Delhi Metropolitan Education
Affiliated to GGSIP University, New Delhi & Approved by Bar Council of India

RESEARCH ARTICLE
doi: 10.53361/dmejl.v5i01.06

The Disaster Management Act, 2005: A Critical Review

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Abstract

India has faced numerous devastating natural and man-made catastrophes during the last four to five decades, resulting in significant loss of life, resources, property, and trauma. Until 2005, India had no system or policy for disaster management, leading to a response-based conscious attitude, and there was no structure for prevention or pro-activeness. Policymakers recognised the need for a formalised disaster management strategy after the 2004 tsunami, leading to the adoption of the Disaster Management Act, 2005. This paper aims to examine the key features of the Disaster Management Act 2005 of India and identify its key limitations in order to provide appropriate recommendations.

Methods: This study is based on a comprehensive review of secondary data and a detailed analysis of India's Disaster Management Act, 2005. The analysis includes a critical examination of the Act's sections, institutional frameworks, and implementation mechanisms, ensuring a thorough understanding of the Act's strengths and weaknesses.

Discussion: A meticulous and comprehensive review of the 2005 Disaster Management Act reveals that while it has established a structured framework for disaster management, it has several limitations. The Act does not appear to put enough emphasis on proactive steps to reduce disaster risk, making it seem reactive. Besides, there are no clear accountability procedures in place, which may result in implementation-related inefficiencies and non-compliance. The Act also lacks financial allocations for disaster management authorities at lower administrative levels (district, block, and village), affecting the preparedness and responsiveness of local responders. Political and economic constraints, bureaucratic inefficiencies, and corruption further undermine the Act's effectiveness. Given these issues, an urgent revision of the Act is imperative to establish a more robust and effective disaster management framework in India.

ARTICLE INFO

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Dates:
Received: 12-02-2024
Accepted: 05-04-2024
Published: 10-07-2024

Keywords:
Disaster, Disaster risk reduction, Disaster Management Act, 2005, policy, India

How to Cite:
Hanspal, M.S., Behera, B. (2024) The Disaster Management Act, 2005: A Critical Review. DME Journal of Law, 5(1), 42-53.
doi: 10.53361/dmejl.v5i01.06

INTRODUCTION

Human civilisation has been suffering terrible and unimaginable consequences of unforeseen and inevitable natural events like cyclones, earthquakes, droughts, floods, epidemics, and others since this world was created. These inevitable events or situations are the result of geological processes that have occurred naturally throughout the planet's history. We refer to these naturally occurring phenomena as hazards because they negatively impact humans. Conversely, people have used various terminologies, such as

catastrophes, cataclysms, calamities, devastation, destruction, and disasters, to denigrate or negatively impact humanity. According to the World Disaster Report 2022, in 2020–2021, almost 220 million people were affected by 710 disasters that claimed nearly 30,000 lives. In 2021 alone, 378 disasters were weather and climate-related, accounting for the majority of incidents[1]. The International Monetary Fund expects the pandemic to cost the world economy an incredible $13.8 trillion by the end of 2024, indicating severe long-term economic consequences[2].

The term "disaster" comes from the Old Italian *disastro* and the Middle French désastre, both of which mean "bad," as well as the noun "star." The Greek word "disaster," meaning "bad star," derives from an astrological connotation that associates a catastrophe with the celestial alignment of planets[3]. Ancient civilisations believed that the heavens decreed natural disasters such as droughts, earthquakes, floods, and epidemics. Even in recent years, natural disasters have remained beyond humanity's control. The term "disaster" has been defined with minor variations by a number of academics and organisations. Oxford Dictionary describes disaster as "*an unexpected event, such as a very bad accident, a flood, or a fire, that kills a lot of people or causes a lot of damage.*[4] "In contrast, the UN Office for Disaster Risk Reduction (UNDRR)[5] defined disaster as "*A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.*"Both sources define calamities according to the impact they have on human life. In the past, only natural risks and disasters exposed humans to their fate. However, due to scientific progress, technological catastrophes now confront humankind.

As natural, man-made, and hybrid disasters become more frequent and severe, so does humanity's susceptibility to their negative effects. As a result, measures for disaster risk reduction (DRR) have become a crucial concern for governments, academic institutions, and researchers and scholars.

Disasters generally fall into one of two categories: natural or man-made, gradual or rapid, single or compound events, and major or minor. Cyclones, earthquakes, floods, and droughts are examples of major disasters. Mudslides, storms, heat waves, cold waves, and thunderstorms are examples of minor natural catastrophes. Fires, diseases, deforestation, pollution from shrimp farming, chemical pollution, and conflict are examples of significant man-made disasters. Minor man-made disasters include transportation accidents, rioting, food poisoning, industrial disasters or crises, and contamination of the environment.

