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Disaster Law and Policy in India: Implementation and Framework Analysis

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ABSTRACT

The journey of a nation grappling with the volatile forces of nature and human creation reveals a fundamental tension: the aspiration for order and resilience against the persistent threat of chaos. This inquiry delves into the heart of India's efforts to construct a framework for navigating these turbulent times. Rather than a mere catalogue of rules and institutions, this research seeks to understand the inherent challenges and the underlying architecture of its disaster management policies. It explores the philosophical distance between the envisioned ideal of a prepared and resilient society and the practical realities encountered in its implementation. This investigation contemplates the very nature of governance in the face of unpredictable events, questioning how abstract principles translate into tangible protection and how societal vulnerabilities can truly be overcome. Ultimately, this inquiry aims to illuminate not just the mechanics of India's disaster management policies, but the deeper philosophical currents that inform them. It seeks to identify the persistent challenges that hinder the realization of a truly disaster-resilient India, while simultaneously mapping the essential architecture – the underlying framework of principles, assumptions, and aspirations – that guides the nation's ongoing efforts to navigate the ever-present threat of disruption.

Keywords: *Disaster Management, Disaster Policy, NDMA, SDMA, DDMA, National Disaster Response Force, National Institute of Disaster Management, Disaster Relief, Disaster Management Cycle, Sendai Framework.*

I. INTRODUCTION

India's significant vulnerability to a wide array of natural and human-induced hazards necessitates a strong disaster management framework. Historically characterized by a reactive, relief-focused approach, the nation undertook an important paradigm shift following catastrophic events in the late 20th and early 21st centuries. The enactment of the **Disaster Management Act**[3], 2005, marked the institutionalization of a proactive, holistic strategy prioritizing prevention, mitigation, and preparedness alongside response. This legislation

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[3] The Disaster Management Act, (28 November, 2005), Act No. 53 of 2005

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established a multi-tiered institutional architecture comprising the NDMA[4], SDMAs[5], and DDMAs[6], supported by specialized entities like the **National Disaster Response Force** (NDRF) and the **National Institute of Disaster Management** (NIDM).

Significant progress has been made, particularly in lowering mortality from risks such as cyclones via improved early warning systems. However, ongoing constraints prevent India from fully realizing its catastrophe resilience. A critical gap exists between policy intent and ground-level implementation, which is exacerbated by insufficient funding and utilization challenges for mitigation activities, capacity constraints at the state and local levels, difficulties with inter-agency coordination, and the critical but difficult task of integrating climate change adaptation. Furthermore, establishing strong community participation remains an important, albeit frequently undeveloped, feature. Addressing these systemic weaknesses is critical to enhancing India's resilience and realizing the complete aim outlined in the post-2005 disaster management framework.

(A) Key Concepts in the Indian Disaster Management Context:

A clear understanding of core terminology is essential for analysing India's disaster law and policy. While drawing from internationally accepted definitions, particularly those promoted by the United Nations Office for Disaster Risk Reduction (UNDRR)[7], The Indian legal system, particularly the Disaster Management Act of 2005, contains unique contextual terminology.

i. **Disaster:** The Disaster Management Act of 2005 defines a disaster as "a catastrophe, mishap, calamity, or grave event in any place, either from natural or man-made causes, or by accident." This concept includes both natural and human-caused disasters that exceed local coping capacity.

ii. **Hazard:** A possible cause of injury or undesirable effects. In India, this encompasses a wide range of occurrences, including geophysical (earthquakes, landslides), hydrological (floods, droughts), meteorological (cyclones, heatwaves), climatological, biological (epidemics, pandemics), and technological/human-caused.

iii. **Vulnerability:** The vulnerability of individuals, communities, systems, or assets to the negative effects of hazards. Physical (e.g., poor infrastructure), social (e.g., poverty,

[4] National Disaster Management Authority, the apex body for disaster management in India
[5] State Disaster Management Authorities
[6] District Disaster Management Authorities
[7] Disaster Management Act 2005, (Accessed 10 April 2025), *https://ndmindia.mha.gov.in/ndmi/images/The%20Disaster%20Management%20Act,%202005.pdf*

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marginalization), economic (e.g., a lack of diversified livelihoods), and environmental issues (e.g., damaged ecosystems) all contribute to reduced capacity to cope.

iv. **Disaster Risk Reduction (DRR):** UNDRR defines it as "aimed at preventing new and lowering existing disaster risk, as well as managing residual risk, all of which contribute to increasing resilience." It embodies the policy goal of catastrophe risk management. Indian policy prioritizes disaster risk reduction as a proactive approach.

v. **Disaster Management (DM):** The Disaster Management Act of 2005 describes this as "a continuous and integrated process of planning, organizing, coordinating, and implementing measures which are necessary. evacuation, rescue, and relief; rehabilitation and reconstruction." This definition includes proactive components in addition to reacting.

vi. **Resilience:** The ability of a hazard-affected system, community, or society to resist, absorb, accommodate, adapt to, transform, and recover from the consequences of a hazard in a timely and efficient manner, including the preservation and restoration of critical basic structures and functions. Building resilience is a major goal of India's disaster risk reduction efforts.

Notably, there has been an evolution in terminology, mirroring a deeper conceptual shift. While earlier discourse often cantered on 'Disaster Management'[8], contemporary policy and international frameworks like Sendai increasingly emphasize 'Disaster Risk Management' or 'Disaster Risk Reduction'. This change represents a transition away from a reactive approach to catastrophes and toward a more comprehensive and proactive strategy focused on recognizing, stopping, and mitigating hazards before they become disasters. This philosophical shift s aids India's current legal and policy framework, notwithstanding the fact that the fundamental Disaster Management Act of 2005 keeps the title "Disaster Management" while expanding its definition to encompass risk mitigation initiatives.

(B) Research Objective and Scope:

This research study attempts to provide a critical examination of India's legislative and policy framework for disaster management. It measures the historic evolution of this framework, the structure and process of the institutions established under the Disaster Management Act of 2005, and the efficacy of execution throughout the disaster management cycle. The report examines both successes and obstacles, such as funding, coordination, climate change integration, and

[8] National Report,' Disaster Management in India', (10 April 2015), *https://www.unisdr.org/2005/mdgs-drr/national-reports/India-report.pdf,* Accessed (10 April 2025)

community participation. Furthermore, it investigates India's compliance with international frameworks, mainly the Sendai Framework for Disaster Risk Reduction, and draws conclusions from comparative perspectives and specific case studies of major disasters in India. The ultimate goal is to translate these findings into evidence-based recommendations for refining disaster legislation and policy in India.

II. THE EVOLUTION OF DISASTER MANAGEMENT IN INDIA

(A) Pre-2005: The Relief-Centric Era

Prior to the enactment of the Disaster Management Act in 2005, India's approach to handling disasters was predominantly reactive and relief-centric.[9] The primary focus was on providing emergency assistance and implementing rehabilitation measures once a disaster happened. The constitutional obligation for disaster management remained primarily with state governments, with the central government providing financial help and coordinating resources such as transportation and food supplies.

