

ODM related mains questions:

1. 2011- Composition and functions of the National Executive Committee of the National Disaster Management Authority.(2011/5 Marks)

2. 2013 -1. How important are vulnerability and risk assessment for pre-disaster management? As an administrator, what are key areas that you would focus on in a Disaster Management System? 10

2014-

3.

- 14.** सूखे को उसके स्थानिक विस्तार, कालिक अवधि, मंथर प्रारम्भ और कमज़ोर वर्षों पर स्थायी प्रभावों की दृष्टि से आपदा के रूप में मान्यता दी गई है। राष्ट्रीय आपदा प्रबन्धन प्राधिकरण (एन.डी.एम.ए.) के सितम्बर 2010 मार्गदर्शी सिद्धान्तों पर ध्यान केन्द्रित करते हुए भारत में एल नीनो और ला नीना के सम्भावित दुष्प्रभावों से निपटने के लिए तैयारी की कार्यविधियों पर चर्चा की जाए। Drought has been recognized as a disaster in view of its spatial expanse, temporal duration, slow onset and lasting effects on vulnerable sections. With a focus on the September 2010 guidelines from the National Disaster Management Authority (NDMA), discuss the mechanisms for preparedness to deal with likely El Niño and La Niña fallouts in India.

2015-

4.

1. The frequency of earthquakes appears to have increased in the Indian subcontinent. However, India's preparedness for mitigating their impact has significant gaps. Discuss various aspects.

2016.

5.

1. The frequency of urban floods due to high intensity rainfall is increasing over the years. Discussing the reasons for urban floods, highlight the mechanisms for preparedness to reduce the risk during such events.
2. 6.
- 3.
4. With reference to National Disaster Management Authority (NDMA) guidelines, discuss the measures to be adopted to mitigate the impact of recent incidents of cloudbursts in many places of Uttarakhand.

2017

2017

1. On December 2004, tsunami brought havoc on 14 countries including India. Discuss the factors responsible for occurrence of Tsunami and its effects on life and economy. In the light of guidelines of NDMA (2010) describe the mechanisms for preparedness to reduce the risk during such events.

2018

Describe various measures taken in India for Disaster Risk Reduction (DRR) before and after signing 'Sendai Framework for DRR (2015-2030)'. How is this framework different from 'Hyogo Framework for Action, 2005? (250 Words, 15 Marks)

2019

1. Vulnerability is an essential element for defining disaster impacts and its threat to people. How and in what ways can vulnerability to disasters be characterized? Discuss different types of vulnerability with reference to disasters.
(Answer in 150 words) 10

2. 1. Disaster preparedness is the first step in any disaster management process. Explain how hazard zonation mapping will help disaster mitigation in the case of landslides. **(Answer in 250 words)15**

2020 (jan 2021)

1. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach.
(Answer in 250 words) 15

2021 (jan 2022)

1. Discuss about the vulnerability of India to earthquake related hazards. Give examples including the salient features of major disasters caused by earthquakes in different parts of India during the last three decades. (Answer in 150 words)

2. Describe the various causes and the effects of landslides. Mention the important components of the National Landslide Risk Management Strategy. (Answer in 250 words)

2022. sept 2022

1. Explain the mechanism and occurrence of cloudburst in the context of the Indian subcontinent. Discuss two recent examples. (Answer in 150 words) 10

2. Explain the causes and effects of coastal erosion in India. What are the available coastal management techniques for combating the hazard? (Answer in 250 words)15

2023

1. Dam failures are always catastrophic, especially on the downstream side, resulting in a colossal loss of life and property. Analyze the various causes of dam failures. Give two examples of large dam failures. *(Answer in 150 words) 10*

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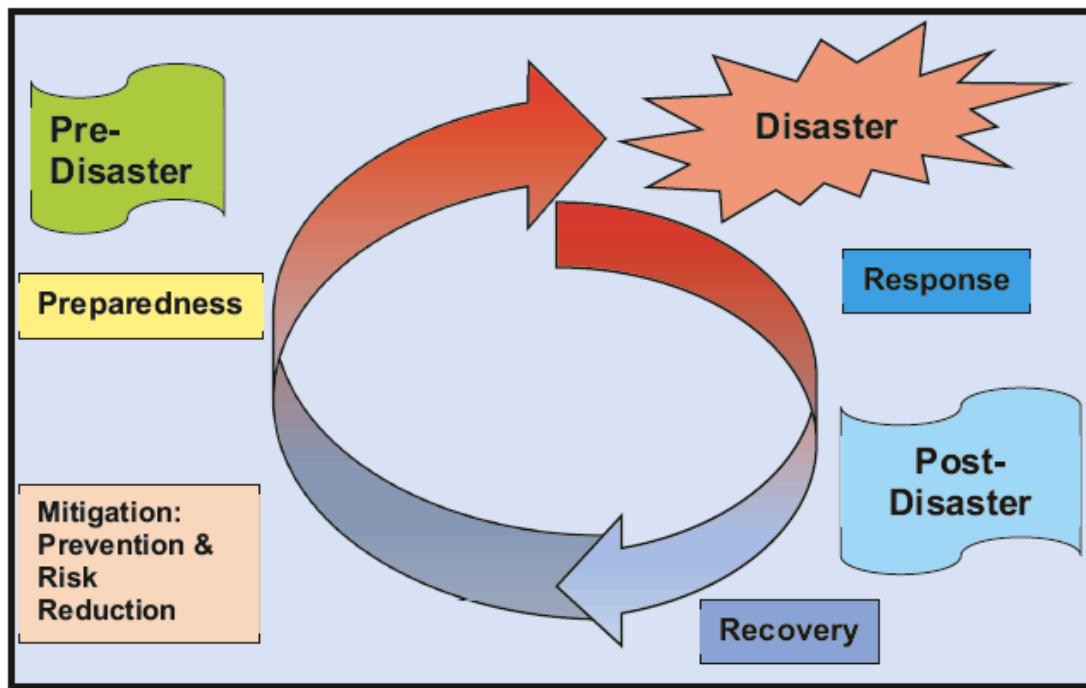


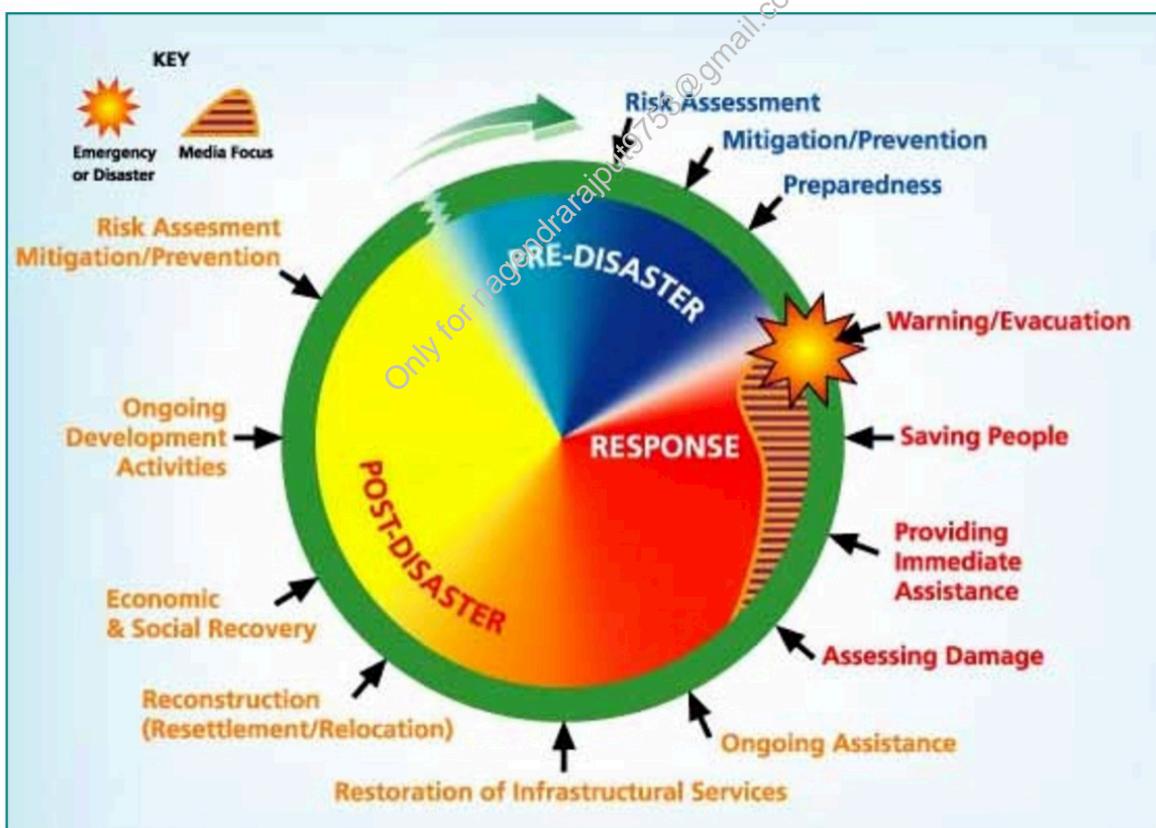
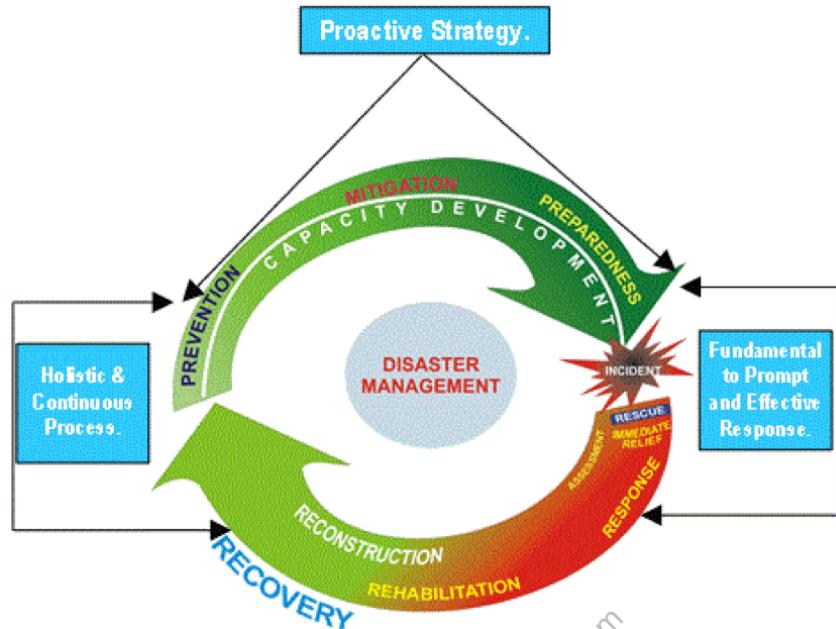
Figure 1-1: Disaster Management Cycle

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DISASTER MANAGEMENT CONTINUUM



7 GLOBAL TARGETS		Reduce	Increase
		Mortality/ global population 2020-2030 Average << 2005-2015 Average	Countries with national & local DRR strategies 2020 Value >> 2015 Value
		Affected people/ global population 2020-2030 Average << 2005-2015 Average	International cooperation to developing countries 2030 Value >> 2015 Value
		Economic loss/ global GDP 2030 Ratio << 2015 Ratio	Availability and access to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values
		Damage to critical infrastructure & disruption of basic services 2030 Values << 2015 Values	