An Overview of Disasters in India

Whether an "Act of God" or an "Act of Man," the Indian subcontinent is devastated by an astounding variety of disasters[6]. India is among the nations most vulnerable to natural disasters globally. Disasters, both man-made and natural, have plagued India for ages. Ancient Indian literature has mentioned natural disasters such as prolonged droughts, flash floods, hailstorms, landslides, cyclones, earthquakes, and forest fires. During ancient times, people often blamed planetary forces and evil spirits for all these tragedies[7]. However, due to its distinct geo-climate, India is extremely vulnerable to a variety of natural calamities, such as earthquakes, landslides, floods, and cyclones, which are predominantly hydro-meteorological[8]. The nation is among the most

1 WORLD DISASTER REPORT 2022, available at: https://www.ifrc.org/document/world-disasters-report-2022 (last visited on 17 May 2024)

2Gopinath G (2022) A Disrupted Global Recovery. International Monetary Fund Blog, available at: https://www.imf.org/en/Blogs/Articles/2022/01/25/blog-a-disrupted-global-recovery (last visited on 17 May 2024)

3Disaster (WIKI), available at: https://en.wikipedia.org/wiki/Disaster (last visited on 17 May 2024)

4Disaster (Oxford Dictionary), available at: https://www.oxfordlearnersdictionaries.com/definition/american_english/disaster (last visited on 17 May 2024)

5UNDRR, available at: https://www.undrr.org/terminology/disaster (last visited on 17 May 2024)

6S. Parasuraman, &P.V. Unnikrishnan, "Disaster response in India: An overview". The Indian journal of social work. 63. 151-172 (2002).

7 Katar Singh and Vishwa Ballabh, "Management of Disasters and Crisis Situations in India with Focus on the Poor", Vol. 61, 1.J.S.W., p. 121, (2004).

8Mrutyunjay Mohapatra, & NareshKumar, et.al., (eds.), Short to

Table 1: Some of the deadliest major disasters to affect India until 2023

Year	*Name of Event*	*State & Area*	*Fatalities*
1905	Earthquake	Himachal Pradesh	20,000 deaths
1977	Cyclone	Andhra Pradesh	10,000 deaths
1993	Latur Earthquake	Maharashtra	7,928 people died
1999	Orissa Super Cyclone	Orissa	10,000 deaths
2001	Gujarat earthquake	Gujarat	25,000 deaths 6.3 million people affected
2004	Tsunami	Tamilnadu, Kerela, A.P.	10,749 deaths, 2.79 million people affected
2005	Kashmir earthquake	KashmirState	86,000 deaths
2008	KosiFlood	NorthBihar	527 deaths, 33,29,423 persons Affected
2008	CycloneNisha	TamilNadu	204 deaths
2019	Cyclone 'Fani'	Odisha province	50 Deaths, 20000000 Affected
2021	Glacial lake outburst	Uttarakhand state	250Deaths, 24Affected
2021	Tropical cyclone 'Tauktae'	Kerala, Karnataka, Goa, Maharashtra, Gujarat, Rajasthan, Delhi, Haryana, Uttar Pradesh and Uttarakhand	198 Deaths, 700000 Affected
2021	Cyclone 'Yaas'	BengaleOccidental, Odisha	19 Deaths, 1625000 Affected
2021	Cyclone 'Shaheen'	Koraput and Malkangiri (Odisha); Srikakulam, Vizianagaram, Visakhapatnam districts (Andhra Pradesh); Telangana, Maharashtra, Gujarat	7 Deaths, 179000 Affected
2021	Tropical storm 'Jawad'	Andhra Pradesh, Odisha, south-western West Bengal, Tripura	5 Deaths, 1650 Affected
2023	Cyclone 'Biparjoy'	Rajasthan, Gujarat	7 Deaths, 10000 Affected.
2023	Tropical storm 'Michaung'	Andra Pradesh, Telangana, Tamil Nadu States	20 Deaths, 4390000 Affected

Source: CRED, EM_DAT(The International Disaster Database) available at: https://www.emdat.be/

disaster-prone in the world due to a combination of socioeconomic factors, unplanned urbanisation, development in high-risk zones, environmental degradation, and climate change. The INFORM Global Risk Index reflects this vulnerability, placing India in the high-risk category for humanitarian crises and disasters[9]. In 2023, India faced multiple extreme weather events. Nearly 5.5 million people in several states of India suffered from extreme weather events such as heat waves, cyclones, droughts, severe rains, and a glacial lake outburst flood in 2023. UNICEF India played a significant role in supporting 1.48 million people affected by disasters in 2023, with a focus on providing primary healthcare services, WASH supplies, and alternative care services for unaccompanied and separated children.[10] Refer to Table 1 for major disasters in India until 2023, detailing fatalities and impacts.

