disaster risk reduction in major development plans as a vital element of disaster management practice.

(iv) The Ministry of Home Affairs (MHA), the nodal ministry for disaster management, is actively engaged with the Central Ministries, Departments and Agencies to integrate disaster risk reduction in development planning of key sectors, such as rural development, education, agriculture, urban development, environment and health. Similarly, the National Disaster Management Authority is also facilitating the process by issuing hazard specific and thematic guidelines and initiating specific mitigation projects.

(v) Government of India designs variety of socially relevant programs in shelter, education, health, livelihoods, skill development, drinking water,

sanitation, food production, roads, integrated development of urban centers etc. These partially or completely funded programs are termed as Centrally Sponsored Schemes (CSS) which are implemented by the state governments or designated agencies. Many GOI ministries implement the CSS using large financial resources. The CSS or flagship programs become suitable vehicles to address disaster risk as this is aligned to their visions, objectives and provisions available in the schemes. The Government has recently approved 10 % flexi-funds in all centrally funded schemes, which would be used for innovation and disaster mitigation/restoration. For the Financial Year 2014-2015, the 10% funds i.e., US\$5.6 billion is available to the states for DRR purpose.

(vi) The GOI-UNDP Programme (2013-2017), “Enhancing Institutional and Community Resilience against Disasters and Climate Change” is currently under implementation for mainstreaming DRR and CCA in development planning, urban risk reduction, capacity building, knowledge management and enhancing resilience of vulnerable communities to cope with disasters and climate variability by implementing scalable demonstrative pilot initiatives as components

(vii) An increasing emphasis is being placed on multi hazard risk and vulnerability analysis (HRVA). The Disaster Management Plans prepared at different levels give adequate focus to hazard risk and vulnerability analysis. In addition to it, Ministry of Finance has introduced a self certification process to ensure that all the national schemes approved by various Ministries are evaluated through a disaster lens and ensure that such development programmes do not add on to disaster risks in future. A checklist has been prepared and circulated to all the Ministries at the national level. The State Governments have also been advised to adopt similar measures. 13th Finance Commission allocation of funds to the State governments under Capacity development has particular focus to utilize the funds for meeting out technical resources and research for development of comprehensive HRVA profile of the State.

(viii) Most of the development schemes/programmes in the country take into account the gender issues. Various enabling measures have also been taken up in this regard like setting up of gender budgeting cells in Ministries of Government of India and reflection of a gender budget statement in the Union Budgets. The Section 61 of the Disaster Management Act, mandates that there will be no gender discrimination while providing compensation and relief

in aftermath of a disaster. In some of the post disaster recovery programmes efforts were put in to ensure equal access of women to humanitarian assistance and equal participation in decision-making and recovery planning. However, there is still a need to develop concrete strategies to institutionalize gender perspective in disaster risk reduction planning.

(ix) A strategic approach for capacity development is already in place with focus on awareness generation, education, training, research and development. National Institute of Disaster Management has been established to design, develop and facilitate capacity building programmes for various stakeholders in the country. NIDM is formulating a comprehensive capacity development plan and implementing the National Disaster Management Programme which supports 29 disaster management training cells established across the country to impart training to various stakeholders on disaster management. Regional Centers for excellence are also being established to provide specialized training on hazard risk mitigation. Dedicated funds have been earmarked for Training and Capacity Building by 13th Finance Commission during the period (2010-2015) to support various state governments to implement various capacity building programmes.

(x) Consistent efforts are being made to integrate human security and social equity approaches integrated in DRR policies. The DM Act 2005 has given legal sanctity to the issue of social equity and emphasizes that no discrimination will be made while providing compensations and relief to the victims of disasters on the ground of sex, caste, community, descent and religion. The Post Disaster Reconstruction and Recovery Programmes in the recent past have integrated social equity and human rights issues. The Disability Act, 1995 and National Policy for persons with disabilities, 2006 also provide the statutory backup to ensure equality, freedom, justice and dignity for people with disabilities. The guidelines of all poverty alleviation schemes implemented by Government of India, incorporate provisions of 3% reservations for the disabled. However there is a further need to strengthen the implementation mechanism and enforcement of the various legal provisions at all levels of government with support from Civil society and community based organizations.