Figure 3-1: Sendai Framework for Disaster Risk Reduction - 7 Global Targets



Figure 3-2: Seventeen Sustainable Development Goals Source: UNDP⁴¹

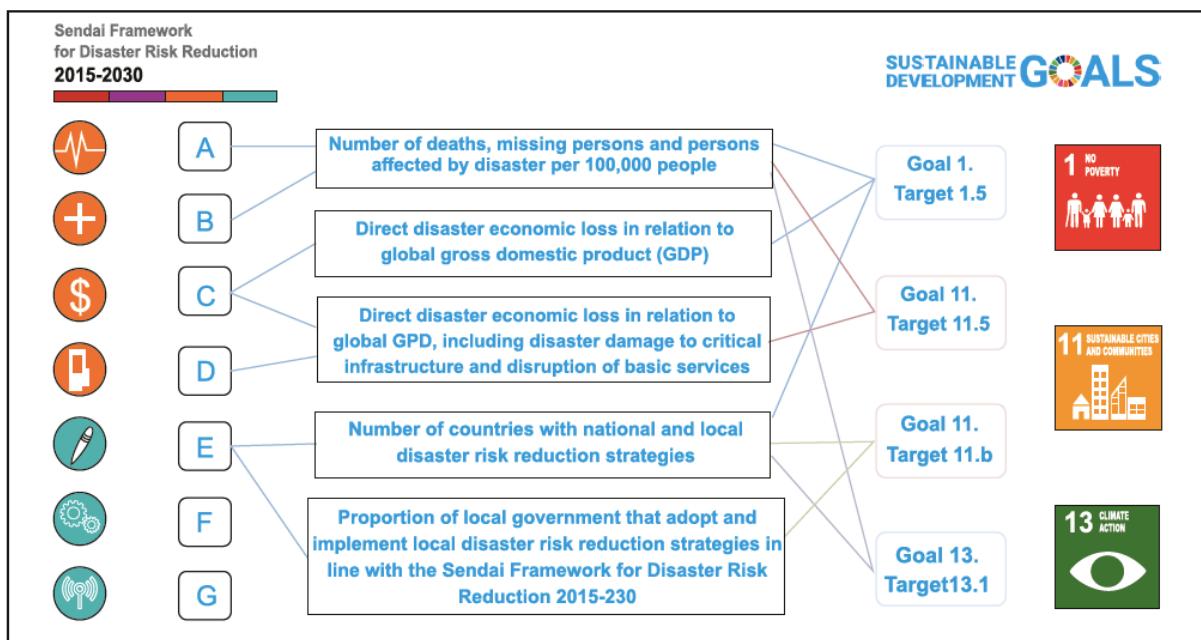


Figure 3-3: Coherence and mutual reinforcement of SDGs and Sendai Framework

Source: preventionweb.net⁴²

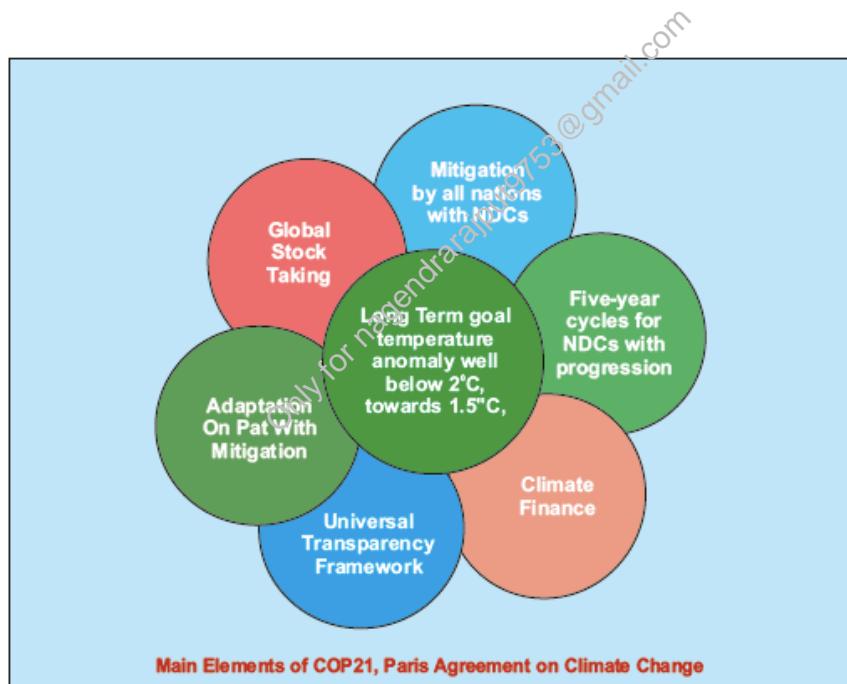


Figure 3-4: Main elements of the COP21, Paris Agreement on Climate Change

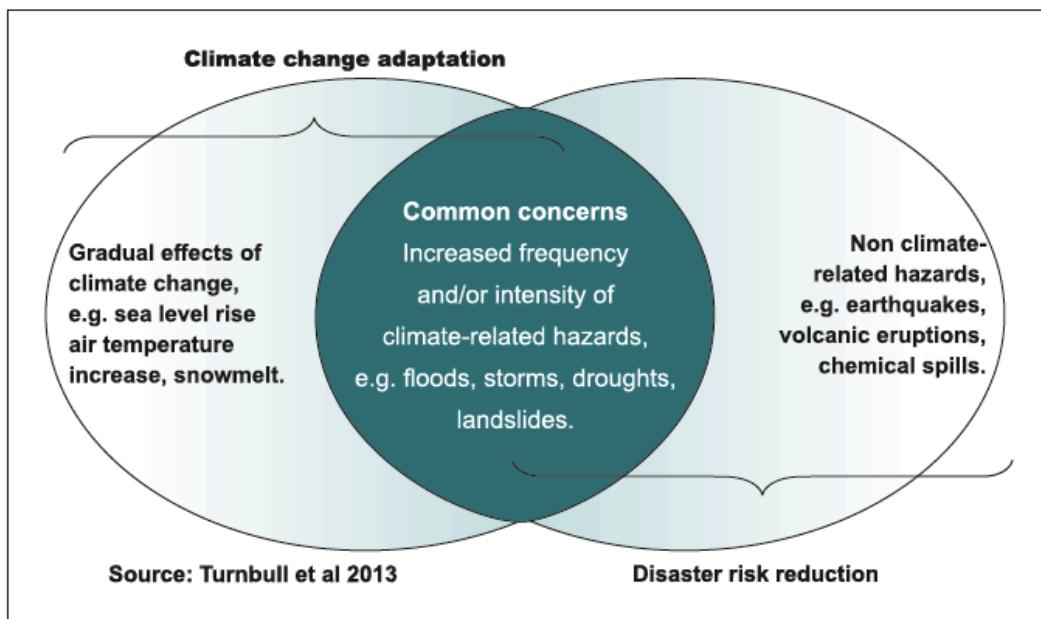


Figure 3-5: Common concerns of climate change adaptation and disaster risk reduction

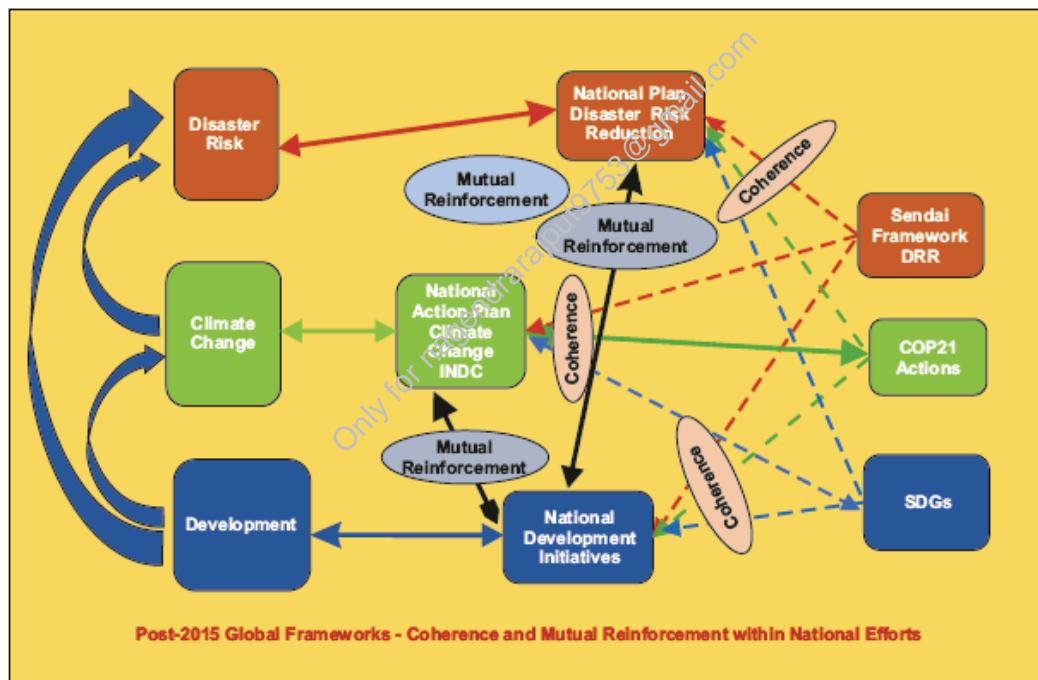
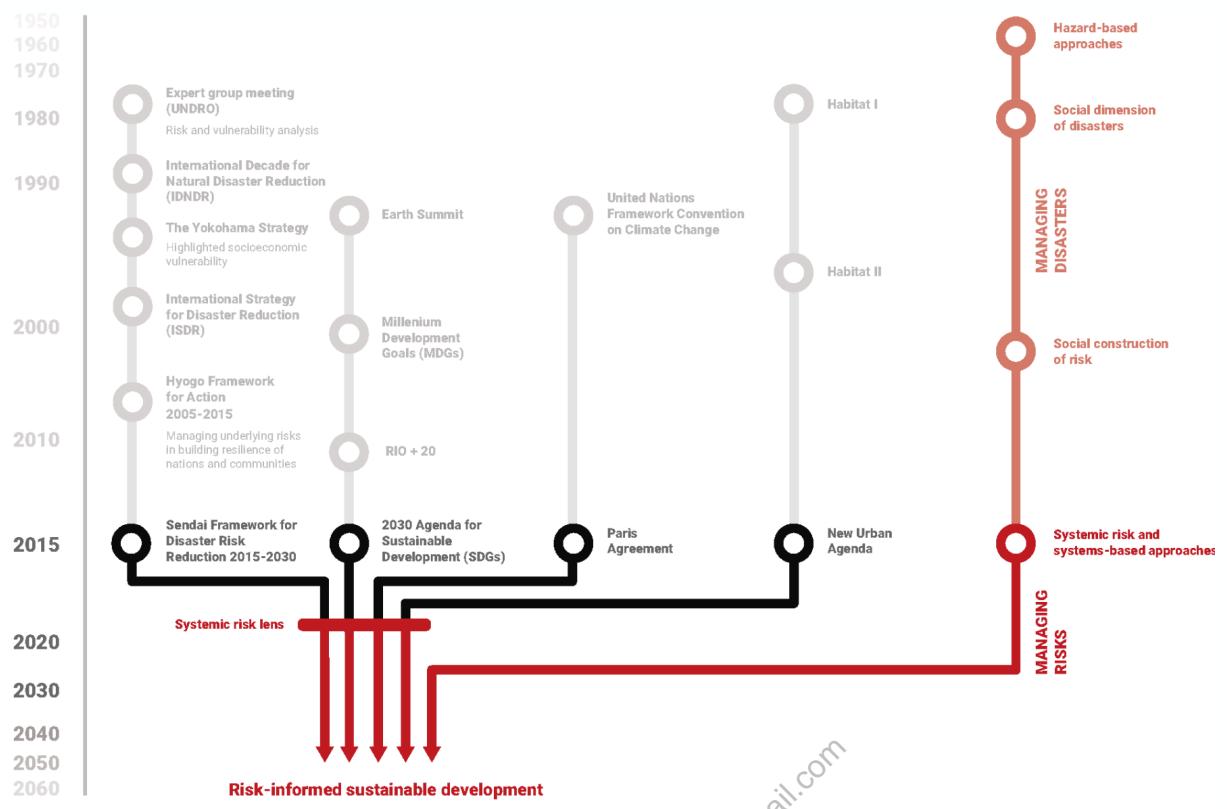


Figure 3-6: Post-2015 Global Frameworks—Coherence and Mutual Reinforcement within National Efforts



Source: GAR 2019

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Table 3-1: India's national initiatives relevant for DRR across the three Global Frameworks

	Sendai – Global Targets	Sustainable Development Goals	COP21 – Paris Agreement on Climate Change	National Initiatives Relevant to DRR
1	Substantially reduce global disaster mortality by 2030 (2020-2030 compared to 2005-2015)	SDG 1, 2, 11, 13	<ul style="list-style-type: none"> • Changes in the pattern of extreme events require enhanced disaster resilience and adaptation • Addressing GACC risks is crucial for eliminating poverty and reducing economic losses from disasters 	Multiple schemes and initiatives for DRR, economic development, GACC mitigation and adaptation.
2	Substantially reduce the number of disaster-affected people by 2030 (2020-2030)	SDG 1, 11, 13	Stresses the need for accelerated action to build resilience through risk-sensitive planning and implementation of DRR	<ul style="list-style-type: none"> • Allocation of resources and funds for disaster prevention and to develop capacities for DRR • Strengthening of the DRR at all levels

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	Sendai – Global Targets	Sustainable Development Goals	COP21 – Paris Agreement on Climate Change	National Initiatives Relevant to DRR
	compared to 2005-2015)			<ul style="list-style-type: none"> • Promoting disaster-resilient development • Mainstreaming DRR and adaptation to GACC in development
3	Substantially reduce direct disaster economic loss	SDG 1, 11	The Paris Agreement aims to hold global average temperature increase to well below 2°C above pre-industrial levels and to pursue efforts to limit it to 1.5°C, recognizing that this would significantly reduce the risks and impacts of climate change	<p>National commitment to DRR evident from the PM Ten Point Agenda for DRR</p> <p>National commitments for mitigation of and adaptation to GACC as per Intended Nationally Determined Contributions (INDC)</p>
4	Substantially reduce damage to critical infrastructure and disruption of basic services (health, education, etc.)	SDG 1, 4, 9, 11,	Global adaptation goals for enhancing adaptive capacity, strengthening resilience and reducing vulnerability to ensure adequate adaptation response in the context of the global temperature goal	<p>Enhance the resilience of national health systems by integrating DRR into primary, secondary and tertiary health care, and by promoting and enhancing training capacities in the field of disaster medicine. The substantial reduction of disaster damage to critical infrastructure and disruption of basic services is essential to ensure healthy lives and promote well-being.</p>

5	Substantially increase disaster risk reduction strategies	SDG 1, 3, 6, 11, 13,	Addressing GACC risks that are crucial for reducing economic losses from disasters along with a well-integrated approach to adaptation, sustainable development, environmental management and disaster risk reduction	<ul style="list-style-type: none"> • NAPCC for mitigation of and adaptation to GACC • National Mission on Sustainable Agriculture (NMSA) • National Initiative on Climate Resilient Agriculture (NICRA)
6	Substantially increase international cooperation to complement national actions	Close international cooperation to achieve SDGs	Firm commitments by countries to the global response to GACC based on INDCs and international cooperation for	India is a pro-active member in the implementation of the Post-2015 and other global frameworks
5	Substantially increase disaster risk reduction strategies	SDG 1, 3, 6, 11, 13,	Addressing GACC risks that are crucial for reducing economic losses from disasters along with a well-integrated approach to adaptation, sustainable development, environmental management and disaster risk reduction	<ul style="list-style-type: none"> • NAPCC for mitigation of and adaptation to GACC • National Mission on Sustainable Agriculture (NMSA) • National Initiative on Climate Resilient Agriculture (NICRA)
6	Substantially increase international cooperation to complement national actions	Close international cooperation to achieve SDGs	Firm commitments by countries to the global response to GACC based on INDCs and international cooperation for	India is a pro-active member in the implementation of the Post-2015 and other global frameworks