India has experienced several devastating natural disasters. Notable events include the 1905 Himachal Pradesh earthquake (20,000 deaths), the 1993 Latur earthquake (7,928 deaths), the 2001 Gujarat earthquake (6.3 million affected, 25,000 dead), the 2004 tsunami (10,749 deaths, 2.79 million affected), and the 2005 Kashmir earthquake (86,000 deaths).

Medium Range Weather Forewarning System in India. (2022)

9 Gaurav Bhatia et al.,"Information Technology": The Utopian Solution to Achieving Disaster Resilience & Ensuring Disaster Management. International Journal of Research in Engineering, Page 12-19, (2020).

10 UNICEF, Humanitarian Situation Report No.2, available at: https://reliefweb.int/report/india/unicef-india-humanitarian-situation-report-no2-1-january-31-december-2023 (last visited on 17 May 2024)

Table 2: The DME, 2005 of India – key provisions

1.	*Title, scope, and date of enforcement of Act*	*Section 1*
2.	Definitions	Section 2
3.	The National Disaster Management Authority	Section 3-13
4.	State Disaster Management Authorities	Section 14-24
5.	District Disaster Management Authority	Section 25-34
6.	Measures by the Government for Disaster Management	Section 35-40
7.	Local Authorities	Section 41
8.	National Institute of Disaster Management	Section 42-43
9.	National Disaster Response Force	Section 44-45
10.	Finance, Accounts and Audit	Section 46-50
11.	Offences and Penalties	Section 51-60
12.	Miscellaneous	Section 61-79

More recent significant events are Cyclone Fani in 2019 (50 deaths, 20 million affected) and Tropical Storm Michaung in 2023 (20 deaths, over 4.39 million affected). Table2 shows some of the deadliest disasters in India below:

Disaster Management in India

Over the past decade, the Indian government's approach to disaster risk management has significantly evolved, reflecting a shift towards more integrated and technology-driven strategies to mitigate disaster-related losses. At first, the Ministry of Home Affairs established the National Disaster Management Authority (NDMA), which placed a strong emphasis on risk mitigation, response, and recovery from both natural and man-made disasters. It shows that the initial focus was on creating a foundational framework for disaster management[11]. In reaction to the 2001 Bhuj earthquake, a coordinated disaster response was also demonstrated during this time by the signing of an agreement for a disaster risk management program with the UNDP[12]. The COVID-19 pandemic and other recent studies have brought attention to the need for a more nuanced approach to disaster risk management, emphasising the importance of preparedness and high vulnerability as major problems for healthcare organisations during disasters. The Prime Minister's 10-point agenda for future interventions underscored India's leadership in disaster risk reduction, emphasising investment in resilient infrastructure and the use of emerging technologies. India's G20 Presidency established a new working group on disaster risk reduction[13]. The pandemic highlighted the critical role of communication and up-to-date information sharing in an effective disaster management strategy[14]. Because of its unique geographic and socioeconomic makeup, increased vulnerability to natural disasters, and changing climate, India is among the nations most in need of adopting cutting-edge technological tools for disaster management, such as GIS, remote sensing, and the Internet[15]. Overall, the last ten years have seen a positive shift in India's approach to disaster management, with a focus on technology, holistic planning, and climate consciousness, leading to a decrease in disaster losses.

Effective disaster risk management (DRM) in India involves a multi-faceted approach that includes policy frameworks, institutional mechanisms, community participation, and technological advancements.

Policy Frameworks

The disaster management act, 2005[16]

This act governs the Indian disaster management system. Consequently, the establishment of the National Disaster Management Authority (NDMA)[17]

11 Attila J. Hertelendy, Rajnish Jaiswal, et. al.,30 - Disaster Risk Management,Ciottone's Disaster Medicine (Third Edition),Pages 178-190, (2024).

12 Hiteshwar, Kumar, Azad., Kumar, et.al., "Disaster management ontology- an ontological approach to disaster management automation". Dental science reports, (2023).

13 Rajib, Shaw., Kamal, Kant, Kishore. "Disaster risk reduction and G20: A major step forward. Progress in disaster science", (2023).

14Ripin Kalra. "Support for Multi-Hazard Risk Reduction in Urban Local Bodies", Halduskultuur: The Estonian Journal of Administrative Culture and Digital Governance, 23(1), 66-79, (2023).