Institutional mechanisms reflected this reactive posture. At the national level, the Ministry of Home Affairs (after 2002; previously Agriculture) served as the nodal ministry, with the Central Relief Commissioner (CRC) coordinating relief operations[10]. During emergencies, high-level committees such as the National Crisis Management Committee (NCMC), led by the Cabinet Secretary, and the Crisis Management Group (CMG), chaired by the CRC, are largely activated to oversee and coordinate response activities. At the state level, Departments of Relief & Rehabilitation, guided by State Relief Manuals or Codes, managed the response, with the State Relief Commissioner playing a key role[11]. The District Collector/Magistrate was the pivotal point for coordinating relief activities at the district level.

Financial arrangements were similarly geared towards post-disaster expenditure. The Calamity Relief Fund (CRF), established in each state with contributions from both the Centre (75%) and the State (25%), was the primary source for funding relief measures[12]. For disasters of severe magnitude exceeding the state's capacity, additional assistance could be sought from the centrally managed National Calamity Contingency Fund (NCCF). These funds were largely based on recommendations of successive Finance Commissions and focused on meeting

[9] Pulak Das, 'Disaster Management in India: Policy Review and Institutional Structure', (June 2012) https://www.gcoedu.in/pdf/evs1.pdf, (Accessed 10 April 2025)
[10] Id.
[11] National Report, supra note 8
[12] National Centre for Disaster Management, 'The report of High-Powered Committee on disaster management' (2020), *https://nidm.gov.in/pdf/pubs/hpc_report.pdf*, (Accessed 10 April 2025)

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immediate relief needs.

This traditional approach suffered from significant limitations. There was a distinct lack of emphasis on pre-disaster phases like prevention, mitigation, and preparedness[13]. Responses were frequently ad hoc, with no unifying legal or institutional framework to guide systematic action. The lack of a proactive plan meant that underlying weaknesses were frequently left neglected, resulting in recurring losses and impeding long-term development.

(B) Post-2005: The Paradigm Shift Towards Proactive Risk Reduction:

The culmination of lessons learned from successive disasters and the recommendations from policy review committees led to a fundamental paradigm shift in India's approach to disaster management, formally institutionalized by the Disaster Management Act, 2005[14]. This was a deliberate movement away from the conventional, reactive focus on post-disaster aid and toward a proactive, holistic, and integrated disaster management strategy that included prevention, mitigation, readiness, response, recovery, and reconstruction.

The central conviction driving this transition was the recognition that growth cannot be sustainable unless disaster mitigation is incorporated into the process. Investing in disaster prevention and mitigation was recognized as more cost-effective and socially beneficial than focusing exclusively on disaster recovery. The new approach aims to build resilience by lowering the underlying risks and improving coping capacities at all levels.

The DM Act of 2005 established the legal and institutional foundation for this new paradigm. It required the formation of dedicated disaster management authorities at the national (NDMA), state (SDMA), and district (DDMA) levels, the establishment of specialized bodies such as the National Disaster Response Force (NDRF) and the National Institute of Disaster Management (NIDM), and the development of comprehensive disaster management plans at all administrative levels. Subsequent policies, notably the National Policy on Disaster Management (NPDM) 2009 and the National Disaster Management Plan (NDMP) 2016 (revised 2019), further elaborated and operationalized this proactive, risk-reduction-focused approach[15].

However, it is important to remember that, while explicitly expressed in law and policy, this paradigm change is a continuous progression rather than a complete state. Critiques and performance audits indicate that implementation faces major challenges. Funding allocation

[13] Pulka Das, supra note 9

[14] Shri KM Singh, 'Disaster Management in India: Preparing for future challenges', (2021) *https://ppf.org.in/opinion/disaster-management-in-india-preparing-for-future-challenges,* (Accessed 10 April 2025)

[15] Gujrat Institute of Disaster Management, 'Disaster Risk Management', (2021), *idm.gujarat.gov.in/sites/default/files/A-presentation-on-the-Basics-of-Disaster-Risk-Management-22.pdf,* (Accessed 10 April 2025)

challenges, particularly at the local level, capacity restrictions, besides coordination concerns mean that components of the older, reactive approach may continue in practice, particularly when converting national mandates into effective ground-level action. Thus, while the policy purpose is clearly proactive, India's journey to a truly comprehensive and preventative disaster risk management system is ongoing.

Feature	Pre-2005 Approach (Relief-Centric)	Post-2005 Approach (Proactive DRR-Focused)
Primary Focus	Post-disaster Relief & Rehabilitation	Holistic: Prevention, Mitigation, Preparedness, Response, Recovery, Reconstruction
Legal Basis	State Relief Codes/Manuals, Ad-hoc arrangements	Disaster Management Act, 2005; National Policy (NPDM) 2009
Key Institutions	NCMC, CMG, Central/State Relief Commissioners, State Relief Depts.	NDMA, NEC, SDMA, SEC, DDMA, NDRF, NIDM
Funding Mechanism	Calamity Relief Fund (CRF), National Calamity Contingency Fund (NCCF)	National/State Disaster Response Funds (NDRF/SDRF), National/State Disaster Mitigation Funds (NDMF/SDMF)
Planning Approach	Primarily Response-oriented (State Relief Manuals)	Comprehensive, Multi-level Plans (National, State, District, Departmental) mandated by DM Act
Overall Philosophy	Reactive, Event-based	Proactive, Risk-based, Integrated, Development-linked

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(C) Catalysts for Change: Major Disasters and Policy

A number of terrible disasters in the 1990s and early 2000s highlighted the shortcomings of the existing relief-centric system and served as major spurs for policy reform.

- **The Latur Earthquake (1993)**, It struck a previously seismically stable region, causing severe loss of life (estimates range from 7,500 to 11,000 deaths) and widespread devastation, notably to traditional houses. It emphasized the vulnerability of rural housing stock and a lack of preparedness, especially in unexpected places. The lack of a pre-existing rehabilitation policy in Maharashtra exacerbated recovery attempts. This catastrophe sparked first planning for preparedness and systemic reaction.
- **The Odisha Super Cyclone (1999)**, This was a massive disaster, officially killing about 10,000 people and wreaking havoc throughout the coastline. It ruthlessly highlighted flaws in early warning systems, evacuation processes, shelter availability, and coastal communities' unique vulnerabilities. This calamity became a watershed moment for the state, prompting the foundation of the Odisha State calamity Management Authority (OSDMA) in 1999, long before the national act.
- **The Gujarat Earthquake (2001),** It wreaked immense havoc, mainly in the Kutch region, affecting millions and killing tens of thousands of people. The state government led the reaction and reconstruction phase, pioneering the concepts of "build back better" and owner-driven reconstruction. This experience helped shape the Gujarat State Disaster Management Act of 2003, India's first state-level legislation, which served as a critical blueprint for subsequent national legislation.
- **The Indian Ocean Tsunami (2004)**, which inflicted unparalleled devastation throughout India's coastline and resulting in over 10,000 deaths, served as the final, heartbreaking incentive for comprehensive national action.

Policy reviews began concurrently with these occurrences. In August 1999, the Government of India setup a High-Powered Committee (HPC) on Disaster Management. Originally focused on natural disasters, its job was extended to cover man-made calamities. Through a participatory approach involving various stakeholders, the HPC suggested a systematic, comprehensive, and holistic approach that emphasized preparedness, mitigation, strengthening organizational structures, improving forecasting, and incorporating disaster reduction into development planning. Following the Gujarat earthquake, a National Committee on Disaster Management was constituted in 2001. These committees, along with the Tenth Five-Year Plan's inclusion of

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a chapter on disaster management[16] , signalled a growing recognition of the need for change. Disaster management was formally shifted from the Ministry of Agriculture to the Ministry of Home Affairs in 2002, indicating that it is becoming a national priority in India.