S No.	Title	Release Date	Download
1	National Guidelines For Preparation of Action plan – Prevention and Management of Cold Wave and Frost 2021 NEW	Oct 2021	Download(7 MB)
2	Simplified Guideline for Earthquake Safety of Building from National Building Code of India 2016	May 2021	Download(10 MB)
3	Cool Roof : House Owners' Guide to alternate roof cooling solutions	May 2021	Download(8.30 MB)
4	Guidelines on Management of Glacial Lake Outburst Floods (GLOFs)	Oct 2020	Download(11.21 MB)
4.a	Compendium of Task Force Report on NDMA Guidelines on Management of Glacial Lake Outburst Floods (GLOFs)	Oct 2020	Download(12.70 MB)
4.b	Summary for Policy Makers on NDMA Guidelines on Management of GLOFs	Oct 2020	Download(04.01 MB)
5	Guidelines for Preparation of Action Plan - Prevention and Management of Heat Wave	Oct 2019	Download(45.74 MB)
6	Landslide Risk Management Strategy	Sept 2019	Download(12.48 MB)
7	Guidelines on Disability Inclusive Disaster Risk Reduction	Sept 2019	Download(64.63 MB)
8	Guidelines on Temporary Shelters for Disaster-Affected Families	Sept 2019	Download(09.86 MB)
9	Guidelines on Prevention & Management of Thunderstorm & Lightning/Squall/Dust/Hailstorm & Strong Winds	March 2019	Download(09.55 MB)
10	Guidelines on Boat Safety	Sept 2017	Download(04.40 MB)
11	Guidelines on Cultural Heritage Sites and Precincts	Sept 2017	Download(21.45 MB)
12	Guidelines on Museums	May 2017	Download(02.12 MB)
13	Guidelines on Minimum Standards of Relief	Feb 2016	Download(03.00 MB)
14	Guidelines on Hospital Safety	Feb 2016	Download(03.22 MB)
15	Guidelines on School Safety Policy	Feb 2016	Download(02.50 MB)
16	Guidelines on Seismic Retrofitting of Deficient Buildings and Structures.	June 2014	Download(01.25 MB)
17	Guidelines on Scaling, Type of Equipment and Training of Fire Services	April 2012	Download(02.61 MB)
18	Guidelines on National Disaster Management Information and Communication System	Feb 2012	Download(06.00 MB)
19	Guidelines on Management of Drought	Sept 2010	Download(01.40 MB)
20	Guidelines on Management of Urban Flooding	Sept 2010	Download(14.35 MB)
21	Guidelines on Management of Dead in the Aftermath of Disaster	Aug 2010	Download(01.40 MB)
22	Guidelines on Management of Tsunamis	Aug 2010	Download(01.40 MB)
23	Guidelines on Incident Response System	July 2010	Download(08.97 MB)
24	Guidelines on Psycho-Social Support and Mental Health Services in Disasters	Dec 2009	Download(0748 KB)
25	Guidelines on Management of Landslides and Snow Avalanches	June 2009	Download(03.39 MB)
26	Guidelines on Management of Nuclear and Radiological Emergencies	Feb 2009	Download(01.65 MB)
27	Guidelines on Management of Biological Disasters	July 2008	Download(03.23 MB)
28	Guidelines on Management of Cyclones	April 2008	Download(04.52 MB)
29	Guidelines on Management of Floods	Jan 2008	Download(05.84 MB)
30	Guidelines on Medical Preparedness and Mass Casualty Management	Oct 2007	Download(60.24 MB)
31	Guidelines on Preparation of State Disaster Management Plans	July 2007	Download(05.84 MB)
32	Guidelines on Chemical Disasters	April 2007	Download(01.67 MB)
33	Guidelines on Management of Earthquakes	April 2007	Download(03.16 MB)

1.14.1 National Level

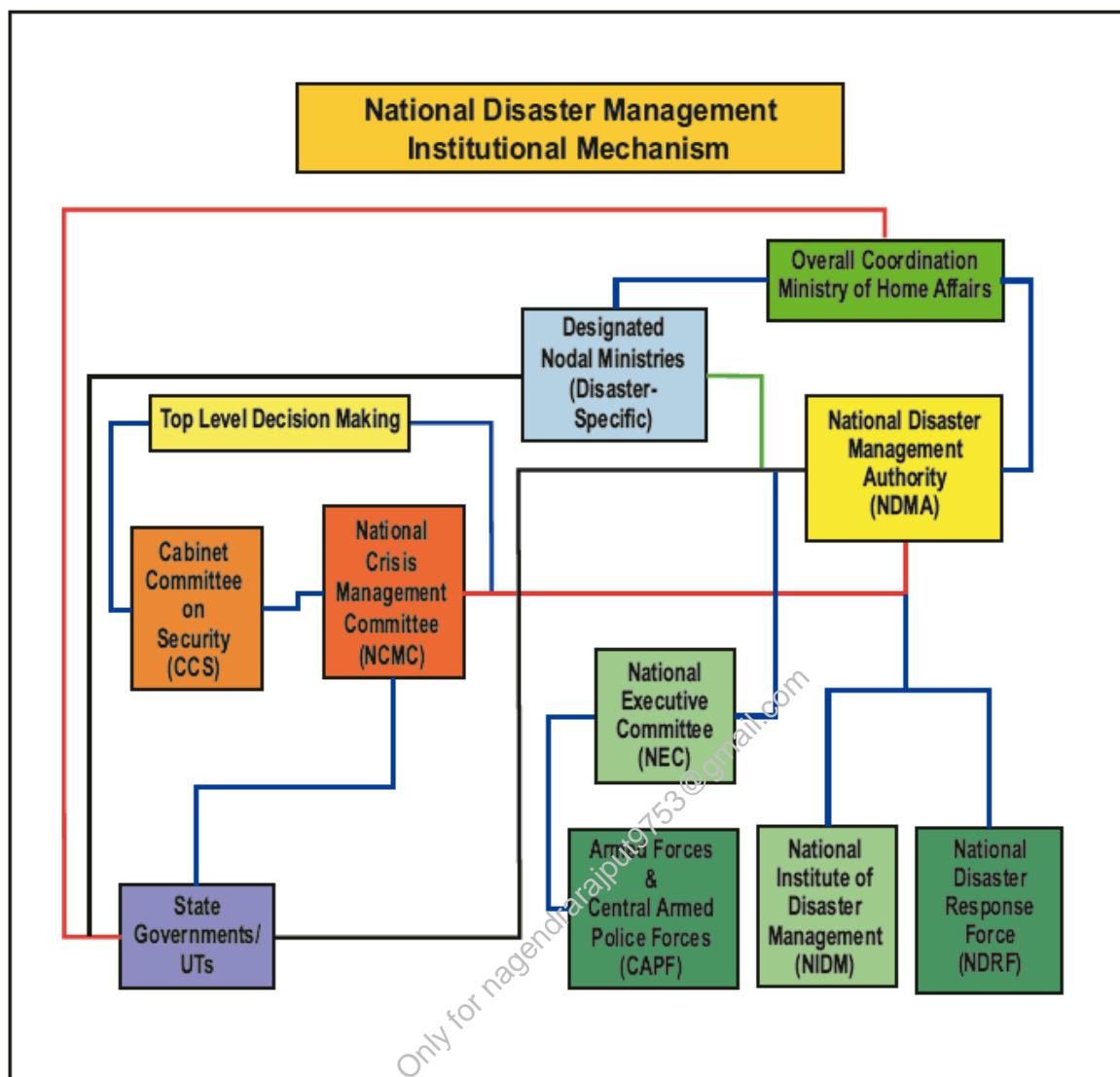


Figure 1-3: National-level disaster management - basic institutional framework

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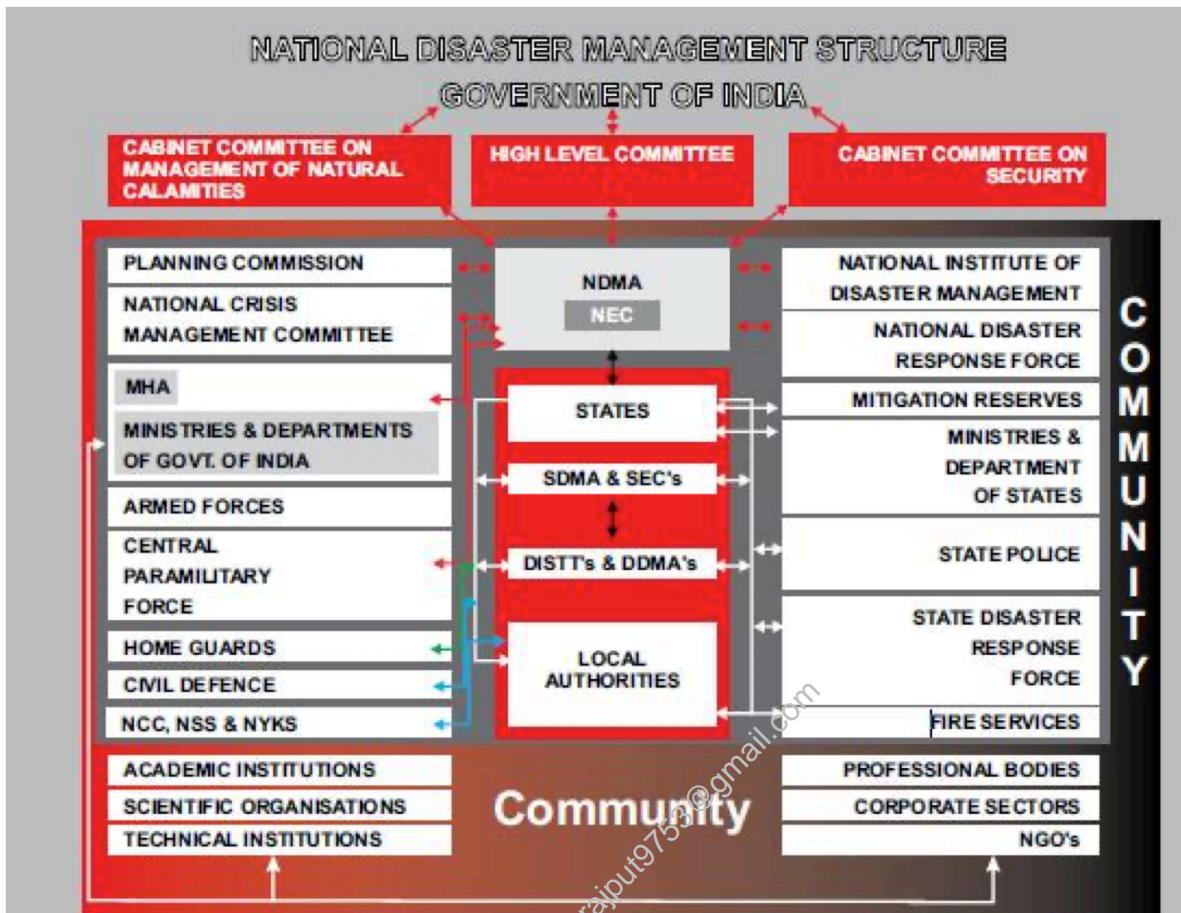
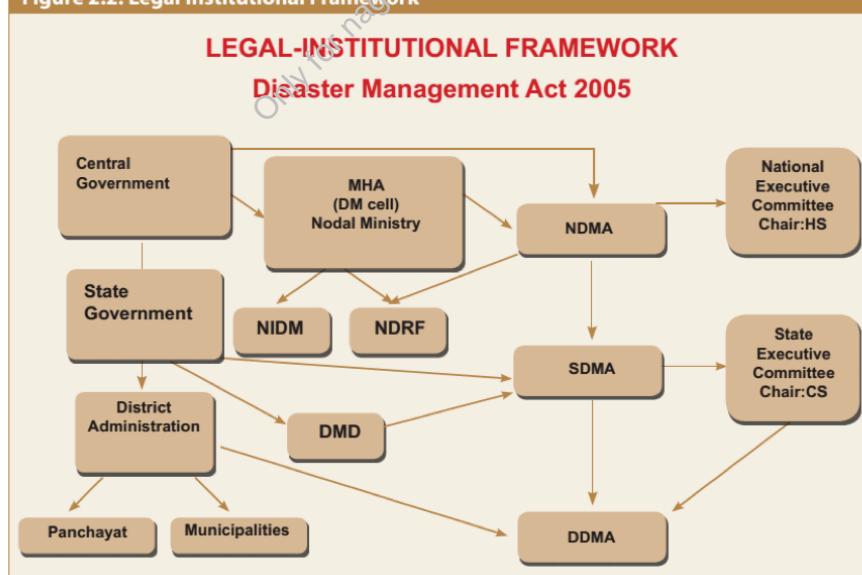
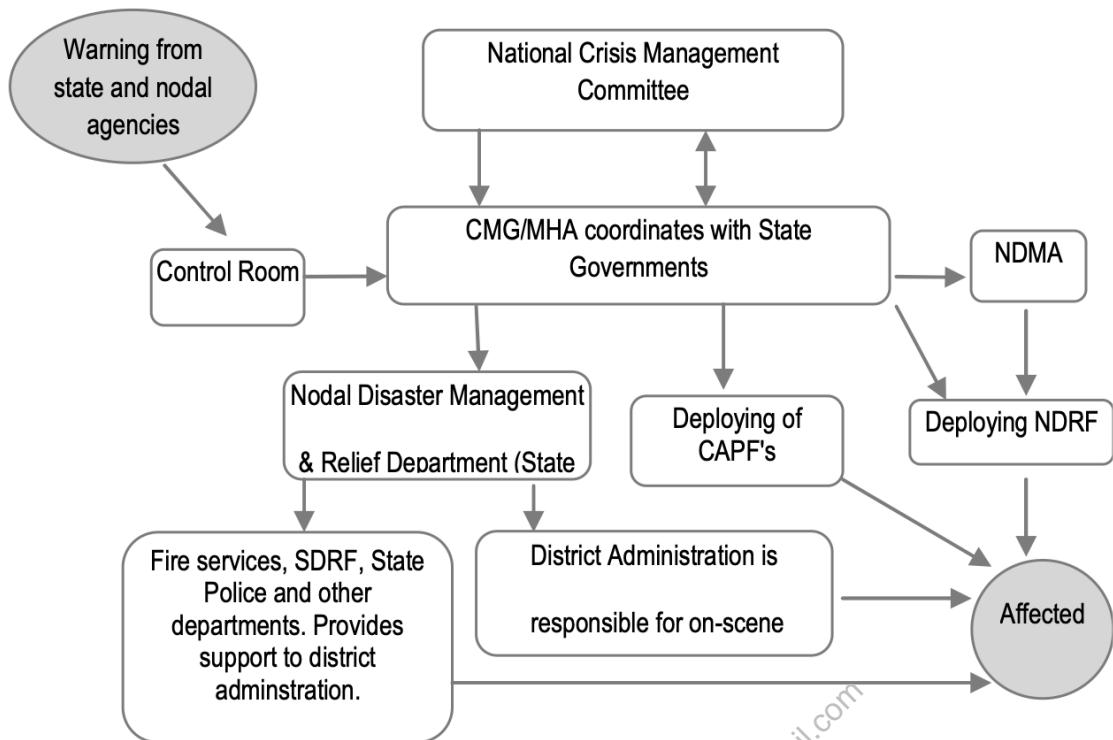