15 PallaviDas,Good Governance Strategies for Disaster Management and Risk Reduction. (International Handbook of Disaster Research, 2023).

16DM Act, 2005, available at: https://ndma.gov.in/Reference_Material/DMAct2005(last visited on 17 May 17, 2024)

17NDMA, available at: https://ndma.gov.in/ (last visited on 17

tasked it with developing the plans, rules, and regulations related to disaster management. The Act strongly emphasizes holistic disaster management, from prevention to rehabilitation. Refer to Table 2 for key provisions of the DM Act, 2005.

National policy on disaster management (NPDM), 2009[18]

The NPDM outlines a thorough policy for catastrophe risk mitigation. It emphasises the necessity of a proactive strategy that ensures community-based disaster management and incorporates disaster risk reduction (DRR) into development planning.

National disaster management plan (NDMP), 2016[19]

The NDMP offers a strategic framework for disaster management in all areas. The Sendai Framework for Disaster Risk Reduction 2015–2030 is in line with the objectives of the NDMP, which are to increase disaster preparedness, reduce catastrophe risks, and enhance resilience.

Community participation

Community-based disaster management (CBDM) emphasises local communities' involvement in disaster risk reduction. This approach ensures that DRR strategies are culturally appropriate and sustainable. Programs like the Village Disaster Management Plans (VDMP) empower communities to identify risks, develop response strategies, and enhance local capacities[20].

Technological Advancements

Early warning systems

India has invested in sophisticated early warning systems for cyclones, floods, and tsunamis. The Indian Meteorological Department (IMD)[21]. and the Indian National Centre for Ocean Information Services (INCOIS)[22]. provide timely warnings to lessen the effects of disasters.

Geographic information systems (GIS)

Hazard mapping, risk assessment, and planning extensively utilise GIS technology. It aids in identifying vulnerable areas and populations, resulting in better preparedness and response strategies[23].

National disaster response force (NDRF)[24]

The NDRF is a specialised force with extensive training in handling all kinds of disasters. It plays a critical role in rescue and relief operations, demonstrating India's commitment to enhancing disaster response capabilities.

Overview of the disaster management act, 2005

the Indian Parliament passed the Disaster Management Act 2005 (DMA) on December 23, 2005, to provide a comprehensive and successful disaster management framework throughout the nation. The Act established the institutional and legal frameworks required to manage disasters at the federal, state, and local levels.

Structure and content of the act

The DMA, 2005, is an extensive document comprising 79 sections divided into 11 chapters. The chapters cover aspects of crisis management in detail, including the creation of authorities, plans, and finances, as well as the distinct roles and responsibilities of various governmental and non-governmental organisations.

Section 1

This section describes the "Disaster Management

May 2024)

18NPDM 2009, available at:https://ndma.gov.in/sites/default/files/PDF/national-dm-policy2009.pdf, (last visited on 17 May 2024)

19NDMP 2016, available at: https://www.mha.gov.in/sites/default/files/2022-08/National%2520Disaster%2520Management%2520Plan%2520May%25202016%5B1%5D.pdf (last visited on 17 May 2024)

20Sachinkumar N.Bhagat,"Community-based disaster management strategy in India: An experience sharing". PDPU Journal of Energy and Management, 11-17. (2013).

21IMD, available at :https://mausam.imd.gov.in/ (last visited on 17 May 2024)

22INCOIS, available at :https://incois.gov.in/portal/aboutus (last visited on 17 May 2024)

23C. Ghosh and A. Singh, (eds), GIS and Geospatial Studies in Disaster Management. International Handbook of Disaster Research. Springer, Singapore. pp 701–708 (2023).

24NDRF, available at :https://www.ndrf.gov.in/ (last visited on 17 May 2024)

Act, 2005," which is applicable to the whole of India and has a start date of December 26, 2005.

Section 2

Explains the meaning of twenty key terms used in the Act, such as "affected area," "disaster," "disaster management," "mitigation," and "capacity building," giving readers a basic grasp of the legal and practical settings. As per Section 2(d) of the Disaster Management Act, 2005, disaster is defined as *"disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area;"*[25], and in Section 2(e), defines disaster management as *"disaster management" means a continuous and integrated process of planning, organising,coordinating and implementing measures which are necessary or expedient for–*

- (i) prevention of danger or threat of any disaster;
- (ii) mitigation or reduction of risk of any disaster or its severity or consequences;
- (iii) capacity-building;
- (iv) preparedness to deal with any disaster;
- (v) prompt response to any threatening disaster situation or disaster;
- (vi) assessing the severity or magnitude of effects of any disaster;
- (vii) evacuation, rescue and relief;
- (viii) rehabilitation and reconstruction;"[26]

Sections 3-13

These parts cover the establishment and detailed roles of the National Disaster Management Authority (NDMA). In order to guarantee a prompt and efficient response to disasters, this central organisation is in charge of establishing disaster management policies, strategies, and recommendations. The Prime Minister chairs the NDMA, which also oversees the execution and enforcement of plans and policies for disaster management (Section3)[27].