III. THE LEGAL ARCHITECTURE: THE DISASTER MANAGEMENT ACT, 2005 AND NATIONAL POLICIES

(A) The Disaster Management Act, 2005: A Critical Analysis

The Disaster Management (DM) Act, 2005, passed in the aftermath of the 2004 Indian Ocean Tsunami, remains the foundation of India's current disaster management legal system. Its primary objective is "to provide for the effective management of disasters and for matters connected therewith or incidental thereto"[17]. The Act signifies the formal institutionalization of the paradigm shift towards a more proactive and integrated approach.

Structurally, the Act creates a multi-tiered institutional architecture. The Prime Minister chairs the National Disaster Management Authority (NDMA). It establishes State Disaster Management Authorities (SDMAs) chaired by respective Chief Ministers and District Disaster Management Authorities (DDMAs) chaired by the District Collector/Magistrate. Executive Committees at the national (NEC) and state (SEC) levels support these authorities. The Act also establishes a specialized National Disaster Response Force (NDRF) to provide expert response, the National Institute of Disaster Management (NIDM) to build capacity and conduct research, and devoted funds for response and mitigation at the national, state, and district level.

The definitions in Section 2 are critical in shaping the Act's reach. The broad definition of "disaster" covers both natural and man-made disasters that exceed the community's coping capabilities. Critically, "disaster management" is characterized as an ongoing and interconnected process that includes prevention, mitigation, capacity building, readiness, response, assessment, rescue, relief, rehabilitation, and reconstruction. The definitions of "mitigation" (reducing risk/impact), "preparedness" (state of readiness), and "capacity-building" (resource identification, creation, and training) emphasize the Act's intended comprehensive and proactive nature.

Critically assessing the Act discloses both its qualities and disadvantages. Its fundamental strength is the establishment of a comprehensive, multi-level institutional and legal structure devoted to disaster management, as opposed to the old ad hoc approach. It provides a clear

[16] Pulka Das, supra note 9

[17] Swati V. Shah, Dr. S.P. Rathor, 'Critical Evaluation of Disaster Management act, 2005', IJRAR Vol 6 Issue 1,(March 2019), *https://www.ijrar.org/papers/IJRAR19J4708.pdf*, (Accessed 10 April 2025)

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mandate for proactive planning and establishes specialized bodies like NDRF and NIDM. However, more than a few critiques have emerged[18]. Some observers believe that, despite its aggressive rhetoric, the Act focuses too little on specific risk reduction measures. There are worries regarding potential overlaps in functions across multiple groups, as well as a lack of set timetables for critical processes such as plan reviews.

Authority	Section	Key Powers/Functions
NDMA	**Sec 6**	• Lay down national policies, plans, guidelines • Approve National Plan & Ministry Plans • Guide SDMAs • Coordinate implementation • Recommend mitigation funds • Oversee NIDM • General superintendence, direction, control of NDRF.
NEC	**Sec 10**	• Assist NDMA • Prepare National Plan • Monitor National Policy/Plan implementation • Guide Ministries/States on plan preparation • Provide technical assistance • Coordinate national response • Monitor mitigation/preparedness • Evaluate preparedness • Coordinate training and Promote awareness.
SDMA	**Sec 18**	• Lay down State policies & plans • Approve State Plan & Departmental Plans • Guide State Depts. & DDMAs

[18] Manindra S. Hanspal, Bijayananda Behra, 'The Disaster Management act, 2005', SSRN EJ vol 5 issue 1 (July 2024),*https://www.researchgate.net/publication/382249297_The_Disaster_Management_Act_2005_A_Critical_Review*, (Accessed 10 April 2025)

		• Coordinate State Plan implementation • Recommend State mitigation/preparedness funds • Review State development plans for DRR integration • Review State preparedness.
SEC	**Sec 22**	• Implement National/State Plans • State coordinating/monitoring body • Examine State vulnerability • Guide Depts./DDMAs on plan preparation • Monitor plan implementation • Coordinate State response • Promote awareness/training • Advise State Govt. on finance • Ensure compliance.
DDMA	**Sec 30**	• District planning, coordinating, implementing body • Prepare District Plan (incl. response) • Monitor policy/plan implementation • Guideline compliance at district level & coordinate response • Facilitate community training/awareness • Set up local EWS.

(B) The National Policy on Disaster Management (NPDM), 2009

Following the passage of the DM Act, the National Policy on Disaster Management (NPDM) was approved in 2009. It acts as a comprehensive policy framework that articulates the national vision and strategy. The stated objective is to "create a safe and disaster resilient India by building a holistic, proactive, multi-hazard oriented, and technology-driven strategy through a culture of prevention, mitigation, readiness, and response.".

The NPDM clearly boosts the paradigm shift, arguing for a comprehensive, proactive, multi-hazard, technology-driven strategy. It goes past response to highlight prevention, mitigation, and readiness as key pillars. Key underlying themes include community-based disaster management with last-mile integration, capacity building in all areas, consolidation of

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preceding projects and best practices, relationship with national and international organizations, and assuring multi-sectoral synergy.

The policy elaborates on the provisions of the DM Act, providing detailed guidance on institutional and legal arrangements, financial mechanisms, disaster prevention, mitigation, and preparedness strategies, the techno-legal regime (including building codes and safety standards), response coordination, relief and rehabilitation norms, reconstruction and recovery principles, capacity development initiatives, knowledge management, research and development priorities, and public awareness generation. It acts as the primary guiding document intended to inform the development of state-level policies and disaster management plans at the national, state, and district levels, ensuring coherence with the national vision and the DM Act's mandate[19].

(C) The National Disaster Management Plan (NDMP):

The National Disaster Management Plan (NDMP) provides an operational framework for the DM Act's legislative mission and the NPDM's strategic mission. The first NDMP was released in 2016 and then amended in 2019. The NDMP's clear connection with the Sendai Framework for Disaster Risk Reduction 2015-2030 marks India as one of the first nations to adopt a national plan based on this global agreement.

The NDMP provides a comprehensive framework that encompasses all stages of the disaster management process. It specifies institutional duties and responsibilities while emphasizing inter-agency coordination. It outlines strategies and actions for understanding disaster risk, investing in disaster risk reduction through both structural (e.g., resilient infrastructure) and non-structural measures (e.g., awareness, regulations), building capacity, strengthening early warning systems, ensuring effective response, and promoting resilient recovery and reconstruction ('Build Back Better'). The plan addresses a wide spectrum of hazards, with the 2019 revision adding new hazards such as thunderstorms, lightning, GLOF, heatwaves, and biological emergencies, as well as new chapters on coherence with other global frameworks established after 2015.

(D) State-Level Legal Frameworks:

The DM Act of 2005 requires states to build their own disaster management institutions and strategies that operate within the national framework. This includes the establishment of State Disaster Management Authorities (SDMAs) and the development of State Disaster

[19] NIDM newsletter, 'National policy on disaster management', (December 2009), Vol. 4, no. 1, *https://nidm.gov.in/pdf/newsletter/22_oct_2009.pdf.,* (Accessed 10 April 2025)

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Management Plans (SDMPs). States may also pass their own specialized rules or, in some situations, actions to supplement national legislation.