Figure 2.2: Legal Institutional Framework



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1.14.2 State Level

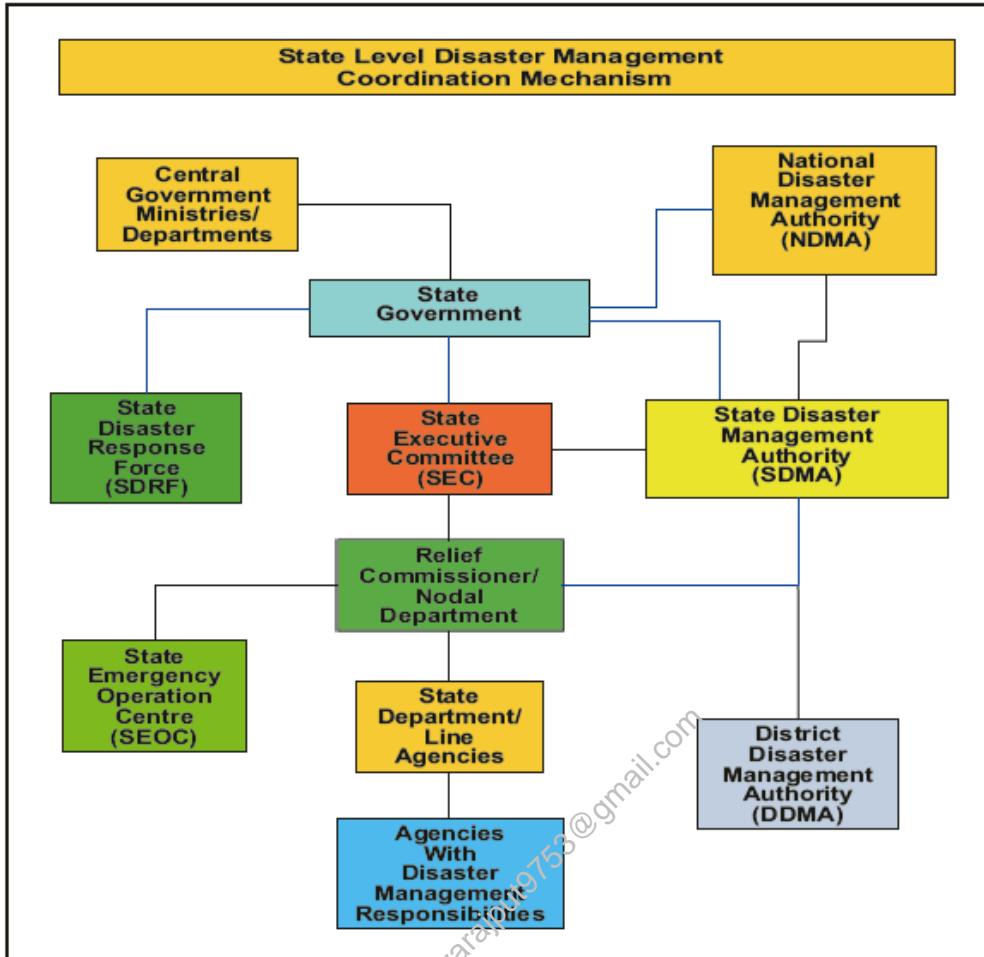
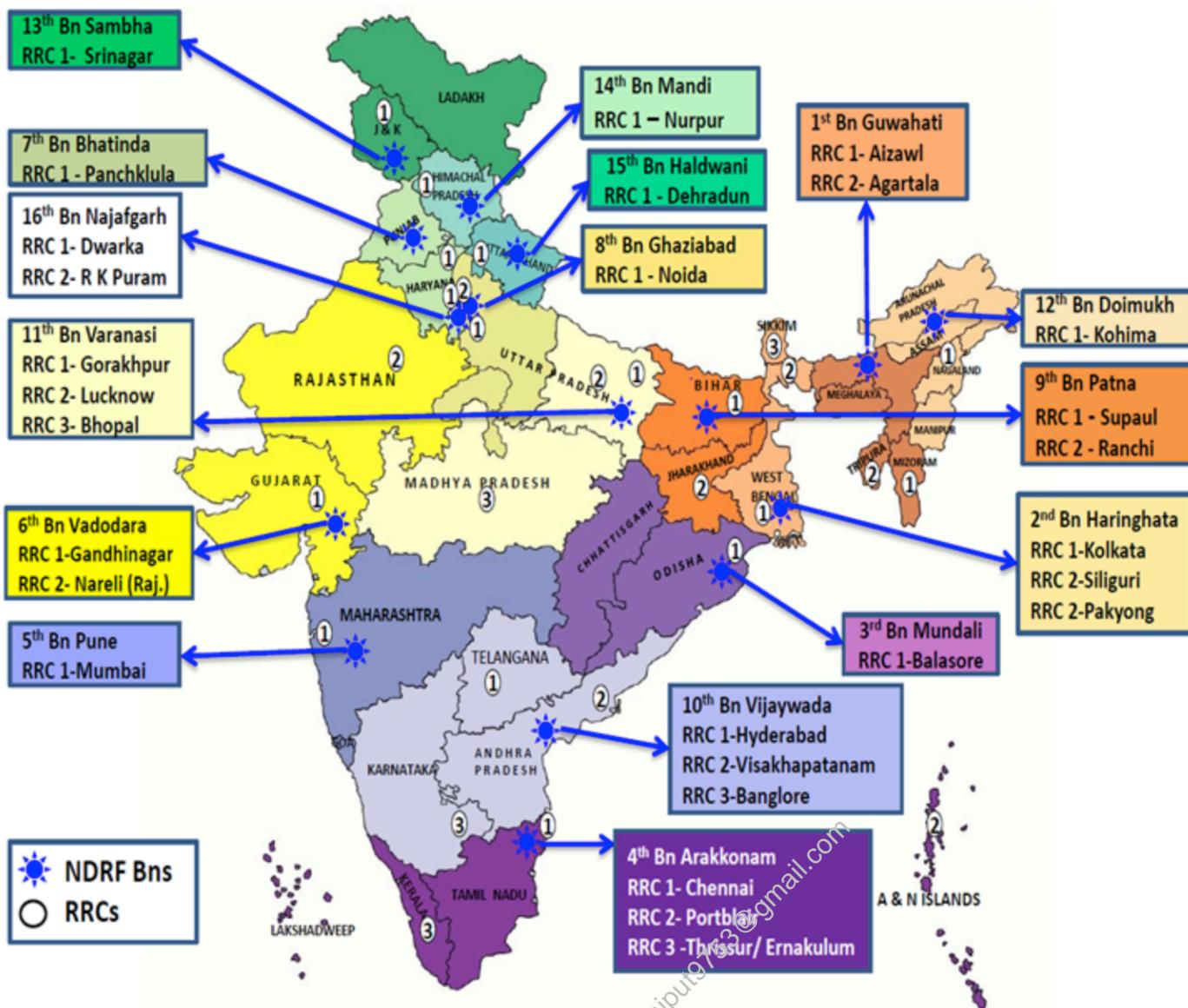


Figure 1-4: State-level disaster management - basic institutional framework

Note: The figure represents merely the institutional pathways for coordination, decision-making and communication for disaster management and does not imply any chain of command.

Time frames envisaged in the NDMP			
Short-Term (T1)	T1 (2022)		
Medium-Term (T2)	T1/T2	T2 (2027)	
Long-Term (T3)	T1/T2/T3	T2/T3	T3 (2030)

Figure 1-2: Time Frames—Short, Medium and Long Term



NDRF battalions as of Feb 2024

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Table 2-1: India - General profile

Feature	Description
1 Area	32.87 lakh (3.3 million) sq.km
2 Location	Situated in southern Asia, the Indian peninsula is separated from mainland Asia by the Himalayas; Lying entirely in the northern hemisphere, India lies between latitudes 8°4' N and 37°6' N; longitudes 68°7'E and 97° 25'E
3 Borders/ Neighbouring Countries	North: China, Bhutan and Nepal; Himalayan mountain ranges Northwest: Afghanistan and Pakistan South: Sri Lanka and Maldives; Indian Ocean, Palk Strait and the Gulf of Mannar East: Myanmar and Bangladesh; Bay of Bengal West: Arabian Sea
4 Major Rivers	Twelve with total catchment area of 252.8 million hectares
5 Forest	692,027 sq.km (21.5 percent of the total geographical area)
6 Coastline	7,517 km (the mainland, Lakshadweep Islands, and the Andaman and Nicobar Islands)
7 Desert	442,289 sq.km
8 Population	1.2 billion; Male: 51.5%; Female: 48.5% (Census 2011)
9 States*	28
10 Union Territories*	9
11 Sex Ratio	940 females per 1,000 males (Census 2011)
12 Population Density	382 persons per sq.km (Census 2011)
13 Annual exponential population growth rate	1.64 per cent in 2001-2011 (Census 2011)
14 Population share	Rural: 69%; Urban: 31% (Census 2011)
15 Climate	Tropical monsoon; tropical climate marked by relatively high summer temperatures and dry winters. Main seasons: a) Winter (Dec.-Feb.) b) Summer (Mar.-Jun.) c) South-West monsoon (Jun.-Sep.) and d) Post monsoon (Oct.-Nov.)

(*) Note: From October 31, 2019⁵Based on GOI website: <https://www.india.gov.in/india-glance/profile>

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2.2.1 Multi-Hazard Vulnerability

As per the definition adopted by UNISDR, hazard is a dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. India, due to its, physiographic and climatic conditions is one of the most disaster-prone areas of the World. Nearly 59 per cent of the landmass is prone to earthquakes of moderate to very high intensity. More than 40 million hectares (12 per cent of land) is prone to floods and river erosion. Of the nearly 7,500 km long coastline, close to 5,700 km is prone to cyclones and tsunamis. Nearly 68% of the cultivable area is vulnerable to drought. Large tracts in hilly regions are at risk from landslides and some are prone to snow avalanches. Vulnerability to disasters/emergencies of CBRN origin also exists. Heightened vulnerabilities to disaster risks can be related to expanding population, urbanisation, and industrialisation, development within high-risk zones, environmental degradation, and climate change.