25The Disaster Management Act, 2005, s. 2 (d).
26The Disaster Management Act, 2005, s. 2 (e).
27The Disaster Management Act, 2005, s. 3.

These sections outline the authority's composition, powers, and functions, including the creation of a national plan, the coordination of disaster response activities, and the facilitation of capacity-building measures.

Sections 14-24

The State Disaster Management Authorities (SDMAs), under the direction of the corresponding state chief minister, are established in these parts. SDMAs formulate state-level policies and plans and coordinate disaster management efforts to ensure effective and localised response and mitigation strategies. Additionally, these sections delineate the powers and functions of SDMAs in disaster mitigation, response, and recovery, guaranteeing a systematic approach that caters to the unique needs and vulnerabilities of each state.

Sections 25-34

These sections describe the formation of District Disaster Management Authorities (DDMAs) led by the District Collector or Magistrate. These provisions require DDMAs to create and carry out mitigation plans at the district level, make sure that preparedness and response mechanisms are in place, and integrate their efforts with state and federal policies.

Sections 35-40

These sections focus on government responsibilities in disaster management, which include the obligation to establish early warning systems, ensure effective communication, and facilitate continuous training and capacity building. Furthermore, to improve preparedness, response, and recovery efforts, these sections call for the creation of structures for cooperation across all levels of government, the distribution of required finances, and the integration of disaster management policies into development plans.

Section 41

According to this provision, local authorities must maintain the resources needed for an effective and timely response to any crisis scenario, create strategies for disaster management, and assure capacity building.

Table 3: Detail review of the DMA, 2005 of India

Row	*Role*	*Composition*
First Tier (NDMA)		
National Disaster Management Authority (NDMA) (Section 3)	Act as the central body for disaster management policies, plans and guidelines (Section 6)	Chairperson: Prime Minister Members: Ministers of State for Home Affairs, Agriculture, Atomic Energy, Science & Technology, and other relevant ministries; Vice-Chairperson and other members nominated by the Chairperson
National Executive Committee (NEC) (Section 8)	Assist the NDMA in performing its functions and ensure compliance with the directions.	Chairperson: The Secretary to the Government of India who is in charge of the Central Government Ministry or Department that oversees disaster management administratively.Members: Secretaries to the Government of India in various departments, Chief of the Integrated Defence Staff of the Chiefs of Staff Committee
National Institute of Disaster Management (NIDM) (Section 42)	Training, research, and capacity-building institution	Director: Appointed by the Central Government Members: Experts and professionals in disaster management and related fields
National Disaster Response Force (NDRF) (Section 44)	Special response force for disaster situations	Control: Director-General appointed by the Central Government Composition: Various battalions from Central Armed Police Forces
Second Tier (SDMA)		
State Disaster Management Authority (SDMA) (Section 14)	Lay down the state disaster management plan and policies	Chairperson: Chief Minister Members: Ministers nominated by the Chief Minister, including the Minister for Disaster Management
State Executive Committee (SEC) (Section 20)	Ensure that the state's disaster management plan is implemented with coordination and monitoring.	Chairperson: The state's chief secretary; Members: Department secretaries, as determined by the state government.
Third Tier (DDMA)		
District Disaster Management Authority (DDMA) (Section 25)	At the district level, organise, plan, and carry out disaster management initiatives.	Chairperson: District Magistrate Co-Chairperson: Elected representative of the local authority Members: include the Chief Medical Officer, Superintendent of Police, and additional district-level personnel nominated by the state government.
Local Authorities (Section 41)	Execute disaster management procedures in compliance with district and state plans.	Composition: consists of town planning authorities, municipalities, district and cantonment boards, Panchayati Raj establishments, and other organisations in charge of urban development and planning.

Sections 42-43

The founding of the National Institute of Disaster Management (NIDM) is the subject of these parts. The NIDM is in charge of organising and advancing disaster management education, research, and documentation. It also focuses on policy development, technology enhancement, and facilitating information exchange to improve ongoing learning and preparedness for disasters.