Odisha provides a pertinent example. Following the 1999 Super Cyclone, Odisha proactively established the Odisha State Disaster Management Authority (OSDMA) even before the national act.[20] The state later enacted the Odisha Disaster Management Rules, 2010, in accordance with the terms of the DM Act 2005. These rules specify the makeup of the State Authority, the State Executive Committee, and the District Authorities in Odisha. Odisha additionally maintains and updates its State Disaster Management Plan (SDMP), with versions prepared in 2013 and updated in 2019, describing the state's framework for managing its specific hazard profile and coordinating response across all phases.

Gujarat also played a pioneering role by enacting the Gujarat State Disaster Management Act in 2003, following the 2001 Bhuj earthquake[21]. This state act established a legal framework for disaster management and risk mitigation in Gujarat and had a important impact on the formulation of the national DM Act 2005.

The existence of these state-level frameworks highlights an important aspect of disaster management in India: while the national framework provides necessary structure and guidance, the actual effectiveness of disaster risk reduction and response is heavily dependent on individual state governments' proactive engagement, capacity, and contextual adaptation. Given that disaster management involves subjects from both state and concurrent lists, and states bear primary accountability for response, differences in state-level political will, institutional capacity, and resource allocation inevitably result in varying levels of performance and resilience across the nation. Success stories frequently arise from states that took the initiative and adjusted the national framework to their specific needs and vulnerabilities.

IV. INSTITUTIONAL FRAMEWORK FOR DISASTER MANAGEMENT IN INDIA:

The Disaster Management Act of 2005 created a comprehensive, multi-tiered institutional structure to give a coordinated and systematic approach to disaster management throughout India. This structure functions at the national, state, and district levels, with different bodies allocated specific duties and responsibilities.

[20] Government of Odisha, 'State Disaster Management Plan', (June 2019), *https://ndma.gov.in/sites/default/files/PDF/SDMP/Odisha_SDMP_2019.pdf*, (Accessed 10 April 2025)

[21] World Health Organisation, 'Resilient reconstruction: 20 years after Gujarat earthquake' (January 2021), *https://www.who.int/india/news-room/feature-stories/detail/resilient-reconstruction-20-years-after-gujarat-earthquake*, (Accessed 10 April 2025)

(A) National Level Institutions:

- **National Disaster Management Authority (NDMA):** As the apex body, the NDMA is chaired by the Prime Minister of India, signifying the high national priority accorded to disaster management[22]. It comprises up to nine members nominated by the Chairperson. The NDMA's vision is "To build a safer and disaster resilient India by a holistic, pro-active, technology driven and sustainable development strategy..."[23]. Its statutory functions, as mandated by Section 6 of the DM Act, include laying down policies, authorizing the National Plan and plans of central ministries, providing guidelines for State Authorities and central ministries (including for integrating DRR into development projects), managing the enforcement of policy and plans, recommending funds for mitigation, providing support to other affected countries, taking necessary measures for prevention/mitigation/preparedness. Its goals include promoting a culture of prevention and resilience, encouraging mitigation, mainstreaming disaster management into development, establishing enabling techno-legal frameworks, ensuring efficient risk assessment and monitoring, creating advanced early warning systems, and ensuring efficient and caring response and relief efforts. The NDMA Secretariat, led by a Secretary-level officer, provides support to the Authority through sections focused on policy, mitigation, operations, administration, and finance.

- **National Executive Committee (NEC):** Chaired by the Union Home Secretary, the NEC comprises Secretaries from key central ministries (Agriculture, Defence, Health, Finance, etc.) and the Chief of Integrated Defence Staff[24]. According to Section 10 of the DM Act, its principal duty is to help the NDMA by serving as the central coordinating and monitoring body for disaster management. It is in charge of preparing the National Plan for approval by the NDMA, monitoring the implementation of the National Policy and Plan, issuing guidelines for ministry and state DM plans, giving technical assistance, coordinating national disaster response, assessing preparedness, and planning specialized training.

- **National Institute of Disaster Management (NIDM):** Established under Section 42 of the DM Act, NIDM is the premier national institution for human resource development, capacity building, training, research, documentation, and policy advocacy in disaster management[25]. Its objective is to be the "premier Institute of Excellence." Its objective includes serving as the government's think tank, organizing and promoting training, conducting research, building a national information base, raising awareness, strengthening training institutions, and

[22] National Disaster Management Authority, *https://ndma.gov.in/about-us/introduction*, (Accessed 10 April 2025)
[23] Id.
[24] The Disaster Management Act, (28 November, 2005), Act No. 53 of 2005
[25] Shri K.M. Singh, supra 17

fostering collaboration. NIDM contributes significantly to disaster management professionalism through training programs, workshops, e-learning platforms, research papers, and training module development.

- **National Disaster Response Force (NDRF):** Constituted under Sections 44-45 of the DM Act, the NDRF is a specialized force dedicated to disaster response[26]. It now has 16 battalions drawn from Central Armed Police Forces (CAPFs), including the BSF, CRPF, CISF, ITBP, SSB, and Assam Rifles. Each battalion has specialized search and rescue teams comprised of engineers, technologists, medical personnel, and canine squads. The NDRF is overseen by the NDMA and directed by a Director General. Its mandate encompasses reaction to all natural and man-made disasters, including CBRN incidents. NDRF units are strategically stationed across the country for rapid deployment, typically pre-positioned in response to warnings. It has received accolades for its professional response both domestically (Kosi floods, Kerala floods, Odisha cyclones) and internationally (Japan, Nepal, Turkey).

(B) State Level Institutions:

- **State Disaster Management Authority (SDMA):** Section 14 of the DM Act requires each state to create an SDMA chaired by the Chief Minister. The SDMA is the state's apex body for disaster management, responsible for establishing state policies and plans (consistent with national guidelines), approving the State DM Plan and state department plans, coordinating implementation, recommending funds, and reviewing the integration of disaster risk reduction into state development plans. The State Chief Secretary is normally the SDMA's Chief Executive Officer.

- **State Executive Committee (SEC):** The SEC, which was Setup under Section 20, is chaired by the Chief Secretary and is made up of Secretaries from key state departments. According to Section 22, it serves as the coordinating and monitoring body for applying the National and State Plans within the state. Its responsibilities include assessing state vulnerability, issuing guidelines for departmental and district plans, observing their implementation, coordinating state response, raising awareness and training, providing technical help to DDMAs and local authorities, and advising the state government on DM-related financial issues.

[26] Manindra S. Hanspal, Bijayananda Behera, 'The Disaster Management act, 2005', SSRN EJ vol 5 issue 1 (July2024),*https://www.researchgate.net/publication/382249297_The_Disaster_Management_Act_2005_A_Critical_Review,* (Accessed 10 April 2025)

(C) District Level Institutions:

- **District Disaster Management Authority (DDMA):** Section 25 requires the installation of a DDMA in each district, which serves as the primary planning, coordinating, and implementing body at the district level. It is chaired by the District Collector/Magistrate/Deputy Commissioner, with the elected head of the Zila Parishad (where applicable) as Co-Chairperson[27]. Other members include the Superintendent of Police, Chief Medical Officer, and significant district-level authorities, with an Additional District Magistrate frequently serving as Chief Executive Officer. The DDMA's responsibilities (Sec 30) include preparing the District DM Plan (including response plan), coordinating and monitoring the implementation of national, state, and district policies and plans, identifying risk areas, ensuring compliance with prevention guidelines by district departments and local authorities, coordinating district response, facilitating community training and awareness programs, establishing local early warning systems, identifying The Chairperson (Collector/DM) is a key leader in directing reaction and relief actions.