(xi) Under the multi-stakeholder approach adopted for disaster risk reduction substantive efforts have been made to engage the non-governmental actors, private sector, academic institutions etc in disaster management planning and implementation at various levels. India has a strong civil society movement and there is a long tradition of government and the civil society organizations working together particularly during post disaster response and recovery. Although no dedicated legislation exists in the country that describe their inclusion in the formal coordination structure, informal mechanisms are in place at the national and state level to interact and coordinate with the nongovernmental organizations for disaster preparedness, response and mitigation. Partnership has also been fostered with the corporate sectors and their contribution has been notable especially during the aftermath of Orissa Super Cyclone 1999, Bhuj Earthquake 2001, tsunami 2004 and recent Uttarakhand flood 2013. The Corporate sector has also been involved at local level disaster risk reduction planning in many states.

(xii) The National Disaster Response Force (NDRF) which was set to provide immediate response in case of disasters is being strengthened further both in terms state-of-the-art training and equipments has emerged as a professional response force. NDRF is not only doing a stupendous job in addressing national disasters but responding to disasters in the region and beyond.

### **4.3 Emergency Preparedness and Response**

4.3.1 The DM Act has made the statutory provisions for constitution of National Disaster Response Force (NDRF) for the purpose of specialized response to natural and man-made disasters. Accordingly, in 2006 NDRF was constituted with 08 Bns (02 Bn each from BSF, CRPF, ITBP and CISF). As on date NDRF is having strength of 10 Bns. Each NDRF Bn consists of 1149 personnel. The States/UTs have also been advised to set up their own Specialist Response Force for responding to disasters on the lines of National Disaster Response Force.

4.3.2 NDRF has emerged as the most visible and vibrant multi-disciplinary, multi-skilled, high-tech force capable to deal with all types of natural as well as manmade disasters and to mitigate the effects of disasters. It has taken up several highly skilled rescue and relief operations both nationally and internationally. Some of major rescue operation include Kosi flood in Bihar 2009, 2011, Uttarakhand flood in 2013, Cyclone Phailin in Odisha in 2013 and Cyclone Hudhud in 2014 Andhra Pradesh recuing thousands of lives and distributing immediate relief to the affected. Similarly, NDRF's

role in Fukushima earthquake and tsunami of 2011 has been highly appreciated at the global level. NDRF in keeping pace with its mission goal and dynamic nature of disaster situations has been undertaking regular and intensive training and re-training, capacity building and familiarization exercises, carrying out mock drills and joint exercises with the various stakeholders.

4.3.4 As a part of institutional strengthening, the Government of India has constituted the National Disaster Response Force Academy by merging the National Fire Service College (NFSC), Nagpur and National Civil Defence College, (NCDC), Nagpur. The NDRF Academy would provide advanced search & rescue training to personnel of Fire Service, NDRF and State Disaster Response Force.

4.3.5 The Government of India has approved the constitution of Disaster Response Medal for the personnel of NDRF, who have served NDRF for at least three years. This initiative is to motivate and strengthen the morale of the primary responders of the NDRF who work in the most hazardous situations. Since inception, NDRF lost 9 rescuers in different operations while trying save the victims.

4.3.6 Government of India has approved the creation of National Disaster Response Reserve (NDRR) through a revolving fund of Rs.250 crore to be operated by the National Disaster Response Force. This dedicated fund would enable the NDRF to maintain a ready inventory of emergency goods and services comprising tents, medicines, food items, etc, which are immediately required after any disaster. This financial arrangement would strengthen the operational response readiness of NDRF against disasters.

#### **4.4 International Cooperation**

4.4.1 Govt is firmly committed and is making consistent efforts to promote regional cooperation in the field of Disaster Risk Reduction. India hosts the SAARC Disaster Management Centre which is working towards putting in place a comprehensive regional disaster management framework to reduce disaster risks and promoting knowledge sharing among the SAARC countries. India has plans to further strengthen this Centre.

4.4.2 The SAARC Agreement on Rapid Response to Natural Disasters signed on 11<sup>th</sup> November, 2011, institutionalizes the regional cooperation on disaster response among the member countries. It provides a mechanism for rapid response to disasters to achieve substantial reduction of disaster losses in lives and in the social, economic and environmental damages through concerted national efforts and intensified regional cooperation. Besides rapid response, the Agreement requires the incumbent member countries to organise periodic mock drills/forums in rotation, wherein other Member States be invited to test the effectiveness of regional preparedness for response.