Sections 44-45

Regarding the National Disaster Response Force (NDRF), these sections deal with its formation. It equipped this specialist force with the necessary skills to respond quickly to disasters. It also possesses the necessary equipment to carry out rescue and relief operations.

Sections 46-50

These sections lay out the financial foundation for disaster management in India. For emergency response, Section 46 establishes the National Disaster Response Fund (NDRF). Section 48 establishes state and district disaster response

funds for localised needs[28]. Section 47 sets up the National Disaster Mitigation Fund[29]. Sections 49–50 address the accounting and auditing of these funds to ensure transparency and accountability.

Sections 51-60

Punishments for specific offences are covered in these sections.

- For obstruction of any authorised personnel (Section 51)[30]
- For making false claims regarding relief or assistance (Section 52)[31]
- For issuing false warnings to the public (Section 54)[32]
- For failure of duty by a government officer (Section 55)[33]

Sections 61-79

These sections cover miscellaneous provisions, including compensation and relief to the victims of disasters (Section 61)[34], delegation of powers to various authorities (Section 62)[35], and protection of actions taken in good faith (Section 73)[36]. They ensure comprehensive legal and administrative support for the effective management of disasters. Refer to Table 3 for a detailed review of the roles and composition of disaster management authorities under the DM Act, 2005.

The Act requires the establishment of three tiers of the system: NDMA, SDMA, and DDMA.

- NDMA (National Disaster Management Authority)
- SDMA (State Disaster Management Authority)
- DDMA (District Disaster Management Authority)

The Act creates the Disaster Response Fund and the Disaster Mitigation Fund for the national, state, and local governments. It also establishes the NDRF and NIDM.

The Ministry of Home Affairs will manage all-natural disasters except for pest attacks, hailstorms, and droughts. The Ministry of Agriculture and Cooperation will supervise the management of droughts, insect infestations, and hailstorms. The following organisations are in charge of responding to disasters. Refer to Figure 1 for the organizational hierarchy under the DM Act, 2005.

Table 4: Nodal Ministries responsible for various disaster types under the DM Act, 2005

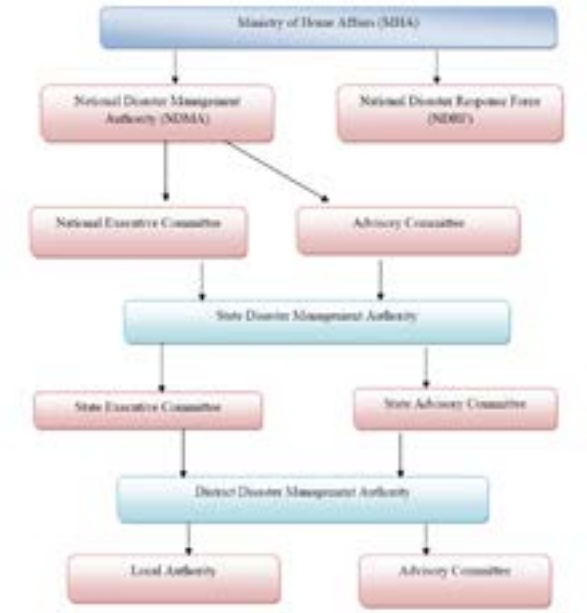
Disaster	*Nodal Ministry*
Natural Disasters except Drought, Pest Attacks and Hailstorm	Ministry of Home Affairs
Drought, Pest- Attacks and Hailstorms	Ministry of Agriculture & Cooperation
Air accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disaster	Ministry of Environment and Forests
Biological Disaster	Ministry of Health
Nuclear Disaster	Department of Atomic Energy

(Source: Disaster Management in India-A Status Report, https://www.preventionweb.net/files/2534_2534Disaster-ManagementIndia.pdf)

Limitation of DMA, 2005 of india

Despite being a major legislative step in the right direction, India's Disaster Management Act (DMA) of 2005 has certain shortcomings that have made it more difficult for the nation to respond to natural disasters. One of the primary criticisms is its inability to effectively integrate and prioritise disaster risk reduction (DRR) efforts, which is critical for mitigating the impact of disasters. Comparative studies have highlighted this lack of integration, highlighting that India still faces challenges in creating anefficient disaster management system, especially when it comes to community participation and coordination mechanisms[37]. Critics have criticised the DMA for its inadequate project planning and execution, making the National Disaster Management Authority (NDMA) nearly invisible during major crises like the COVID-19 pandemic[38]. During the COVID-19 pandemic, the Act's enforcement brought to light more profound

28The Disaster Management Act, 2005, s. 48.
29The Disaster Management Act, 2005, s. 47.
30The Disaster Management Act, 2005, s. 51.
31The Disaster Management Act, 2005, s. 52.
32The Disaster Management Act, 2005, s. 54.
33The Disaster Management Act, 2005, s. 55.
34The Disaster Management Act, 2005, s. 61.
35The Disaster Management Act, 2005, s. 62.
36The Disaster Management Act, 2005, s. 73.
37Sriram Divi, &N. Dorasamy, "Disaster Management in India: Need for an Integrated Approach". Disaster Advances. 15. 60-68. (2022).
38 DeepaSonpal,. Disability, disaster and the law. (2017).