2.3 Regions/Areas Involving Multiple States Requiring Special Attention

While suggesting a holistic approach to DM, the High Power Committee²⁴ discussed three cases that merit special consideration on the geo-physical considerations: a) Himalayan region b) Coastal tracts, and c) Riverine areas. From the point of view of administrative and logistical perspectives, the North-East Region also requires specialized approach. Similarly, the Union Territories, remote Islands and offshore marine assets need to be treated differently given the specific administrative and logistical challenges. Therefore, there are six special categories:

- 1) Himalayan Region spanning more than one State
- 2) Coastal Tracts covering more than one State and UTs
- 3) Riverine Areas spread over one or more States
- 4) North East Region consisting of all eight States
- 5) Union Territories, Islands and Marine Assets located in one or more State and UTs
- 6) Arid and Semi-Arid Regions

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1.3 Main Pillars of the NDMP

The NDMP, in a sense, can be said to have five main pillars:

- I. Conforming to the national legal mandates – the DM Act 2005 and the NPDM 2009
- II. Participating proactively to realise the global goals as per agreements to which India is a signatory – Sendai Framework for Disaster Risk Reduction (SFDRR), Sustainable Development Goals (SDGs) and Paris Agreement on Climate Change – consistent with the international consensus for achieving mutual reinforcement and coherence of these frameworks
- III. Prime Minister's Ten Point Agenda for DRR articulating contemporary national priorities
- IV. Social inclusion as a ubiquitous and cross-cutting principle
- V. Mainstreaming DRR as an integral feature

1.6 Prime Minister's Ten-Point Agenda for Disaster Risk Reduction

The Prime Minister, Shri Narendra Modi, enunciated a Ten-Point Agenda in his inaugural speech at the Asian Ministerial Conference on Disaster Risk Reduction 2016, held in New Delhi during November 2016 (AMCDRR), which has also been incorporated in the NDMP. The ten key elements consist of the following:

1. All development sectors must imbibe the principles of disaster risk management
2. Risk coverage must include all, starting from poor households to SMEs to multi-national corporations to nation states
3. Women's leadership and greater involvement should be central to disaster risk management
4. Invest in risk mapping globally to improve global understanding of Nature and disaster risks
5. Leverage technology to enhance the efficiency of disaster risk management efforts
6. Develop a network of universities to work on disaster-related issues
7. Utilise the opportunities provided by social media and mobile technologies for disaster risk reduction
8. Build on local capacity and initiative to enhance disaster risk reduction
9. Make use of every opportunity to learn from disasters and, to achieve that, there must be studies on the lessons after every disaster
10. Bring about greater cohesion in international response to disasters

1.11 Objectives

Along with the mandate given in the DM Act 2005 and the NPDM 2009, the national plan has incorporated the national commitments in the domain of DRR associated with the three major post-2015 global frameworks and the PM's Ten Point Agenda. Accordingly, the broad objectives of the NDMP are:

1. Improve the understanding of disaster risk, hazards, and vulnerabilities
2. Strengthen disaster risk governance at all levels from local to centre
3. Invest in disaster risk reduction for resilience through structural, non-structural and financial measures, as well as comprehensive capacity development
4. Enhance disaster preparedness for effective response
5. Promote "Build Back Better" in recovery, rehabilitation and reconstruction
6. Prevent disasters and achieve substantial reduction of disaster risk and losses in lives, livelihoods, health, and assets (economic, physical, social, cultural and environmental)
7. Increase resilience, prevent the emergence of new disaster risks, reduce the existing risks and manage the residual risks
8. Promote the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures to prevent and reduce hazard exposure and vulnerabilities to disaster
9. Empower both local authorities and communities as partners to reduce and manage disaster risks
10. Strengthen scientific and technical capabilities in all aspects of disaster management
11. Capacity development at all levels to effectively respond to multiple hazards and for community-based disaster management
12. Provide clarity on roles and responsibilities of various Ministries and Departments involved in different aspects of disaster management
13. Promote the culture of disaster risk prevention and mitigation at all levels
14. Facilitate the mainstreaming of disaster management concerns into the developmental planning and processes
15. Ensuring DRR is socially inclusive, gender sensitive and empowering
16. Build and strengthen the resilience of poor communities to prevent disasters aggravating poverty and to protect livelihoods
17. Enhanced mainstreaming of disaster risk reduction and climate adaptation strategies within the agriculture sector including sustainable farming
18. Special focus on disaster risk reduction measures for agriculture and livestock
19. Promoting resilient health systems to develop the capacities and resilience of communities to cope and recover from disaster impacts
20. Enhance the resilience of health systems by integrating DRR into all levels of health care
21. Promote disaster-resilient schools, colleges and other educational facilities
22. Promote women's leadership and active participation in disaster risk reduction
23. Strengthen efforts to mainstream DRR into water management and reduce the likely impacts of water-related hazards
24. Strengthening and promoting the resilience of new and existing critical infrastructure
25. Integration of disaster risk reduction considerations and measures into financial and fiscal instruments

26. Mainstreaming DRR into development and implementation of all projects and schemes (rural and urban)
27. Strengthen disaster risk modelling, assessment, mapping, monitoring and multi-hazard early warning systems
28. Promote comprehensive surveys on multi-hazard disaster risks and the development of regional disaster risk assessments and maps, including climate change scenarios
29. Implementation of ecosystem-based approaches regarding shared resources, such as within river basins, mountainous regions and coastlines
30. Effective use of science, technology and traditional knowledge in all aspects of DRR

Table 1-2: Key National-Level Decision-Making Bodies for Disaster Management

	Name	Composition	Vital role
1	Cabinet Committee on Security (CCS)	Prime Minister, Minister of Defence, Minister of Finance, Minister of Home Affairs, and Minister of External Affairs	<ul style="list-style-type: none"> Evaluation from a national security perspective, if an incident has potentially security implications Oversee all aspects of preparedness, mitigation and management of Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and of disasters with security implications Review risks of CBRN emergencies from time to time, giving directions for measures considered necessary for disaster prevention, mitigation, preparedness and effective response
2	National Crisis Management Committee (NCMC)	<ul style="list-style-type: none"> Cabinet Secretary (Chairperson) Secretaries of Ministries/ Departments and agencies with specific DM responsibilities 	<ul style="list-style-type: none"> Oversee the Command, Control and Coordination of the disaster response Give direction to the Crisis Management Group as deemed necessary Give direction for specific actions to face crisis situations
3	National Disaster Management Authority (NDMA)	<ul style="list-style-type: none"> Prime Minister (Chairperson) Members (not exceeding nine, nominated by the Chairperson) 	<ul style="list-style-type: none"> Lay down policies, plans and guidelines for disaster management Coordinate their enforcement and implementation throughout the country Approve the NDMP and the DM plans of the respective Ministries and Departments of Government of India Lay down guidelines for disaster management to be followed by the different Central Ministries, Departments and the State Governments
4	National Executive Committee (NEC)	<ul style="list-style-type: none"> Union Home Secretary (Chairperson) Secretaries to the GOI in the Ministries/ Departments of 	<ul style="list-style-type: none"> To assist the NDMA in the discharge of its functions Preparation of the National Plan Coordinate and monitor the implementation of the National Policy

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	Name	Composition	Vital role
		Agriculture, Atomic Energy, Defence, Drinking Water and sanitation, Environment, Forests and Climate Change Finance (Expenditure), Health and Family Welfare, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development, Water Resources, River Development and Ganga Rejuvenation, The Chief of the Integrated Defense Staff of the Chiefs of Staff Committee, ex officio as members. • Secretaries in the Ministry of External Affairs, Earth Sciences, Human Resource Development, Mines, Shipping, Road Transport and Highways, Chairman, Central Water Commission and Secretary, NDMA are special invitees to the meetings of the NEC.	<ul style="list-style-type: none"> Monitor the implementation of the National Plan and the plans prepared by the Ministries or Departments of the Government of India Direct any department or agency of the Govt. to make available to the NDMA or SDMAs such men, material or resources as are available with it for emergency response, rescue and relief Ensure compliance of the directions issued by the Central Government Coordinate response in the event of any threatening disaster situation or disaster Direct the relevant Ministries/ Departments of the GOI, the State Governments and the SDMAs regarding measures to be taken in response to any specific threatening disaster situation or disaster. Coordinate with relevant Central Ministries/ Departments/ Agencies which are expected to assist the affected State as per protocols and Standard Operating Procedures (SOPs) Coordinate with the Armed Forces, Central Armed Police Forces⁴ (CAPF), the National Disaster Response Force (NDRF) and other uniformed services which comprise the GOI's response to aid the State authorities Coordinate with all relevant specialized scientific institutions/ agencies responsible for providing early warning and monitoring Coordinate with SDRF, civil defense volunteers, home guards and fire services, through the relevant administrative departments of the State Governments
5	National Disaster Response Force (NDRF)	Specially trained force headed by a Director General Structured like paramilitary forces for rapid deployment	Assist the relevant State Government/District Administration in the event of an imminent hazard event or in its aftermath
6	National Institute of Disaster Management (NIDM)	Union Home Minister; Vice Chairman, NDMA; Members including Secretaries of various nodal Ministries and Departments of Government of India and State Governments and	<ul style="list-style-type: none"> Human resource development and capacity building for disaster management within the broad policies and guidelines laid down by the NDMA Design, develop and implement training programmes Undertake research
	Name	Composition	Vital role
		heads of national levels scientific, research and technical organizations, besides eminent scholars, scientists and practitioners.	<ul style="list-style-type: none"> Formulate and implement a comprehensive human resource development plan Provide assistance in national policy formulation, assist other research and training institutes, state governments and other organizations for successfully discharging their responsibilities Develop educational materials for dissemination Promote awareness generation

Table 1-3: Nodal Ministry for Management/ Mitigation of Different Disasters

SN	Disaster	Nodal Ministry/ Department
1.	Accident – Air (Civil Aviation)	Min. of Civil Aviation (MOCA)
2.	Accidents – Rail	Min. of Railways (MOR)
3.	Accidents – Road	Min. of Road Transport and Highways (MRTH)
4.	Avalanche	Min. of Defence (MOD) – Border Road Organization (BRO)
5.	Biological Emergencies	Min. of Health and Family Welfare (MHFW)
6.	Cold-Wave	Min. of Agriculture and Farmers Welfare (MAFW)
7.	Cyclone/ Tornado	Min. of Earth Sciences (MOES)
8.	Drought	Min. of Agriculture and Farmers Welfare (MAFW)
9.	Earthquake	Min. of Earth Sciences (MOES)
10.	Flood	Min. of Jal Shakti (MOJS)
11.	Floods – Urban	Min. of Housing and Urban Affairs (MHUA)
12.	Forest Fire	Min. of Environment, Forests, and Climate Change (MEFCC)
13.	Frost	Min. of Agriculture and Farmers Welfare (MAFW)
14.	Hailstorm	Min. of Agriculture and Farmers Welfare (MAFW)
15.	Industrial and Chemical	Min. of Environment, Forests and Climate Change (MEFCC)
16.	Landslides	Min. of Mines (MOM)
17.	Nuclear and Radiological	Dept. of Atomic Energy (DAE)
18.	Oil Spills	Min. of Defence (MOD) – Indian Coast Guard (ICG)
SN	Disaster	Nodal Ministry/ Department
19.	Pest Attack	Min. of Agriculture and Farmers Welfare (MAFW)
20.	Tsunami	Min. of Earth Sciences (MOES)

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2.2.1 Multi-Hazard Vulnerability

As per the definition adopted by UNISDR, hazard is a dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. India, due to its, physiographic and climatic conditions is one of the most disaster-prone areas of the World. Nearly 59 per cent of the landmass is prone to earthquakes of moderate to very high intensity. More than 40 million hectares (12 per cent of land) is prone to floods and river erosion. Of the nearly 7,500 km long coastline, close to 5,700 km is prone to cyclones and tsunamis. Nearly 68% of the cultivable area is vulnerable to drought. Large tracts in hilly regions are at risk from landslides and some are prone to snow avalanches. Vulnerability to disasters/emergencies of CBRN origin also exists. Heightened vulnerabilities to disaster risks can be related to expanding population, urbanisation, and industrialisation, development within high-risk zones, environmental degradation, and climate change.

2.3 Regions/Areas Involving Multiple States Requiring Special Attention

While suggesting a holistic approach to DM, the High Power Committee²⁴ discussed three cases that merit special consideration on the geo-physical considerations: a) Himalayan region b) Coastal tracts, and c) Riverine areas. From the point of view of administrative and logistical perspectives, the North-East Region also requires specialized approach. Similarly, the Union Territories, remote Islands and offshore marine assets need to be treated differently given the specific administrative and logistical challenges. Therefore, there are six special categories:

- 1) Himalayan Region spanning more than one State
- 2) Coastal Tracts covering more than one State and UTs
- 3) Riverine Areas spread over one or more States
- 4) North East Region consisting of all eight States
- 5) Union Territories, Islands and Marine Assets located in one or more State and UTs
- 6) Arid and Semi-Arid Regions

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1.3 Main Pillars of the NDMP

The NDMP, in a sense, can be said to have five main pillars:

- I. Conforming to the national legal mandates – the DM Act 2005 and the NPDM 2009
- II. Participating proactively to realise the global goals as per agreements to which India is a signatory – Sendai Framework for Disaster Risk Reduction (SFDRR), Sustainable Development Goals (SDGs) and Paris Agreement on Climate Change – consistent with the international consensus for achieving mutual reinforcement and coherence of these frameworks
- III. Prime Minister's Ten Point Agenda for DRR articulating contemporary national priorities
- IV. Social inclusion as a ubiquitous and cross-cutting principle
- V. Mainstreaming DRR as an integral feature

1.6 Prime Minister's Ten-Point Agenda for Disaster Risk Reduction

The Prime Minister, Shri Narendra Modi, enunciated a Ten-Point Agenda in his inaugural speech at the Asian Ministerial Conference on Disaster Risk Reduction 2016, held in New Delhi during November 2016 (AMCDRR), which has also been incorporated in the NDMP. The ten key elements consist of the following:

1. All development sectors must imbibe the principles of disaster risk management
2. Risk coverage must include all, starting from poor households to SMEs to multi-national corporations to nation states
3. Women's leadership and greater involvement should be central to disaster risk management
4. Invest in risk mapping globally to improve global understanding of Nature and disaster risks
5. Leverage technology to enhance the efficiency of disaster risk management efforts
6. Develop a network of universities to work on disaster-related issues
7. Utilise the opportunities provided by social media and mobile technologies for disaster risk reduction
8. Build on local capacity and initiative to enhance disaster risk reduction
9. Make use of every opportunity to learn from disasters and, to achieve that, there must be studies on the lessons after every disaster
10. Bring about greater cohesion in international response to disasters