Accordingly, the SADMEX 2015 will be organized by the NDRF in Delhi. The joint exercise will address the important aspect of responding to disasters by pooling of resources and expertise and the imperative of presenting a well-coordinated response to disasters situation in any of the SAARC countries. The joint exercise will focus on sharing relevant disaster-related information namely early warning, setting up of Emergency Operation Centres (EOCs) for regional response Mechanism , developing emergency response mechanism, strategies, contingency response, and the ability to deploy suitable personnel and material with practices ease that ensures the success of disaster response effort.

4.4.3 India has made proactive response measures to address some of the major crisis in the region. In December 2014, when the Maldivian capital faced an acute water crisis after a fire in the city's water treatment plant, India sent an Indian Air Force transport aircraft and naval vessels carrying a large consignment of water to meet the immediate requirement of over 100,000 people.

4.4.4 In a major rescue mission in April 2015 in Yemen, India evacuated about 4640 Indian nationals and nearly 960 foreign citizens of 32 countries when the country was facing the civil war like situation. During that mission, Indian Air Force and Navy were deployed.

4.4.5 In July 2015, 12 Regions and States of Myanmar have been severely affected by Cyclone Komen, which has led to widespread floods and landslides in that country. Around 250,000 people have been affected and over 500,000 acres of farmland destroyed. Government of India was specifically requested by the Government of Myanmar to send emergency supplies of rice and medicines by air to locations that are currently hard to reach through other means. In response, India had dispatched about 100-tonne load of rice and noodles and 10 tones of medicines were dispatched emergency relief supplies to Myanmar.

4.4.6 In the wake of devastating earthquake in Nepal, the National Disaster Response Force was deployed within 5 hours, assisting Nepalese Government in their rescue and relief operations. Government of India provided relief materials like food, water, medicines, tents, blankets, tarpaulin amounting to about Rs.327 crores. Further, besides technical assistance, India has further committed USD 2 billion to Nepal for rebuilding Nepal.

## Section 5: Stakeholder Mapping for Disaster Risk Reduction

### 5.1. List and Description of Stakeholders

Volunteerism and community based movements have remained intrinsic to the social fabric of our country and have helped sustain communities through times of crisis. The role of NGOs remains crucial in all phases of disaster management namely relief, response, rehabilitation, reconstruction, recovery, preparedness and mitigation. Recent trends with respect to management of natural disasters have highlighted the role of Non-Governmental Organisations (NGOs) as a vital stakeholder in the relief and response efforts especially with respect to facilitating communication and coordination between the administration and the affected community.

The National DM Policy Instruments detail the roles and responsibilities of stakeholders in disaster management. The institutional structure outlined in the DM Act 2005 and the National DM Policy 2009 promotes a holistic and proactive approach to disaster management, without disturbing the other mechanisms that exist in the country.

The 35 (2) of chapter V in DM Act 2005 says in particular and without prejudice to the generality of the provisions of subsection (1), the measures which the Central Government may take under that sub-section include measures with respect to all or any of the following matters, namely:— (a) Coordination of actions of Ministries or Departments of the Government of India, State Governments, National Authority, Governmental and Non-governmental organizations (NGOs) in relation to disaster management. The Act entrusts/mandates the State Executive Committees at different levels with the responsibility to advise, assist and coordinate the activities of NGOs engaged in disaster management. Thus, the states continue to have the primary responsibility for disaster management by assigning responsibilities for different stakeholders.

In pursuance of the National DM policy guidelines, the Government of India has constituted a multi-stakeholder National Platform for Disaster Risk Reduction (NPDRR) on 26<sup>th</sup> February, 2013. The National Platform aims to bring together the whole range of stakeholders from Government, Parliamentarians, Mayors, Media, International Organisations, NGOs, local community representatives, scientific and academic institutions and corporate businesses etc. The list of stakeholders is at **annexure I**. It helps in sharing of experiences, views and ideas, present findings of research and action and explores opportunities for mutual cooperation in the field of Disaster Risk Reduction.