(D) District Level Institutions:

- The DM Act envisages a system of seamless coordination, both vertically (between National, State, and District levels) and horizontally (among different government departments and agencies at each level)[28]. The NEC and SECs serve as the major coordinating bodies at the national and state levels, respectively. Emergency Operations Centres (EOCs) at the national, state, and district levels are designed to act as nerve centres for information management as well as operational coordination during emergencies.

- Despite this hierarchical architecture, effective coordination remains a major difficulty in practice. Gaps in the transmission of information and directions between layers may occur. Overlapping mandates and a lack of clarity in roles, particularly during complex, multi-jurisdictional crises, can cause confusion and delays. Resource constraints, such as insufficient staffing and financing, particularly at the district and sub-district levels, significantly limit the ability of DDMAs and local governments to effectively coordinate and implement programs. Another ongoing problem is to ensure reliable, fail-safe communication networks at all levels, particularly in rural or disaster-affected locations. Furthermore, successfully integrating the work of non-governmental organizations (NGOs), the commercial sector, and community groups into the formal government-led coordination structure necessitates ongoing effort and

[27] The Disaster Management Act, (28 November, 2005), Act No. 53 of 2005
[28] NDMA, 'Explanatory Notes for Preparation of District Disaster Management Plan (DDMP)', (December 2014), *https://ndma.gov.in/sites/default/files/PDF/NDMA%20DDMP%20Explanatory%20Notes.pdf*, (Accessed 10 April 2025)

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defined protocols. Performance audits have revealed cases in which state-level advisory committees were not formed or state response troops were deployed for non-disaster purposes, showing flaws in expected institutional functioning and coordination. These practical coordination issues frequently hamper the seamless translation of government policy into timely and effective action on the ground, potentially resulting in fragmented or delayed reactions during crucial emergencies.

Institution	**Level**	**Primary Role**	**Key Responsibilities (Illustrative, refer DM Act Sections)**
NDMA	National	• Policy • Planning • Guidelines • Apex • Coordination	• Lay down national policies (Sec 6) • Approve National/Ministry Plans • Coordinate implementation • Oversee NIDM/NDRF
NEC	National	• Coordination • Monitoring • National Plan • Preparation	• Assist NDMA • Prepare National Plan (Sec 10) • Monitor policy/plan implementation • Coordinate national response; • Provide technical assistance.
SDMA	State	• State Policy • Planning • Coordination	• Lay down State policies/plans (Sec 18) • Approve State/Departmental Plans • Coordinate State Plan implementation • Guide DDMAs
SEC	State	• State-level • Implementation • Coordination & Monitoring	• Implement National/State Plans (Sec 22) • Coordinate State responses • Monitor State preparedness

			• Guide DDMAs/Local Authorities
DDMA	District	• District • Planning • Coordination • Implementation	• Prepare District Plan (Sec 31) • Coordinate district response (Sec 30) • Monitor implementation • Ensure guideline compliance • Facilitate community training/awareness
NDRF	National	• Specialized Response	• Provide specialist response to disasters (Sec 44) • Search & Rescue • Medical Aid • CBRN response
NIDM	National	• Capacity Building • Research • Training	• Plan & promote training/research (Sec 42) • Documentation • Policy assistance • Develop educational materials

V. EVALUATING IMPLEMENTATION EFFECTIVENESS: SUCCESSES AND CHALLENGES

Evaluating the effectiveness of India's disaster law and policy demands an examination of its performance across the disaster management cycle, recognizing both important accomplishments and ongoing issues.

(A) Performance Across the Disaster Management Cycle:

- **Prevention/Mitigation:** Since the paradigm shift, there has been a considerable emphasis on preventive and mitigation. Risk assessment and vulnerability mapping are common efforts, which commonly make use of GIS and remote sensing technologies. Structural mitigation measures have seen investment, particularly the construction of multi-purpose cyclone shelters (MPCS) and coastal embankments, notably under initiatives like the National

Cyclone Risk Mitigation Project (NCRMP)[29]. Non-structural interventions, such as developing and promoting building codes (including seismic retrofitting recommendations) and pushing for risk-sensitive land-use planning, are essential components of national policies and programs. One essential goal is to integrate disaster risk reduction into all sectors' development planning. However, issues continue, particularly in effectively enforcing building codes and land-use restrictions, particularly in quickly urbanizing areas, and ensuring that development projects regularly integrate DRR elements.

- **Preparedness:** The mandated preparation of disaster management plans at the national (NDMP), state (SDMP), and district (DDMP) levels has substantially increased preparedness. Early Warning Systems (EWS) have seen major advancements, especially for cyclones, utilizing satellite technology, Doppler radars, and automated weather stations[30]. Mobile applications such as 'Damini' (lightning), 'Mausam' (weather), and 'Meghdoot' (agro-met) aim to directly give warnings to the public. The Common Alerting Protocol (CAP)-based technology enables geo-targeted notifications. To better readiness, capacity is built through training programs (NIDM, NDRF, SDMAs) and regular mock drills involving all stakeholders, including communities. Emergency Operations Centers (EOCs) at all levels are being upgraded. Despite progress, gaps remain, such as insufficient flood forecasting systems in some places, difficulties with last-mile connectivity for warnings in distant places, and maintaining uniform quality and effectiveness of training programs.

- **Response:** The formation of the NDRF, and later State Disaster Response Forces (SDRFs), professionalised disaster response. The NDRF's capabilities in search and rescue, medical first response, and addressing various crisis situations, including CBRN occurrences, are well known. The deployment of the Incident Command System (ICS) aims to improve coordination during response efforts. Plans and guidelines define systems for distributing relief and medical supplies. However, issues in quick deployment to challenging terrains, inter-agency cooperation during large-scale crises, and ensuring equal and timely relief distribution continue to be areas of improvement.

- **Recovery/Reconstruction:** The 'Build Back Better' (BBB) approach is becoming increasingly important in disaster recovery and reconstruction plans, with the goal of creating

[29] Lt. Col. Surya P Pandey, 'Disaster Management system in India: AN overview', (April, 2023), *https://www.dpme.gov.za/keyfocusareas/gwmeSite/Documents/INDIA%20Presentation%20-%2017%20April%202023.pdf* , (Accessed 10 April 2025)

[30] Vigilant India, (October 2024), Year 2 Vol 13, *https://bprd.nic.in/uploads/pdf/25-01-2025-Disaster-%20Vigilant%20India,%20(%201-15%20Oct,2024)%20Year-2,%20Volume%20No-13%20Final.pdf.* (Accessed 10 April 2025)

more resilient infrastructure and communities. Owner-driven reconstruction models, which emerged following the Gujarat earthquake, are encouraged. Rehabilitation programs concentrate on restoring livelihoods, providing emotional assistance, and addressing vulnerable populations' special needs. However, the rehabilitation phase frequently encounters obstacles linked to long-term finance, capability for effectively adopting BBB principles, and addressing the complex socioeconomic and psychological repercussions on affected populations.