1.11 Objectives

Along with the mandate given in the DM Act 2005 and the NPDM 2009, the national plan has incorporated the national commitments in the domain of DRR associated with the three major post-2015 global frameworks and the PM's Ten Point Agenda. Accordingly, the broad objectives of the NDMP are:

1. Improve the understanding of disaster risk, hazards, and vulnerabilities
2. Strengthen disaster risk governance at all levels from local to centre
3. Invest in disaster risk reduction for resilience through structural, non-structural and financial measures, as well as comprehensive capacity development
4. Enhance disaster preparedness for effective response
5. Promote "Build Back Better" in recovery, rehabilitation and reconstruction
6. Prevent disasters and achieve substantial reduction of disaster risk and losses in lives, livelihoods, health, and assets (economic, physical, social, cultural and environmental)
7. Increase resilience, prevent the emergence of new disaster risks, reduce the existing risks and manage the residual risks
8. Promote the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures to prevent and reduce hazard exposure and vulnerabilities to disaster
9. Empower both local authorities and communities as partners to reduce and manage disaster risks
10. Strengthen scientific and technical capabilities in all aspects of disaster management
11. Capacity development at all levels to effectively respond to multiple hazards and for community-based disaster management
12. Provide clarity on roles and responsibilities of various Ministries and Departments involved in different aspects of disaster management
13. Promote the culture of disaster risk prevention and mitigation at all levels
14. Facilitate the mainstreaming of disaster management concerns into the developmental planning and processes
15. Ensuring DRR is socially inclusive, gender sensitive and empowering
16. Build and strengthen the resilience of poor communities to prevent disasters aggravating poverty and to protect livelihoods
17. Enhanced mainstreaming of disaster risk reduction and climate adaptation strategies within the agriculture sector including sustainable farming
18. Special focus on disaster risk reduction measures for agriculture and livestock
19. Promoting resilient health systems to develop the capacities and resilience of communities to cope and recover from disaster impacts
20. Enhance the resilience of health systems by integrating DRR into all levels of health care
21. Promote disaster-resilient schools, colleges and other educational facilities
22. Promote women's leadership and active participation in disaster risk reduction
23. Strengthen efforts to mainstream DRR into water management and reduce the likely impacts of water-related hazards
24. Strengthening and promoting the resilience of new and existing critical infrastructure
25. Integration of disaster risk reduction considerations and measures into financial and fiscal instruments

26. Mainstreaming DRR into development and implementation of all projects and schemes (rural and urban)
27. Strengthen disaster risk modelling, assessment, mapping, monitoring and multi-hazard early warning systems
28. Promote comprehensive surveys on multi-hazard disaster risks and the development of regional disaster risk assessments and maps, including climate change scenarios
29. Implementation of ecosystem-based approaches regarding shared resources, such as within river basins, mountainous regions and coastlines
30. Effective use of science, technology and traditional knowledge in all aspects of DRR

Table 1-2: Key National-Level Decision-Making Bodies for Disaster Management

	Name	Composition	Vital role
1	Cabinet Committee on Security (CCS)	Prime Minister, Minister of Defence, Minister of Finance, Minister of Home Affairs, and Minister of External Affairs	<ul style="list-style-type: none"> Evaluation from a national security perspective, if an incident has potentially security implications Oversee all aspects of preparedness, mitigation and management of Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and of disasters with security implications Review risks of CBRN emergencies from time to time, giving directions for measures considered necessary for disaster prevention, mitigation, preparedness and effective response
2	National Crisis Management Committee (NCMC)	<ul style="list-style-type: none"> Cabinet Secretary (Chairperson) Secretaries of Ministries/ Departments and agencies with specific DM responsibilities 	<ul style="list-style-type: none"> Oversee the Command, Control and Coordination of the disaster response Give direction to the Crisis Management Group as deemed necessary Give direction for specific actions to face crisis situations
3	National Disaster Management Authority (NDMA)	<ul style="list-style-type: none"> Prime Minister (Chairperson) Members (not exceeding nine, nominated by the Chairperson) 	<ul style="list-style-type: none"> Lay down policies, plans and guidelines for disaster management Coordinate their enforcement and implementation throughout the country Approve the NDMP and the DM plans of the respective Ministries and Departments of Government of India Lay down guidelines for disaster management to be followed by the different Central Ministries, Departments and the State Governments
4	National Executive Committee (NEC)	<ul style="list-style-type: none"> Union Home Secretary (Chairperson) Secretaries to the GOI in the Ministries/ Departments of 	<ul style="list-style-type: none"> To assist the NDMA in the discharge of its functions Preparation of the National Plan Coordinate and monitor the implementation of the National Policy

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	Name	Composition	Vital role
		Agriculture, Atomic Energy, Defence, Drinking Water and sanitation, Environment, Forests and Climate Change Finance (Expenditure), Health and Family Welfare, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development, Water Resources, River Development and Ganga Rejuvenation, The Chief of the Integrated Defense Staff of the Chiefs of Staff Committee, ex officio as members. • Secretaries in the Ministry of External Affairs, Earth Sciences, Human Resource Development, Mines, Shipping, Road Transport and Highways, Chairman, Central Water Commission and Secretary, NDMA are special invitees to the meetings of the NEC.	<ul style="list-style-type: none"> Monitor the implementation of the National Plan and the plans prepared by the Ministries or Departments of the Government of India Direct any department or agency of the Govt. to make available to the NDMA or SDMAs such men, material or resources as are available with it for emergency response, rescue and relief Ensure compliance of the directions issued by the Central Government Coordinate response in the event of any threatening disaster situation or disaster Direct the relevant Ministries/ Departments of the GOI, the State Governments and the SDMAs regarding measures to be taken in response to any specific threatening disaster situation or disaster. Coordinate with relevant Central Ministries/ Departments/ Agencies which are expected to assist the affected State as per protocols and Standard Operating Procedures (SOPs) Coordinate with the Armed Forces, Central Armed Police Forces⁴ (CAPF), the National Disaster Response Force (NDRF) and other uniformed services which comprise the GOI's response to aid the State authorities Coordinate with all relevant specialized scientific institutions/ agencies responsible for providing early warning and monitoring Coordinate with SDRF, civil defense volunteers, home guards and fire services, through the relevant administrative departments of the State Governments
5	National Disaster Response Force (NDRF)	Specially trained force headed by a Director General Structured like paramilitary forces for rapid deployment	Assist the relevant State Government/District Administration in the event of an imminent hazard event or in its aftermath
6	National Institute of Disaster Management (NIDM)	Union Home Minister; Vice Chairman, NDMA; Members including Secretaries of various nodal Ministries and Departments of Government of India and State Governments and	<ul style="list-style-type: none"> Human resource development and capacity building for disaster management within the broad policies and guidelines laid down by the NDMA Design, develop and implement training programmes Undertake research
	Name	Composition	Vital role
		heads of national levels scientific, research and technical organizations, besides eminent scholars, scientists and practitioners.	<ul style="list-style-type: none"> Formulate and implement a comprehensive human resource development plan Provide assistance in national policy formulation, assist other research and training institutes, state governments and other organizations for successfully discharging their responsibilities Develop educational materials for dissemination Promote awareness generation

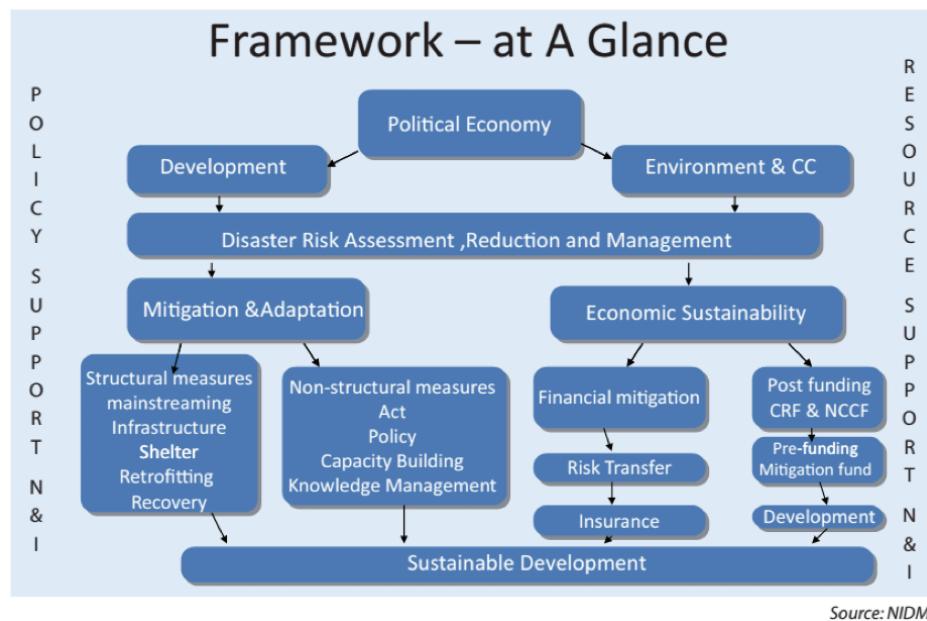
Table 1-3: Nodal Ministry for Management/ Mitigation of Different Disasters

SN	Disaster	Nodal Ministry/ Department
1.	Accident – Air (Civil Aviation)	Min. of Civil Aviation (MOCA)
2.	Accidents – Rail	Min. of Railways (MOR)
3.	Accidents – Road	Min. of Road Transport and Highways (MRTH)
4.	Avalanche	Min. of Defence (MOD) – Border Road Organization (BRO)
5.	Biological Emergencies	Min. of Health and Family Welfare (MHFW)
6.	Cold-Wave	Min. of Agriculture and Farmers Welfare (MAFW)
7.	Cyclone/ Tornado	Min. of Earth Sciences (MOES)
8.	Drought	Min. of Agriculture and Farmers Welfare (MAFW)
9.	Earthquake	Min. of Earth Sciences (MOES)
10.	Flood	Min. of Jal Shakti (MOJS)
11.	Floods – Urban	Min. of Housing and Urban Affairs (MHUA)
12.	Forest Fire	Min. of Environment, Forests, and Climate Change (MEFCC)
13.	Frost	Min. of Agriculture and Farmers Welfare (MAFW)
14.	Hailstorm	Min. of Agriculture and Farmers Welfare (MAFW)
15.	Industrial and Chemical	Min. of Environment, Forests and Climate Change (MEFCC)
16.	Landslides	Min. of Mines (MOM)
17.	Nuclear and Radiological	Dept. of Atomic Energy (DAE)
18.	Oil Spills	Min. of Defence (MOD) – Indian Coast Guard (ICG)

SN	Disaster	Nodal Ministry/ Department
19.	Pest Attack	Min. of Agriculture and Farmers Welfare (MAFW)
20.	Tsunami	Min. of Earth Sciences (MOES)

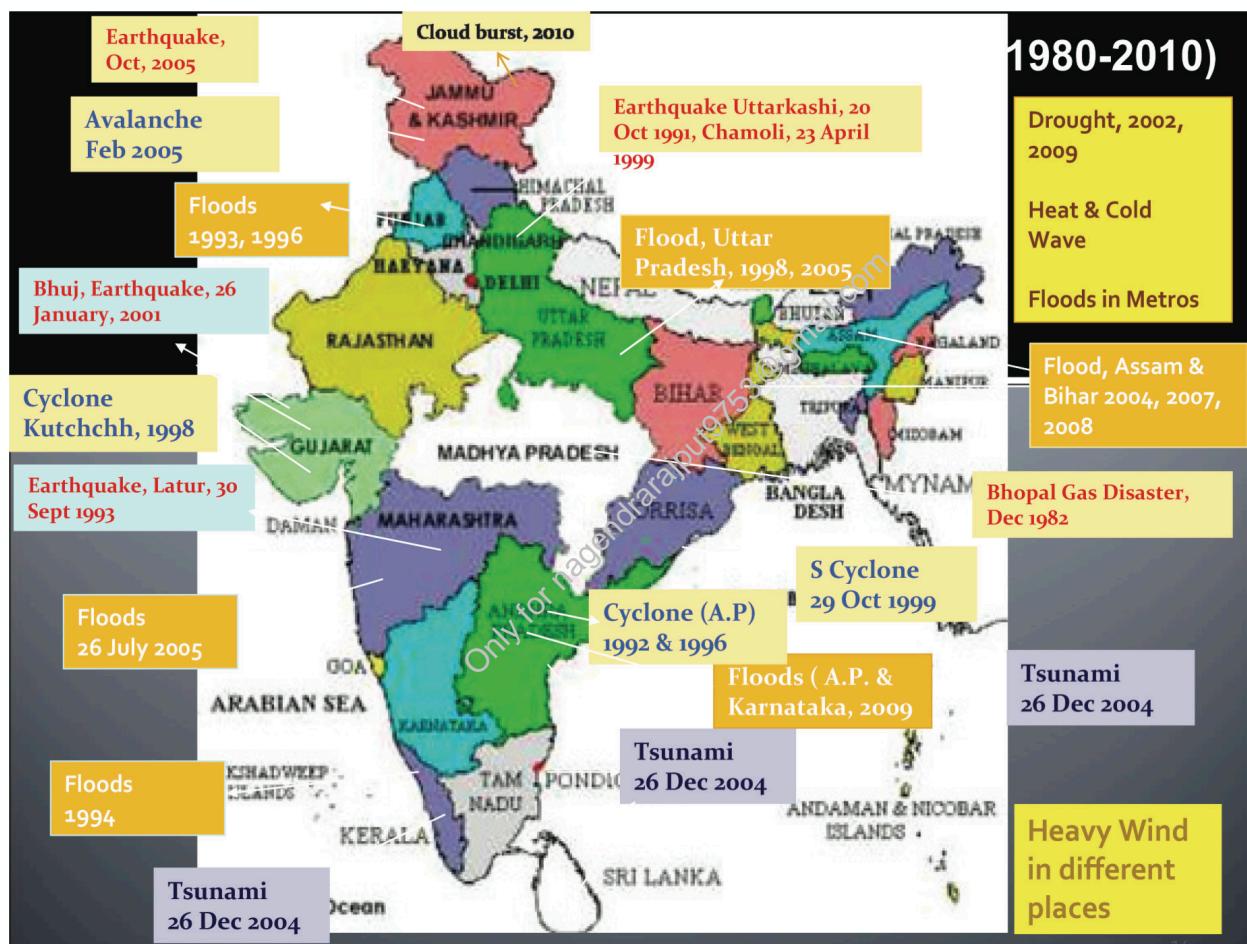
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Figure 2.8: Interface among the stakeholders, leading to the development of society