The National Platform for Disaster Risk Reduction would work towards achieving the targets and priority for action outlined under the Sendai Framework for Disaster Risk Reduction 2015-2030. In this regard, the National Disaster Management Authority has prepared the guidelines on 'Role of NGOs in Disaster Management'.

## **5.2. Stakeholders' shared responsibility towards the implementation of the Sendai Framework**

NGOs/CBOs UN agencies, scientific and academic institutions and private sector in India are working closely with the Government and local administration and carry out activities such as contingency planning, stockpiling of equipments and supplies, arrangements for inter agency coordination, evacuation plans and public information, and associated training and field exercises in supplementing the efforts of the Government in disaster management. Government of India will be working with closely with the stakeholders while taking forward the implementation of the Sendai Framework for Disaster Risk Reduction. The national multi-stakeholder platform viz, National Platform for Disaster Risk Reduction (NPDRR) would be further strengthened to institutionalize the shared responsibilities of the stakeholders towards achieving the Sendai Framework targets, goal and priorities for action.

## **Section : 6 Key Issues, Challenges and Priorities for Sendai Framework Implementation**

### **6.1. Achieving the SFDRR outcome, goal and targets: National targets to implement the framework, in line with national strategies and/or existing targets**

### **6.2. Understand disaster risk – issues, challenges and priorities for action**

#### **Issues and Challenges:**

Government of India through adopting multi-level and multi stakeholder approach has been working consistently over the years to reduce disaster risks. Some of the general issues and challenges faced in India are as follows:

- (i) capacity gaps in integrating DRR into the development programmes
- (ii) lack of adequate funding for research and knowledge building
- (iii) lack of catastrophic insurance systems
- (iv) lack of comprehensive planning in many of the state level efforts leading to sustainability issues
- (v) Interdependencies across key sectors and socio-economic vulnerabilities arising out of hazard risks.
- (vi) Limited capacity in loss modeling and interpretation of hazard information to estimate the potential risks; while Situation/Damage Reports are generated on a regular basis in a post disaster situation there is a need to analyze the information to estimate the loss.
- (vii) There is a need to enhance the data sharing protocols and mechanism at national and state Level. Though the institutional mechanisms for hydro meteorological hazards are in place the major challenge lies in establishing connectivity with the last mile. Efforts are being made to strengthen the capacity of the States and Districts in setting up local level early warning systems.
- (viii) Mechanism for interpretation of warnings as well as data sharing protocols need to be further improvised for effective early warning dissemination.
- (ix) Although data has been made available in the public domain its accessibility and actual usage are the two key issues which need to be addressed.
- (x) There is a need to strengthen the mechanisms in place to reach out to the grass-root level with information on hazard, risks and measures for preparedness.

## Priorities for Action

The list of priorities for action that need to be taken to achieve the targets and goal of Sendai Framework are listed as under:

- (i) In collaboration with the Central Statistics Organisation (CSO) an integrated Centralised Disaster Database requires to be developed. Data collection on standardized format should be the responsibility of the concerned state government. Such database would facilitate researchers and decision makers to undertake range of analyses to better understand the linkages between disaster management and other sectors that would help in taking up informed risk reduction activities as well as to understand the impact of disasters on economy.
- (ii) Need to enhance the capacity of policy makers and development planners to formulate appropriate mitigation measures based on such risk assessment.
- (iii) Improving the coordination among various agencies handling disaster database will help in increasing the information accessibility of key hazards and database at all levels.
- (iv) Undertake mass awareness programmes on disaster safety at the national, state and local level.
- (v) Promoting risk sensitive development planning through integrating disaster risk in sectoral development planning process.
- (vi) Mainstream DRR in technical education and training curriculum of State Administrative training institutes, SIRDs etc.
- (vii) Early Warning systems and communication and connectivity upto the last mile: There is a scope for improvement in flood, cyclone and storm surge warnings. Even with the best of early warning systems, the impact may still be catastrophic if early warning signals are not properly interpreted and communities are not educated and trained to respond to the early warning signals in real time. Therefore, both the early warning system need to be made robust with introduction of technology and, on the one hand and, community response to early warning needs to be further improved through proper training and rehearsal on a regular basis. This needs to be coupled with the National Emergency Communication Plan to ensure real time dissemination of early warnings and information to the 'at risk' community and the local authorities.