Source: Disaster Management in India, Ministry of Home Affairs 2011

Figure 1: Organizational Structure of Disaster Management in India under the DM Act, 2005

facts about health rights, access to healthcare, and health equity.This suggests a need to refurbish public health legislation to address epidemics and bioterrorism more comprehensively[39]. India, despite its high susceptibility to disasters, placed inadequate emphasis on disaster management until the COVID-19 pandemic. Political interference, inadequate planning, and poor execution have rendered the (NDMA) National Disaster Management Authority ineffectual since its inception in 2005. The organisation's inadequate performance amidst the pandemic underscores underlying concernsregarding its framework and direction.[40] Refer to Table 4 for nodal ministries responsible for various disaster types under the DM Act, 2005.

Moreover, the Act has not effectively addressed the systemic and cascading nature of disaster and climate risks, which is critical for furthering the priorities of action laid out under international frameworks such as the Sustainable Development Goals (SDGs) and the Sendai Framework[41]. The lack of emphasis on effective preventative and regulatory measures for man-made hazards further limits its scope[42]. Critics also point out that the centralised and top-down nature of the DMA reinforces the state's control over disaster management, frequently neglecting local and community-based interventions crucial for long-term resilience and recovery[43]. The successful implementation of disaster risk reduction and management techniques is dependent on the community's effective engagement and participation in disaster management processes, which this centralised approach has hindered[44].In conclusion, India's capacity to successfully respond to natural disasters has been severely impacted by the limitations of the Disaster Management Act of 2005, including its inadequate integration of DRR activities, weak planning and execution, lack of inclusion, and centralised approach[45]. These limitations underscore the need for a more integrated, inclusive, and community-focused disaster management approach in India[46].

DISCUSSION

The Disaster Management Act, 2005 of India was enacted to provide a systematic and organised

39 Kim, J., &Ashihara, K., "National Disaster Management System: COVID-19 Case in Korea". International journal of environmental research and public health, 17(18), 6691. (2020).

40SubhradiptaSarkar,."National Disaster Management Authority: Close Encounters with COVID-19. International Handbook of Disaster Research, pp 273–288, (2023).

41Shakeri Ehsan, Bela, Vizvari., et. al., "Comparative analysis of disaster management between India and Nigeria". International journal of disaster risk reduction, (2021).

42 M.Z.M., Nomani., Rehana, Parveen. "Covid-19 pandemic and application of disaster management act, 2005: Promises and pitfalls". Journal of Pharmaceutical Research, (2020).

43L. MalleswaraRao, J. Rama, Mohan. "Disaster management in india: prevention, mitigation & preparedness". Journal of emerging technologies and innovative research, (2020).

44 Shajahan, Avadi., Rajiv, Seth. "Positing Indian military for disaster response: comparative analysis of military involvement pre- and post-adoption of National Disaster Management Framework 2005". Defence Studies, (2020)

45 B., K., Maheshwari. "Disaster Management in India and Characterization for Geohazards, Geotechnics for Natural Disaster Mitigation and Management, (2020).

46 José, Manuel, Mendes. Disaster Exceptionalism in India: The View from Below. Recovering from Catastrophic Disaster in Asia., (2017).

approach to disaster management. Despite their best efforts, public and commercial organisations frequently fall short of ensuring a coordinated response to disasters, which increases suffering for the impacted populations. The act mandates clear roles and responsibilities for various government institutions, but overlapping functions have resulted in inefficiencies and a lack of accountability, exacerbating the chaos during disaster events. One of the main issues is that disaster risk reduction (DRR), which is essential for lessening the effects of disasters, is not incorporated into and prioritised enough. Although India has developed stronger institutional and legal frameworks than some other nations, a lack of transparency, particularly at the state and local levels, makes it difficult to mobilise, manage, and use funds for disaster management[47]. The systemic and cascading nature of disaster and climate risks, highlighted by the COVID-19 pandemic, underscores the urgent need for a holistic understanding of multi-hazard scenarios[48]. The enforcement of the Disaster Management Act, 2005, during the COVID-19 pandemic, revealed gaps in the legislative intent and the practical application of the Act, particularly in terms of public health administration and the right to health equity[49]. India's geo-climatic parameters have historically made it vulnerable to natural disasters, emphasising the need for a proactive and comprehensive approach to disaster management[50]. In addition to mitigation and assistance, the basic structure of the Act should prioritise early warning systems, identification, prediction, and preparedness for effective disaster management[51].