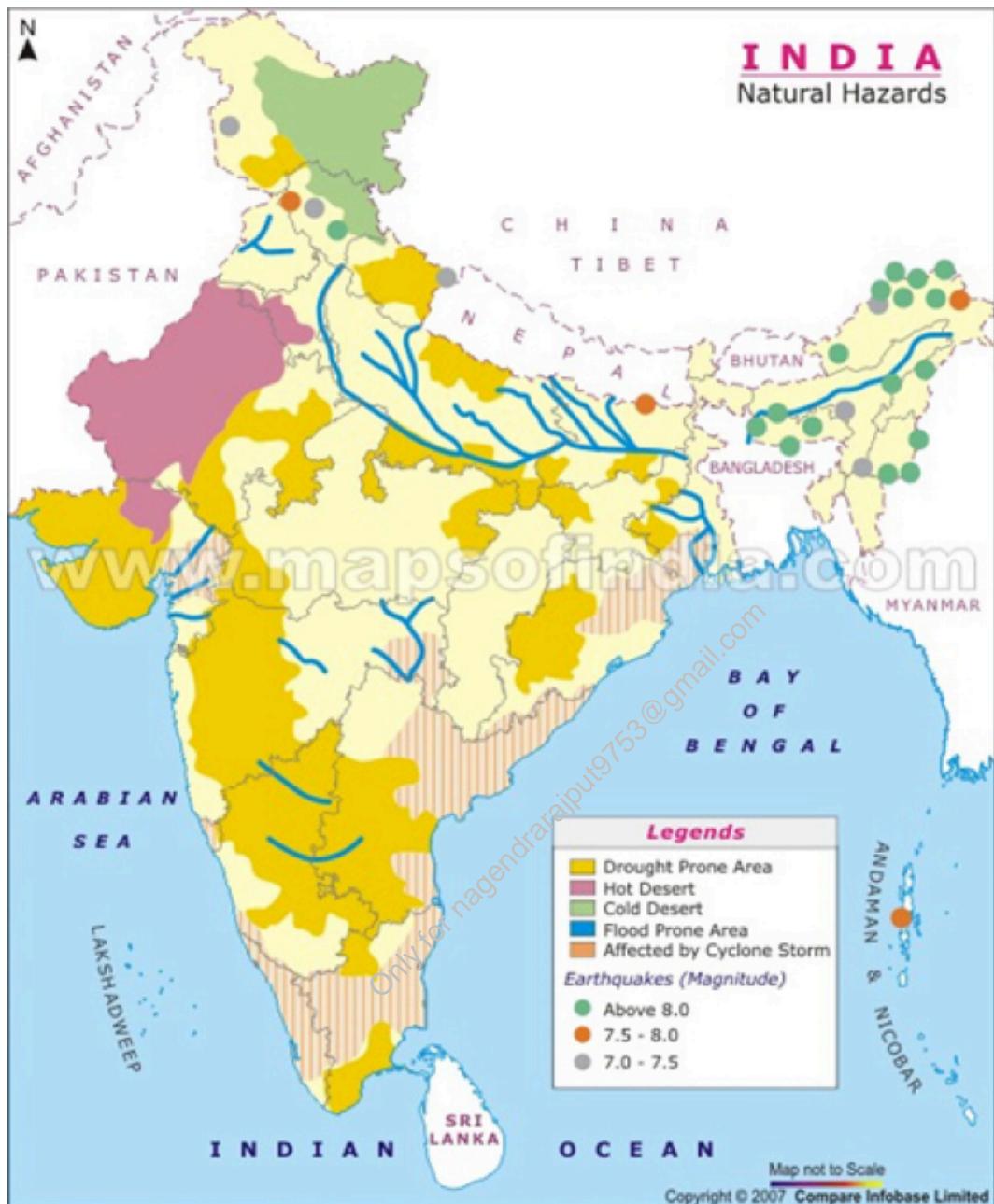
Source: NIDM

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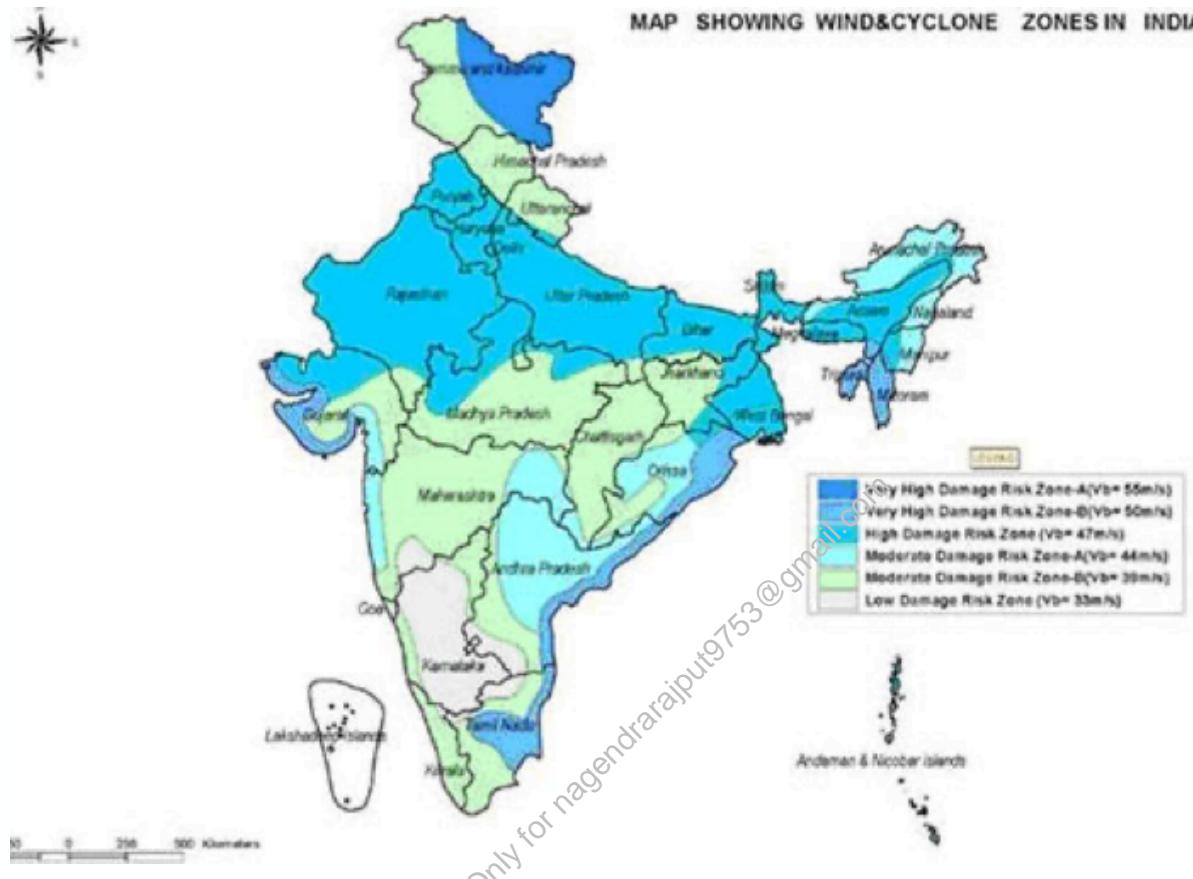


INDIA

Natural Hazards



MAP SHOWING WIND&CYCLONE ZONES IN INDIA



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Box 4.2: National Cyclone Risk Mitigation Project

Aim: The scheme aims to upgrade cyclone forecasting, tracking and warning systems, build capacity in multi-hazard risk management and to construct major infrastructures including multi-purpose cyclone shelters and embankments.

Outcome: The project is expected to benefit 5.60 lac people in Orissa and over 5.50 lacs in Andhra Pradesh.

Execution Authority: The National Disaster Management Authority (NDMA) has been designated as the implementing agency. The scheme is regularly monitored by NDMA and MHA.

Principal Components: The major components under the scheme are as follows;

- Community mobilisation and training,
- Cyclone Risk Mitigation Infrastructure (construction of cyclone shelters, roads/missing links and construction/repair of Saline Embankments etc.),
- Technical assistance for capacity building on Disaster Risk Management (risk assessment, damage and need assessment),
- Capacity Building and knowledge creation along with project management and implementation support.

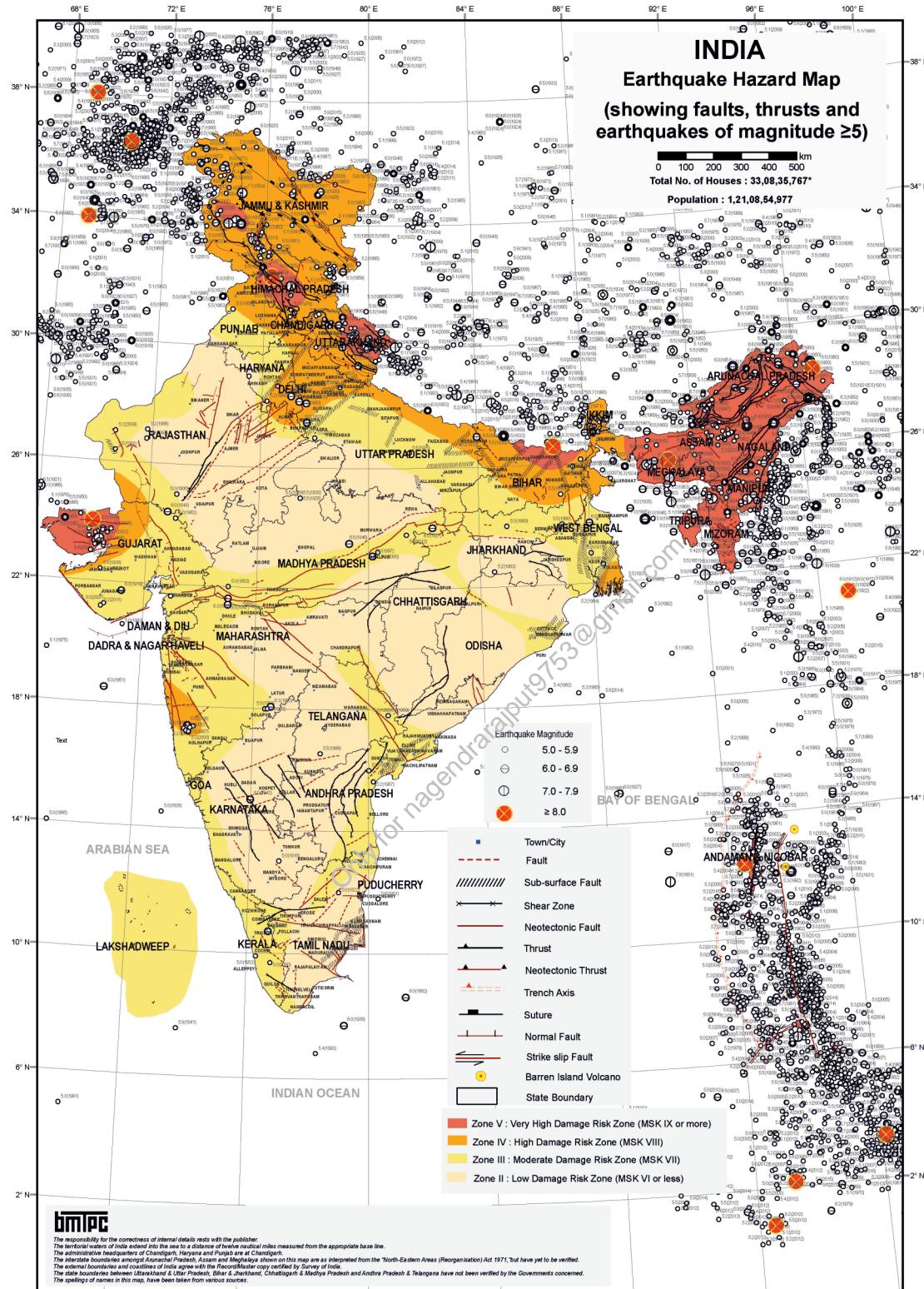
States covered: In the first phase of the project, states of Orissa and Andhra Pradesh are being covered.