(B) Success Stories and Areas of Improvement:

India's catastrophe management system has shown remarkable success. The most frequently mentioned example is the huge reduction in cyclone-related mortality, especially in regions such as Odisha and Andhra Pradesh. This success is attributed to a combination of accurate early warnings from the India Meteorological Department (IMD), efficient mass evacuations coordinated by state authorities, the availability of cyclone shelters, and enhanced community preparedness[31]. The NDRF's skilled and timely response to several local and international crises has also been an impressive achievement. Technological improvements have played an important role, including enhanced forecasting skills and the use of GIS, remote sensing, and mobile applications for warning dissemination and management. Overall, the DM Act 2005's institutional framework has resulted in a more planned and coordinated approach than existed prior to 2005, resulting in increased preparedness and response capacities for specific types of disasters.

(C) Persistent Challenges in Implementation:

Despite development, India's disaster law and policy implementation confronts a sum of ongoing obstacles.

- **Funding:** The adequate and efficient use of financial resources is a significant bottleneck. While the DM Act includes National and State Disaster Response Funds (NDRF/SDRF) and Mitigation Funds (NDMF/SDMF), there are concerns about the timely delivery and effective use of these funds, particularly the mitigation funds, which are critical for proactive risk reduction. Critiques highlight a lack of dedicated and predictable funding mechanisms specifically for DDMAs and local bodies, hindering their capacity for planning and implementation[32]. This financial limitation sparks discussions, such as whether to officially declare heatwaves disasters due to the enormous compensation costs involved.

[31] id
[32] Manindra S. Hanspal, Bijayananda Behera, supra note 26

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- **Coordination:** Effective coordination across different levels of government (National-State-District-Local) and across ministries and agencies remains a difficulty. CAG reports have identified non-functional state advisory committees and inappropriately constituted DDMAs, indicating coordination problems. Integrating the efforts of numerous stakeholders – government agencies, armed forces, CAPFs, NDRF/SDRF, scientific institutions, NGOs, private sector, and communities – during complex emergencies requires robust protocols and continuous effort[33].

- **Climate Change Integration:** While policy documents acknowledge the link between climate change and disaster risk, effectively integrating Climate Change Adaptation (CCA) measures into DRR plans and routine developmental projects remains a significant hurdle[34]. Frequently, there is a gap between national/state-level initiatives and their practical execution at the local level, where climate effects are most acute. Initiatives such as the development of Climate Risk Management frameworks and district-level planning recommendations try to address this, but widespread integration remains a challenge.

- **Community Participation:** Although community-based disaster management (CBDM) is a stated policy goal[35] , its effective implementation faces obstacles. Initiatives like the Aapda Mitra scheme (training community volunteers) and the formation of Village/Ward Disaster Management Committees (VDMCs) exist. However, reviews and studies highlight difficulties in moving beyond token engagement to actual community empowerment. Issues include training efficacy and sustainability, guaranteeing meaningful participation in decision-making (rather than merely implementation), incorporating local and traditional knowledge, and reaching and involving the most vulnerable populations within communities. Even in cities, there are still gaps in disaster preparedness awareness.

- **Techno-Legal Regime Enforcement:** Weak enforcement of building rules, seismic safety norms, environmental regulations, and risk-informed land-use planning continue to be major contributors to disaster losses, particularly in earthquakes and flooding. It is vital to bridge the gap between regulations and ground-level compliance.

[33] Give2Asia, 'Disaster Link Country Profile: India', (January 2019), *https://give2asia.org/india-disaster-country-profile/*.(Accessed 10 April 2025)
[34] Gorakhpur Environment Action Group (GEAG), 'Integrating Climate change concerns in disaster management planning: The case of Gorakhpur, Uttar Pradesh, India', (October 2019), *https://cdkn.org/sites/default/files/files/CDKN_Gorakhpur_Background_Paper-FINAL.pdf.* (Accessed 10 April 2025)
[35] NDMA, 'Explanatory Notes for Preparation of District Disaster Management Plan (DDMP)', (December 2014), *https://ndma.gov.in/sites/default/files/PDF/NDMA%20DDMP%20Explanatory%20Notes.pdf*, (Accessed 10 April 2025)

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- **Capacity Constraints:** Many states, mainly districts and local governments, have a scarcity of skilled staff, specialized equipment, and overall institutional skill to successfully carry out comprehensive disaster management functions ranging from risk assessment and planning to response and recovery.

- **Data and Risk Assessment:** Obtaining dependable, consistent, and granular data for comprehensive hazard, vulnerability, and risk assessments remains difficult, affecting the quality of planning and monitoring.

- **Bureaucratic Issues and Accountability:** Administrative delays, a lack of clear accountability mechanisms within the system, and, in some cases, corruption can all obstruct implementation by diverting resources and undermining public trust.

A fundamental overriding obstacle appears to be the difficulty of translating national-level policies and frameworks into effective, context-specific, and sufficiently resourced actions at the state, district, and, most importantly, local levels. This "implementation gap" is the result of a number of reasons, including insufficient financial devolution, limited local capacities, coordination bottlenecks, weak enforcement, and unsatisfactory mainstreaming of DRR/CCA into ordinary governance and development processes.

Furthermore, while the system has demonstrated improved capacity in managing high-profile, rapid-onset events like cyclones, it arguably faces greater difficulties in addressing slow-onset disasters such as drought[36] and tackling the chronic, underlying risks embedded within development practices, like unsafe construction or inadequate urban planning. This shows that the system may be more suited for acute disaster response than for long-term prevention, mitigation, and resilience building, which require consistent enforcement and deep integration with development goals.

VI. INDIA IN GLOBAL CONTEXT: INTERNATIONAL FRAMEWORKS AND COMPARATIVE PERSPECTIVES

(A) Alignment with the Sendai Framework for Disaster Risk Reduction 2015-2030:

India is an active participant in global disaster risk reduction efforts and is a signatory to the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030[37]. The Sendai Framework, the successor to the Hyogo Framework for Action (HFA), outlines seven global targets for

[36] Give2Asia, 'Disaster Link Country Profile: India', (January 2019), *https://give2asia.org/india-disaster-country-profile/*.(Accessed 10 April 2025)
[37] NDMA, 'SFDRR Midterm Review Voluntary National Report India 2023', (July 2024), *https://sendaiframework-mtr.undrr.org/media/100445/download?startDownload=20250411*. (Accessed 10 April 2025)

disaster risk reduction (focusing on reducing mortality, affected people, economic loss, and property damage, while increasing national/local strategies, international collaboration, and access to EWS/risk information) and four action priorities.

- Understanding disaster risk.
- Strengthening disaster risk governance to manage disaster risk.
- Investing in disaster risk reduction for resilience.
- Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

India has exhibited a great desire to integrate its national policies and objectives with the SFDRR. The National Disaster Management Plan (NDMP), which was first prepared in 2016 and amended in 2019, is clearly organized around the four Sendai priorities. The NPDM 2009 also incorporates ideas from the Sendai Framework, stressing prevention, mitigation, preparedness, and resilience. Furthermore, the Prime Minister's Ten Point Agenda on Disaster Risk Reduction, which was announced in 2016, provides high-level strategic direction that is consistent with Sendai's goals, emphasizing aspects such as integrating DRR in development, leveraging technology, building resilient facilities, developing risk assessment capacities, utilizing social media, involving universities, learning from disasters, and improving international cooperation.