### **6.3. Strengthening disaster risk governance to manage disaster risk: issues, challenges and priorities for action**

Strengthening national and local risk governance arrangements which would guide national, state and local authorities to be guided in addressing disaster risk in public policy, strategies and plans.

#### **Priority for Action**

- (i) Promote amendment in building by-laws and land use plans and their implementation; wherever necessary to ensure safe development
- (ii) Empower PRIs/ULBs for prioritizing DRR activities.
- (iii) Mainstream DRR into housing, both rural and urban, as part of Housing for All Project, Sarva Shiksha Abhiyan, Rasthriya Madhyamik Shiksha Abhiyan, National Rural Health Missions and other.
- (iv) Expand the scope of State Disaster Response Fund (SDRF) software to include monitoring of financial as well as physical progress.
- (v) Promote and strengthen community based disaster management

### **6.4. Invest on DRR Resilience – Issues, challenges and Priority of Action**

#### **Priority of Action**

- (i) Utilise SDRF for training, procurement of search & rescue equipment and capacity building of various stakeholders at state and district level.
- (ii) Allocate 5-10 % of flexi-funds for DRR in all schemes under the State Plan. As per the guidelines, the 10% flexi-fund within the Centrally Sponsored Schemes (CSS) is to be utilized inter alia for disaster mitigation, restoration and innovation activities in the event of natural disasters. Proper planning and utilization of the flexi-funds for disaster mitigation by States can help mitigate disaster risk/vulnerability due to natural disasters. The guidelines are applicable from the Financial Year 2014-2015.
- (iii) Promote social Safety nets of people below poverty line living in hazard prone areas under-Jan Dhan Yojana and PM Jeevan Jyoti Yojana.
- (iv) Sensitize private sector to invest in DRR in their own businesses and their supply chain partners to improve their Business continuity Plan.
- (v) Promote private sector to invest in DRR through Corporate Social Responsibility (CSR). As per Section 135 of the Companies Act 2013, w.e.f. April 2014, every company which either has net worth of 500 crores or turnover of Rs.1000 crores or net profit of Rs.5 crores, needs to spend at least 2 percent of average



net profit on CSR activities. The CSR activities are listed in Schedule VII of the Act. Government may consider incorporating DRR as one of the activities in Schedule VII.

### **6.5. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction**

- (i) Holding regular meeting of State Disaster Management Authority (SDMAs) and District Disaster Management Authority (DDMAs) to discuss preparedness and Do's and Don'ts.
- (ii) Organise meeting of Forecasting agencies on a weekly basis, four weeks before monsoon and continue these meetings during the monsoon.
- (i) Strengthen Early Warning System for cyclone, flood, tsunami and extreme weather events such as heat wave, cold wave etc.).
- (ii) Update stock and resource inventory prior to any calamity.
- (vi) Strengthen communication system and establish a network of EOCs at the State, and district level.
- (vii) Implementation, monitoring and enforcement of building Bye-laws by the Urban Local Bodies and relevant authorities.
- (viii) Retrofitting of existing buildings particularly the life line buildings and public facilities
- (ix) Strengthen Civil Defence and Fire Services to play an important role in post-disaster response and relief at the cutting edge level.
- (x) Promote establishment of disaster management Task Forces/ Teams at village and ward level, impart training and provide basic equipment for search & rescue.
- (xi) Impart training to community level workers such as ASHA, ANM for response functions
- (xii) Conduct mock drills at regular mock drills at the State and district level.
- (xiii) Build capacity to implement loss and damage assessment, restoration and recovery.

### **Conclusion**

The Sendai Framework 2015-30 with emphasis on people-centred preventive approach to disaster risk reduction is an opportunity in strengthening resilience of the poor and the most vulnerable. The implementation of Sendai Framework further would give us access to best global practices in terms of policy prescription. We need to take risk informed decisions while making public and private investments. Mainstreaming disaster risk reduction in development programmes and building the resilience and capacity of the communities would be key in reducing risk exposure to our lives, assets and livelihoods and achieving sustainable development goals (SDGs).

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11. Global Assessment Report on Disaster Risk Reduction, 2015, UNISDR
12. Sendai Framework for Disaster Risk Reduction 2015-2030, UNISDR

## Annexure I

### List and Details of Stakeholders

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