Project cost: The total outlay of the project is ₹1496.71 crore. The World Bank is providing financial assistance equivalent to ₹1198.44 crore and contribution from the state governments is ₹298.27 crore (i.e. Orissa- ₹ 132.98 crore and Andhra Pradesh – ₹165.29 crore).

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Earthquake Hazard Map

(<http://www.bmtpc.org/DataFiles/CMS/file/VAI2019/eq.html>, accessed Oct 15, 2019)



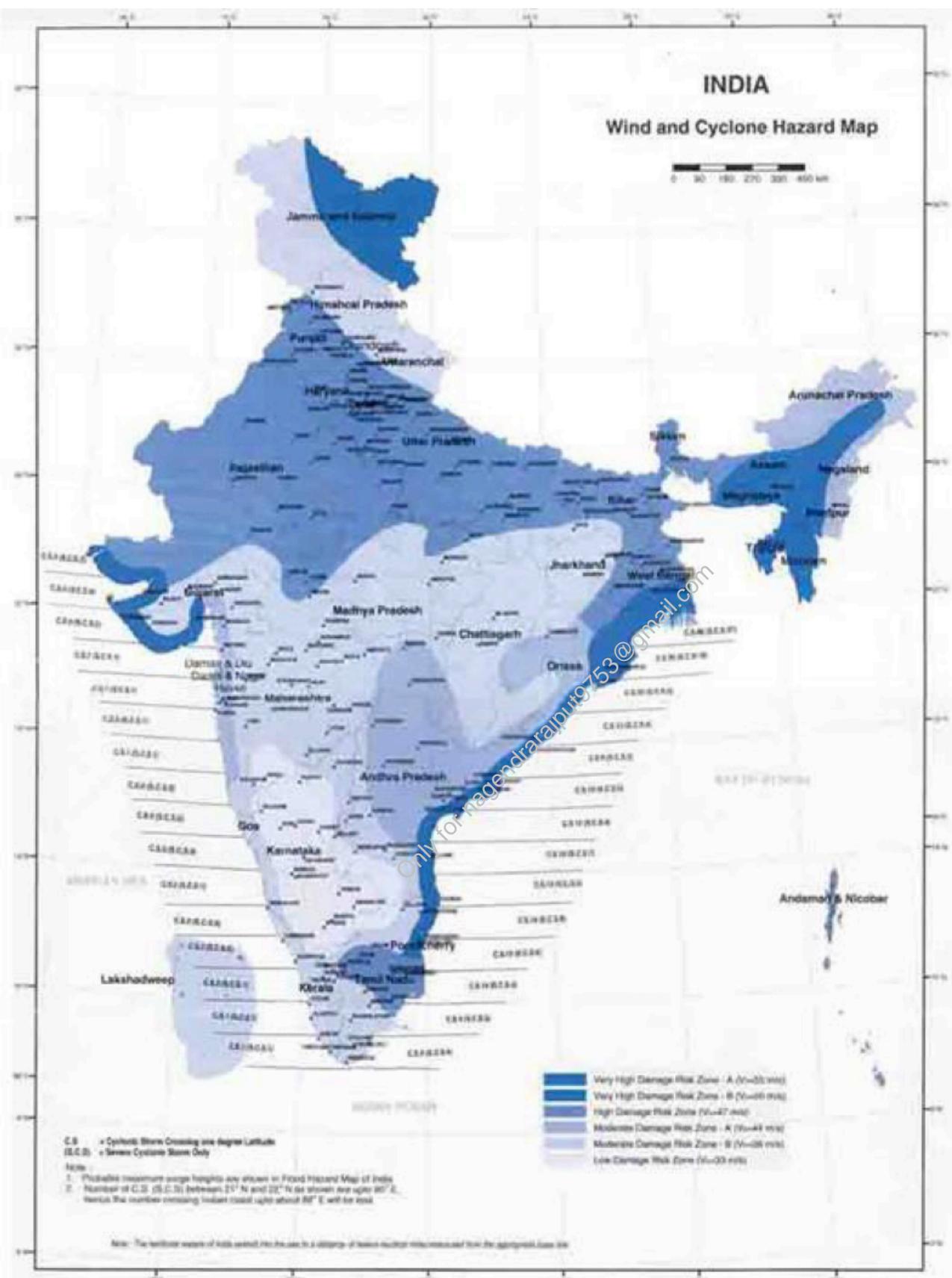
BMTPC : Vulnerability Atlas - 3rd Edition : Peer Group, MoHUA, GoI; Map is Based on digitised data of SOI; Seismic Zones of India Map IS 1893 (Part I) : 2002, BIS; Earthquake Epicentre from IMD; Seismotectonic Atlas of India and its Environs, GSI; Houses/Population as per Census 2011; *Houses including vacant & locked houses. Disclaimer: The maps are solely for thematic presentation.

Landslide Incidence Map

(<http://www.bmtpc.org/DataFiles/CMS/file/VAI2019/landslide.html>, accessed Oct 15, 2019)

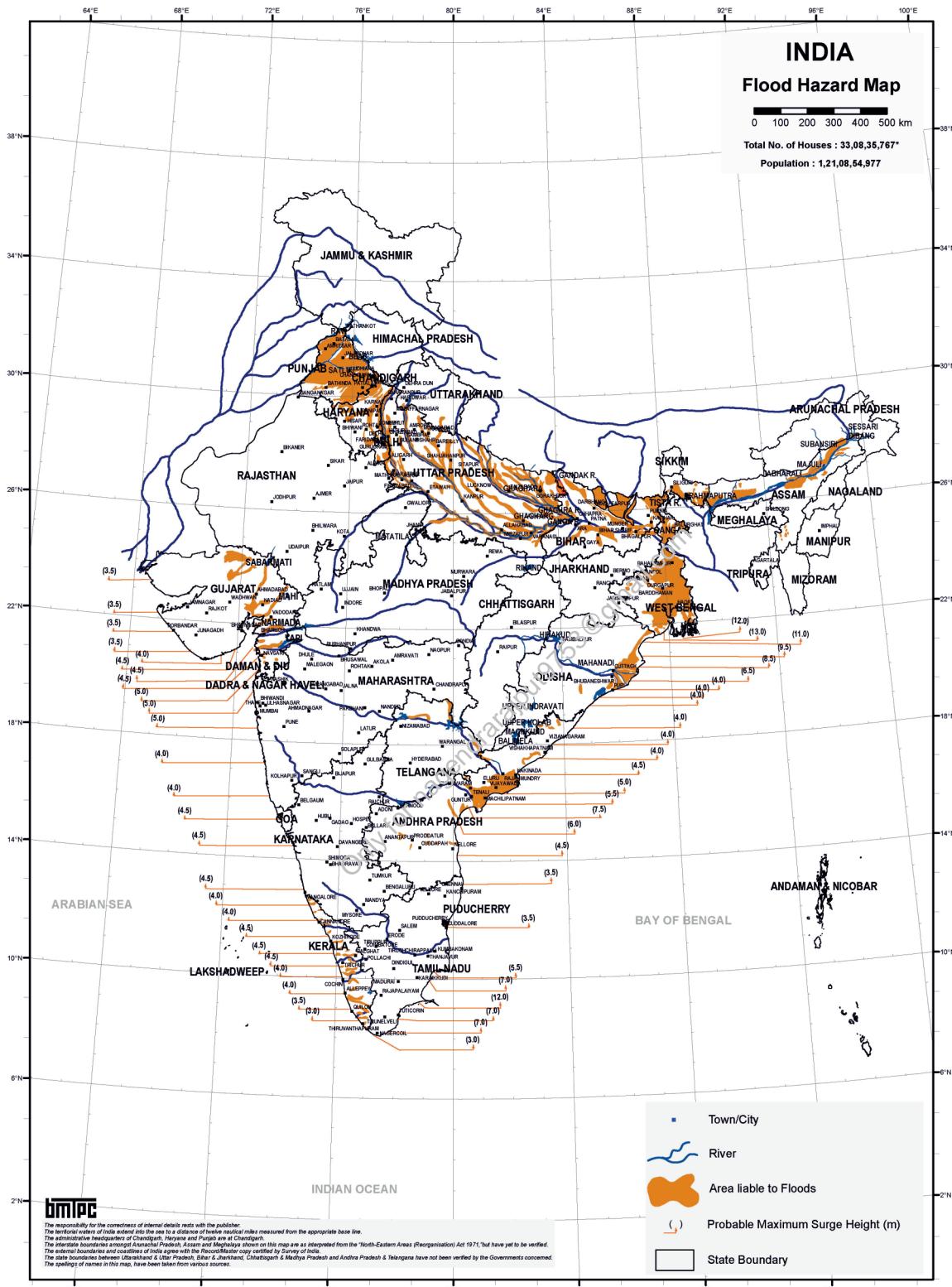


Wind Hazard Map



Flood Hazard Map

(<http://www.bmtpc.org/DataFiles/CMS/file/VAI2019/flood.html>, accessed Oct 15, 2019)



The responsibility for the correctness of internal details rests with the publisher.
The territorial waters of India extend into sea to a distance of twelve nautical miles measured from the appropriate base line.
The boundaries of the State of Jammu & Kashmir are yet to be finalized by the Government of India.
The interstate boundaries along Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the 'North-Eastern Areas (Reorganisation) Act 1971', but have yet to be verified.
The external boundaries and coastline of India are given with the RecordMaster copy certified by Survey of India.
The state boundaries between Uttrakhand & Uttar Pradesh, Bihar & Jharkhand, Chhattisgarh & Madhya Pradesh and Andhra Pradesh & Telangana have not been verified by the Governments concerned.
The spellings of names in this map have been taken from various sources.

BMTPC : Vulnerability Atlas - 3rd Edition; Peer Group, MOHUA; Map is Based on digitised data of SOI, GOI; Census of India 2011; Flood Atlas (1987), Task Force Report (2004), C.W.C., G.O.I. Houses/Population as per Census 2011; * Houses including vacant & locked houses. Disclaimer: The maps are solely for thematic presentation.

Thunderstorm Incidence Map

(<http://www.bmtpc.org/DataFiles/CMS/file/VAI2019/th.html>, accessed Oct 15, 2019)



BMTPC: Vulnerability Atlas - 3rd Edition: Peer Group, MoHUA, GOI; Map is Based on digitised data of SOI; Thunderstorm data from IMD. Disclaimer: The maps are solely for thematic presentation.

Table 8-1: Central Agencies Designated for Natural Hazard-Specific Early Warnings

SN	Hazard	Ministry	Agency
1.	Avalanches	MOD	Snow and Avalanche Study Establishment (SASE)
2.	Cold Wave	MOES	India Meteorological Department (IMD)
3.	Cyclone	MOES	India Meteorological Department (IMD) Regional Specialized Meteorological Centre (RSMC) Tropical Cyclone Warning Centres (TCWC) for different regions
4.	Drought	MAFW	Central Drought Relief Commissioner (CDRC) and Crop Weather Watch Group (CWWG)
5.	Earthquake	MOES	India Meteorological Department (IMD)
6.	Epidemics	MHFW	Ministry of Health and Family Welfare (MHFW)
7.	Floods	MOJS	Central Water Commission (CWC)
8.	Heat Wave	MOES	India Meteorological Department (IMD)
9.	Landslides	MOM	Geological Survey of India (GSI)
10.	Tsunami	MOES	India National Centre for Oceanic Information Services (INCOIS)

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Table 3.1: Convenor - Nodal Ministry/Department for Management/Mitigation of Different Disasters

S. No.	Disaster	Disaster Management by	Mitigation efforts	
			Nodal Ministry	Member Ministries on Mitigation Plan Committee (MPC)
1.	Earthquake	MHA	Ministry of Earth Sciences	Ministries of Science and Technology, Urban Development; Rural Development; HRD; Health & Family Welfare; Panchayati Raj; Youth Affairs & Sports; Women & Child Development; IT & Telecommunication; I & B; and Space
2.	Flood	MHA	Ministry of Water Resources	Space; Telecommunication
3.	Drought, Hailstorm and Pest Attack	A&C	Dept. of Agriculture and Cooperation, Ministry of Agriculture	---
4.	Landslide	MHA	Ministry of Mines	Road Transport and Highways and Shipping
5.	Avalanche	MHA	Ministry of Defence	Road Transport and Highways and Shipping
6.	Forest Fire	E&F	Ministry of Environment and Forests	
7.	Nuclear Disaster	MHA/ AE	Dept. of Atomic Energy	Defence; Health and Family Welfare
8.	Industrial and Chemical Disasters	E&F	Ministry of Environment and Forests	
9.	Biological Disaster	H&FW	Ministry of Health and Family Welfare	Defence, Environment and Forests, Agriculture and Co-operation, Animal Husbandry, Dairying & Fisheries; and Chemicals & Fertilizers
10.	Rail Accidents	Rly	Ministry of Railways	---
11.	Road Accidents	RTH&S	Ministry of Road Transport and Highways and Shipping	---
12.	Aviation Accidents	CA	Ministry of Civil Aviation	---
13.	Cyclone/ Tornado/ Hurricane	MHA	India Metrological Deptt. under Ministry of Earth Sciences	---
14.	Tsunami	MHA	Ministry of Earth Sciences	---

Box 5.1: Disaster wise nodal agencies for Forecast

Disasters	Agencies
Cyclone	Indian Meteorological Department
Tsunami	Indian National Centre for Oceanic Information Services
Floods	Central Water Commission
Landslides	Geological Survey of India
Avalanches	Snow and Avalanche Study Establishment
Heat & Cold Waves	Indian Meteorological Department

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