To enhance disaster risk management (DRM) and disaster risk reduction (DRR) in India, several techniques can be adopted as follows:

- Raising awareness among communities, government officials, and policymakers is crucial.
- Building the capacity of communities and institutions can significantly improve resilience.
- Amending existing laws, policies, and plans to address current gaps and challenges can provide a more robust framework to manage disaster management.
- The role of civil society should be enhanced to guarantee an integrated approach to disaster management.

CONCLUSION AND RECOMMENDATIONS

India's Disaster Management Act of 2005 stands as a critical legal framework designed to address the unique challenges posed by natural and human-induced disasters in a country highly susceptible to such events. Initially crafted to organize and streamline disaster response mechanisms, the Act has faced substantial hurdles in its application. Issues such as overlapping responsibilities, inadequate coordination, favouritism, resource mismanagement, and widespread corruption have not only undermined the effectiveness of the Act but have exacerbated the hardships endured by the affected populations. Moreover, the prevailing focus on reactive measures rather than proactive strategies has resulted in a significant imbalance in disaster management efforts.

To address these deficiencies and harness the potential of modern technology, the Act urgently requires comprehensive revision. This revision should aim to clarify its objectives, redefine key terms to encompass proactive disaster risk reduction measures, and introduce new chapters dedicated to disaster prevention and mitigation. Additionally, empowering lower administrative levels with clear plans, roles, and responsibilities is crucial for ensuring effective local disaster responses. Integrating advanced technologies, such as Artificial Intelligence (AI), could revolutionize early warning systems and resource distribution, enhancing the timeliness and accuracy of responses.

However, the integration of AI and other technologies necessitates further research to understand their impact and adaptability across diverse geographical regions fully. There is also a pressing need to improve community involvement

47Supra note 37.

48 Shalini, Narayanan. "Government Information Dissemination Structures and Processes in Disasters." International Handbook of Disaster Research, undefined (2022).

49Supra note 41.

50Supra note 43.

51 Vishal, Weldode., Sadanand, Petkar. "Disaster Management: Challenges & Solutions Indian Perspective." JournalNX, pp. 195-197. (2018).

and awareness, address economic limitations, and bolster the political will to enforce these changes effectively.

To facilitate these enhancements, the following specific suggestions are recommended for future actions:

A Clear Definition of Objectives

The Act redefines "disaster management" to include prevention and mitigation, ensuring a proactive approach to disaster risk reduction.

Revision of key definitions

Amend Section 2 to include explicit definitions for "hazards," "prevention," and "mitigation," providing consistency and clarity throughout the Act.

Inclusion of disaster prevention chapters

Introduce chapters that explicitly address disaster prevention and include comprehensive prevention plans.

Empowerment at local levels

Create detailed disaster management plans at the tehsil and town levels, providing local officials with clear roles and responsibilities.

Enhanced accountability measures

Implement judicial oversight to hold officials accountable for their actions under the Act, thereby enhancing transparency and effectiveness.

Special resource allocation

To ensure adequate funding, designate specific budget allocations annually for disaster management at all administrative levels.

Modernization of early warning systems

Update early warning and forecasting clauses to incorporate modern technologies such as GIS and AI, improving prediction accuracy and response timeliness.

Clarification of roles to prevent overlap

Clearly define the roles and responsibilities of various institutions to avoid inefficiencies and ensure coordinated efforts across all levels of government.

Community engagement and policymaker involvement

Increase community awareness of disaster risks and management strategies and actively engage policymakers and stakeholders in supporting and implementing disaster risk reduction and management initiatives.

AI integration in disaster management

Utilize AI for advanced data analytics and predictive modelling to enhance early warning systems and optimize logistical and resource management during disasters.

Adopting these recommendations can transform the Disaster Management Act of 2005 into a more effective tool, promoting a proactive, organized, and successful approach to disaster management in India. This comprehensive revision will not only optimize existing protocols but also significantly reduce the suffering of the affected populations, moving towards a more resilient India.

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The Disaster Management Act, 2005, s. 47.

The Disaster Management Act, 2005, s. 51.

The Disaster Management Act, 2005, s. 52.

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