India actively engages in worldwide forums such as the worldwide Platform for Disaster Risk Reduction (GPDRR) as well as the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR). The country filed its Voluntary National Report for the Midterm Review (MTR-SF) of the Sendai Framework, which assessed progress and obstacles in meeting the framework's objectives. While India has good policy alignment and commitment to the SFDRR, the MTR-SF report is expected to reflect the practical implementation issues mentioned before. To meet the Sendai Framework's lofty targets, not only policy alignment is required, but also persistent and effective action on the ground, addressing identified gaps in funding, coordination, capacity, and mainstreaming DRR/CCA across all sectors and levels of government.

(B) Comparative Analysis: Insights from International Practices:

Comparing India's disaster management system to that of other countries, particularly those with substantial experience or alternative approaches, might deliver useful insights into prospective changes.

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- **Japan:** Often cited for its advanced disaster preparedness culture, Japan's system emphasizes strong government initiative, significant investment in technology (especially for earthquake and tsunami EWS), stringent enforcement of building codes, and deep community involvement[38]. The Japanese experience demonstrates the value of ongoing public awareness efforts and empowering local communities (e.g., volunteer fire departments, neighborhood associations) to take an active role in readiness and response. While India inspires community-based DM, Japan's level of institutionalization and integration may provide lessons for strengthening community resilience and engagement beyond volunteer programs like as Aapda Mitra.

- **USA (FEMA Model):** The United States uses a federal system managed by the Federal Emergency Management Agency (FEMA). The National Response Framework (NRF) and the National Disaster Recovery Framework (NDRF - US version) provide structures for coordinating federal support to state and local governments during response and recovery[39]. While structurally distinct from India's NDMA-led system, the FEMA model prioritizes explicit norms for federal-state cooperation and resource mobilization, particularly through Emergency Support Functions (ESFs). Comparative study could investigate the relative efficiency and limitations of these various coordination approaches, perhaps giving insights for expediting inter-governmental collaboration in India, particularly during large-scale disasters that necessitate multi-state or major federal help.

- **Other Comparisons:** Research comparing India to nations such as Australia, Turkey, Iran, Nepal, and the Philippines reveals differences in reference authorities, planning histories, communication platforms, and the degree of reliance on government versus other actors. Some evaluations suggest that disaster categorization and international assistance processes require greater worldwide standardization.

It is crucial to avoid simplistic replication of foreign models, as disaster management must be context-specific. However, comparative analysis suggests potential areas for reflection in India. Strengthening the depth and institutionalization of community participation, drawing lessons from Japan's approach, could enhance local resilience[40]. Examining techniques for promoting

[38] Priyanka Banerji, 'Comparative Analysis of Disaster Management between Japan & India', (January 2013), *https://www.researchgate.net/publication/315306193_Comparative_Analysis_of_Disaster_Management_between_Japan_India.* (Accessed 10 April 2025)

[39] Mustafa Dalli, Asena Soyluk, 'Comparison of The Natural Disaster Management Policies in the Point of view of Architecture', (August 2022), *https://www.researchgate.net/publication/363740389_COMPARISON_OF_THE_NATURAL_DISASTER_MANAGEMENT_POLICIES_IN_THE_POINT_OF_VIEW_OF_ARCHITECTURE,.* (Accessed 10 April 2025)

[40] Dr. Priyanka Banerji, Ms Nidhi Singh, 'Comparative Analysis of Disaster Management between Japan & India',

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smoother vertical coordination between national, state, and district levels, possibly guided by characteristics of other federal systems, could help to alleviate some of the observed coordination issues. Furthermore, sustained investment in research, technology, and strict implementation of techno-legal measures, as seen in many industrialized countries, is essential for continued improvement.

VII. CASE STUDIES: APPLICATION OF LAW AND POLICY IN PRACTICE:

Examining the reaction to specific catastrophic disasters provides crucial insights into how India's disaster law and policy framework works in real-world situations. The case studies below demonstrate both strengths and shortcomings in various geographical situations and hazard kinds.

(A) Kerala Floods (2018):

- In June-August 2018, Kerala suffered tremendous rainfall, resulting in the worst floods since 1924. All 14 districts were impacted, with seven deemed completely flood-affected. The incident produced multiple landslides, necessitated major dam water releases, affected 5.4 million people, evicted 1.4 million, and killed 433. The estimated damages and losses were billions of USD.

- **Framework Performance:** The event put the state's DM apparatus (SDMA and DDMAs) to the test. While the reaction required tremendous mobilization, the scale exposed the capacity limitations and coordination problems that come with managing such major disasters. The PDNA methodology reveals a commitment to using structured recovery planning principles.

(B) Uttarakhand Floods (e.g., 2013/2021):

- Uttarakhand, located in the fragile Himalayan terrain, is extremely vulnerable to hydrometeorological disasters such as flash floods, cloudbursts, and landslides, which are frequently worsened by variables such as glacier melt (GLOF potential). The 2013 tragedy, which was prompted by torrential rains and a potential GLOF, caused widespread destruction, notably along pilgrimage routes, with official death estimates surpassing 4,000 and severe infrastructural damage. Subsequent incidents, such as the 2021 Chamoli accident, have highlighted similar weaknesses.

(October 2013), IOSR Vol 13 Issue 6, *https://www.iosrjournals.org/iosr-jbm/papers/Vol13-issue6/K01366274.pdf*. (Accessed 10 April 2025)

- **Framework Performance:** The 2013 event, in particular, showed major flaws in the state's disaster management system implementation. Although the SDMA and DDMAs existed, their preparedness and response capacity were insufficient for the magnitude of the crisis. The state's disaster management plan appears to be ineffective or underestimated the magnitude of the tragedy. Environmental and building standards appeared to be under-enforced.

(C) Odisha Cyclones (e.g., Fani 2019/Recent):

- Odisha has a lengthy history of destructive storms due to its location on the Bay of Bengal coast. The 1999 Super Cyclone, which claimed around 10,000 lives, was a landmark moment. Cyclone Fani (2019), an exceptionally strong cyclonic cyclone, made landfall in Puri, affecting 16.5 million people in 14 districts.

- **Framework Performance:** Odisha has demonstrated a relatively successful implementation of the state-level disaster management framework, effectively turning policy into action for cyclone preparedness and response. The OSDMA has played a very important role in coordinating efforts and promoting investment. The system displays efficient collaboration at the state, district, and community levels for this specific threat.

(D) Summary of Case Study Findings:

The case studies show considerable advances in reaction capabilities, particularly with the deployment of specialist forces such as NDRF. However, they also point out that extreme occurrences can still overwhelm capacity (Kerala 2018). A fundamental issue that has often emerged is the difficulty of achieving effective and resilient long-term repair and reconstruction that goes beyond acute relief.

Crucially, the case studies show inconsistent improvement across jurisdictions and danger kinds. While Odisha has made formidable cyclone management capacity through sustained state-level focus since 1999, areas facing different hazards (such as floods/landslides in Kerala/Uttarakhand) show different levels of preparedness and response effectiveness, implying that national frameworks require strong state-level leadership and contextual adaptation for successful implementation.

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Case Study	Key Successes	Major Challenges	Key Lessons Learned
Kerala Floods (2018)	• Swift mobilization, • Significant role of fishermen volunteers, • PDNA incorporating sustainability/gender.	• Scale overwhelmed capacity, • WASH/Health risks • Coordination complexity • Reaching vulnerable groups • Long-term recovery	• Need for risk-informed land use, • Green infrastructure, • Inclusive recovery planning, • Leverage community/media roles.
Uttarakhand Floods (2013)	• Large-scale rescue/evacuation by armed forces/NDRF (eventually).	• Inadequate EWS/dissemination • Poor preparedness, • Infrastructure vulnerability, • Coordination failures, • Response delays, • Relief issues	• Need mountain-specific strategies, • Better EWS/ • communication, • Regulate development in fragile zones, • Resilient infrastructure, • Strengthen SDMA/DDMA capacity.

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Odisha Cyclones Fani (2019)	• Minimal casualties ('Zero Casualty' approach), • Effective EWS & mass evacuation, Network of shelters, • Strong community preparedness/drills, • ODRAF/NDRF response	• Massive infrastructure damage (esp. power), • Post-cyclone WASH issues, • Livelihood/housing recovery, • Coastal erosion	• Effectiveness of integrated approach (Institution-Infra-Community), • Need for resilient infrastructure (beyond shelters), • Focus on recovery phase.

VIII. ADAPTING TO THE THREAT: ENFORCEMENT STRATEGIES

Over the past two decades, India's disaster management system has undergone a significant transformation, transitioning from a predominantly reactive, relief-centric system to a proactive, comprehensive framework supported by the Disaster Management Act of 2005 and aligned with global DRR principles such as the Sendai Framework. This evolution has resulted in a multi-tiered institutional architecture (NDMA, SDMA, and DDMA), specialised response capabilities (NDRF), dedicated capacity-building institutions (NIDM), and mandatory planning processes at all levels. Notable results, such as lowering cyclone mortality through enhanced early warning and evacuation procedures, highlight the framework's potential.

However, this analysis demonstrates that India's catastrophe law and policies confront ongoing obstacles, limiting its overall efficacy. While the structural structure appears to be sturdy on paper, its successful implementation remains inconsistent. Significant implementation gaps between national policy and local action are common, owing to insufficient financial devolution and capacity constraints at the state, district, and local levels. Coordination across the multiple entities involved, both vertically and horizontally, remains a challenge, often resulting in fragmented or delayed responses. The crucial work of integrating disaster risk reduction and climate change adaptation into normal development planning and enforcement is still insufficient, allowing vulnerabilities to persist and new hazards to emerge.

Furthermore, while policy emphasizes community engagement, transforming this into actual empowerment and effectively using local knowledge would take further effort. The system appears to be better prepared to deal with acute, rapid-onset occurrences than slow-onset

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disasters or chronic risks buried in development processes, indicating a need for a stronger emphasis on long-term prevention and mitigation.

(A) Evidence-Based Recommendations for Strengthening Disaster Law:

The following proposals for strengthening disaster legislation and policy in India are based on a critical review of the legislative framework, institutional performance, implementation issues, and case studies.

1. Legal and Policy Refinements:

a. Amend DM Act 2005: Consider specific amendments to improve accountability mechanisms for all designated authorities, clarify financial devolution procedures to ensure likely and adequate resources reach DDMAs and local bodies, mandate specific timelines for the review and updating of all disaster management plans, and strengthen provisions related to mitigation measure enforcement (for example, building codes, land-use zoning).

b. Address Emerging Risks: Incorporate explicit rules or guidelines for handling new and complex hazards, such as pandemics, climate-induced disasters (heatwaves, GLOFs), and cascade events, which may clarify notification protocols and funding eligibility for occurrences like heatwaves.

2. Institutional Strengthening and Coordination:

a. Ensure Functionality: Implement measures to ensure the regular operation of SDMAs, SECs, DDMAs, and advisory committees as required by the Act, such as dedicated staffing, resources, and adherence to meeting schedules.

b. Enhance Coordination: Create more detailed Standard Operating Procedures (SOPs) for inter-agency collaboration during various catastrophe phases, especially for major incidents involving numerous jurisdictions. To strengthen interoperability, promote regular joint training exercises including all important stakeholders (NDRF, SDRF, Police, Fire, Health, Line Departments, and NGOs). Increase the capacity and technological capabilities of EOCs at all levels.

c. Capacity Building: Invest heavily in targeted capacity-building programs (headed by NIDM and state training institutions) for officials at the state, district, and local levels, with a focus on risk assessment, plan formulation, coordination, CCA integration, and disaster recovery management.

3. Financial Mechanisms:

a. Improve Fund Utilization: Create clear standards and monitoring procedures for the

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effective and timely use of mitigation funds (NDMF/SDMF), with projects prioritized based on comprehensive risk assessments.

b. Dedicated Local Funding: Create mechanisms for dedicated and predictable funding streams for DRR initiatives at the district and local levels (Panchayat/Municipalities), maybe through designated grants or particular allocations within state budgets.

c. Explore Innovative Finance: Encourage the creation and implementation of risk transfer mechanisms, such as disaster insurance for public assets, private property, and agricultural, as well as the exploration of other novel financing options.

4. Mainstreaming DRR and Climate Change Adaptation (CCA):

a. Mandate Integration: Make DRR and CCA considerations part of the review and approval processes for all major development projects and sectoral plans. This necessitates combining risk evaluations and climate projections into planning policies.

b. Strengthen Enforcement: Increase the capacity and political will to enforce techno-legal restrictions, such as building codes, zoning laws, environmental impact assessments, and coastal control zone norms.1 Wherever possible, link compliance to development funds.

5. Community Empowerment:

a. Strengthen Local Institutions: Beyond raising awareness and providing basic training, empower Village/Ward Disaster Management Committees and Aapda Mitra volunteers to play specific roles in local planning, resource management, and emergency decision-making. Give them appropriate resources and formally connect them to local governance systems.

b. Integrate Local Knowledge: Create systematic mechanisms for incorporating local and traditional knowledge into official risk assessments and emergency preparedness plans.

c. Focus on Vulnerability: Ensure that community-based initiatives target and include the most vulnerable people (women, children, the elderly, the disabled, and marginalized communities) in their development and execution.

6. Technology and Research:

a. Enhance EWS: Continue to invest in enhancing the accuracy, lead time, and reach of early warning systems for all major hazards, with a focus on last-mile connectivity and community awareness of alerts.

b. Promote Demand-Driven Research: Strengthen NIDM and other research that institutes to perform demand-driven research on risk Modeling, vulnerability assessment,

mitigation technologies, socioeconomic implications, and the efficacy of various interventions, with the goal of translating results into policy and practice.

IX. FUTURE DIRECTIONS FOR RESEARCH AND PRACTICE

Although tremendous progress has been made, ongoing learning and adaptation are critical. Future study should centre on:

- Conducting rigorous long-term effect assessments for various mitigation schemes and DRR mainstreaming initiatives.
- Conducting comparative studies on the implementation efficacy of the DM Act and related policies in various states to discover best practices and common constraints.
- Looking into the role and potential of the private sector in disaster risk reduction and resilience building in India.
- Creating frameworks and strategies for dealing with complex, cascading disasters and systemic risks in light of climate change and rising urbanization.
- Evaluating the efficacy and long-term viability of various community-based disaster management approaches in Indian contexts.

In practice, the emphasis must remain on closing the gap between policy intentions and ground realities. This necessitates ongoing political commitment, proper financial allocation, building institutional capacities at all levels, encouraging true community participation, and strictly implementing risk mitigation measures. By addressing the highlighted obstacles and implementing evidence-based suggestions, India may continue its journey to becoming a truly safer and disaster-resilient nation capable of safeguarding its people and economic gains from the growing threat of disasters.

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