# A Critical Analysis of India's Disaster Management Framework: Addressing Gaps and Enhancing Financial Resource Management

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Abstract: India is a nation with diverse eco-geological, socioeconomic, and hazard-prone environments, as evidenced by past disasters and their governance. This research paper provides a critical analysis of India's disaster management framework, with an emphasis on identifying key gaps and enhancing financial resource management. Using a doctrinal approach, the research incorporates a thorough review of relevant legislation and case laws. The findings suggest incorporating disaster risk reduction measures into the legal framework. Several recommendations are made to strengthen India's disaster management laws based on the findings of this study. These include enhancing inter-agency coordination, clarifying roles and responsibilities at all levels of government, empowering local communities in disaster decision-making, increasing investment in disaster risk reduction, and incorporating adaptation strategies to climate change into disaster planning. The paper emphasizes the significance of a flexible and comprehensive legal framework for disaster management in India. By addressing identified gaps and incorporating suggested improvements, particularly in the management of financial resources, India can strengthen its disaster resilience, safeguard lives and livelihoods, and mitigate the far-reaching effects of disasters.

Keywords: Disaster Management, Mitigation, Implementation, Disaster Management Act-2005.

# 1. Introduction

The concept of word 'disaster' has its roots in the Italian word *disastro*. Disaster has Greek pejorative prefix 'dis', which means 'bad', and the word 'astro' which means 'star'. Disaster is an occurrence that causes widespread damage and destruction or a sudden catastrophe leading to loss of life and property. It is a major, typically unexpected, event that causes widespread harm, destruction, and necessitates a concerted response to mitigate its consequences and assist people impacted. Disasters fall into five main categories:

Natural disasters: It happen because of forces and processes in nature. In this group are earthquakes, storms, floods, tornadoes, and volcanic eruptions.

Technological and industrial disasters: These kinds of disasters are caused by mistakes in factories or other places where technology is used. Chemical spills, nuclear accidents, industrial blasts, and building collapses are all examples.

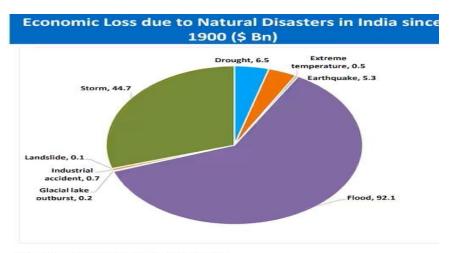
Man-made Disaster: Disasters caused by people are caused by their acts or lack of care. This group includes terrorist attacks, armed conflicts, social unrest, and infrastructure failures like dam breaks.

Public health emergencies: These are caused by widespread disease outbreaks that can make a lot of people sick or kill them. This group includes things like the spread of a new contagious disease.

Environmental Disaster: Disasters in the environment hurt communities and the environment. Some examples are oil spills, cutting down trees that causes land erosion, and large-scale pollution events that hurt the quality of the air and water. Disaster management involves planning, responding, and recovering from disasters that endanger people, property, or the environment. Since the Stockholm Conference in 1972, the majority of worldwide environmental policies have identified natural disasters as a major barrier to the pursuit of sustainable development.

The Disaster Management Act, which became law in 2005, marked a paradigm shift towards "prevention-mitigation-based holistic disaster management." It is interesting to note that it was the same year when India participated in the *Kobe World Conference on Disaster Reduction* in 2005, which produced the Hyogo Framework for Action (2005-2015). It entails planning, organizing, and coordinating disaster mitigation and protection. Although the "Emergency Planning, Preparedness and Response Rules 1996" under the Environmental Protection Act of India was India's groundbreaking law that enabled systemic planning and preparedness for disaster emergencies and a tiered approach of authorities, the 2005 Disaster Management Act introduced the mechanism of comprehensive planning for disaster management and authorities at the national, state, district, and local level. After the 2005 act was passed, it was then followed by The National Policy

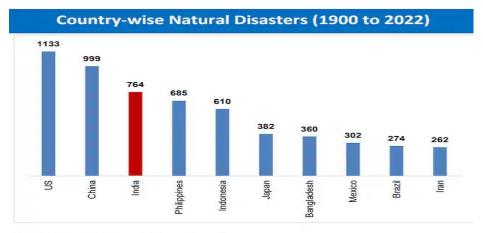
on Disaster Management ((2009), inspired by the Hyogo Framework (2005-2015), and the National Disaster Management Plan (2016–2019), based on the Sendai Framework.



Source: EM-DAT; SBI Research

Compliance with the laws and policies outlined in the Hyogo and Sendai Frameworks is still problematic in developing nations, Similar criticisms regarding the efficacy of the Act, Policy, and Plan have been voiced in the Indian media following a series of disastrous floods between 2013 and 2020. The 2005 Disaster Management Act of 2005 is the foundation of disaster management legislation in India. It outlines the duties, responsibilities, and coordination mechanisms between various stakeholders and provides a legal framework for disaster management at the national, state, and local levels. This act establishes the National Disaster Management Authority (NDMA), the State Disaster Management Authorities (SDMAs), and the District Disaster Management Authorities (DDMAs) to assure effective disaster management and response.

In general, the frameworks for law and strategy already in place are meant to support risk assessment, early warning systems, evacuation plans, search and rescue efforts, relief and rehabilitation efforts, and long-term recovery strategies. Both the national and state governments work to increase disaster preparedness and lessen the effects of disasters on the people and environment by putting these measures into place and maintaining coordination among diverse stakeholders. Despite the existence of these laws and regulations, loss of life and property continues due to a lack of proper implementation and appropriate measures to mitigate the disaster.



Source: EM-DAT; SBI Research

#### 2. Review Of Literature

Disaster management is a highly sought-after topic in both India and the rest of the world. It is also one of the themes that academics from various disciplines are researching. There isn't enough literature on the subject of law and disaster in India when it comes to the legal implications or legal framework to understand disaster management. In order to strengthen our legal research study on the aspects of environmental governance and disaster management in Uttarakhand as well as the function of the legal support system, a few books, papers, and reports on these topics are now available. These are being reviewed here.

Roy examined the socio-economic background of natural disaster in India in his exploratory research. The author concentrated on three major issues: the market, politics, and knowledge, each of which corresponds to a different time scale (short, medium, and long term). While the research states a comprehensive study of natural disasters and their impact it fails to take into consideration other factors such as legal issues involved.

M. N. Rajeevan, Shailesh Nayak and Deepak Badrinarayana have noted that India faces a complex challenge as a result of climate change, which is reflected in the development of India's laws and policies in the area. India is not just one of the nation's most sensitive to climate change, but it is also home to some of the world's poorest citizens, whose lives and property are at risk due to climate change. The authors have successfully explained the laws and policies in India with respect to disaster management but have not mentioned specific suggestions on the problem.

Sumitra Mohan, stated when discussing the Indian disaster prevention and mitigation policy that the Disaster Management Act was passed by the Indian government in 2005, a national policy on disaster management was prepared and adopted in 2009, and three international agreements, including the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals 2015–2030, and the Paris Climate Change Agreement, were adopted. The author has provided a comprehensive view on the legal framework with respect to disaster management on the national as well as international level but fails to answer the question as to why still India has not fully implemented various international guidelines with respect to disaster management.

Indrajit Pal, Rajib Shaw state governance of disaster risk in India and Cross Cutting challenges. The pre-disaster stage, the disaster stage, and finally the post-disaster stage are all taken into account as the writers integrate and draw some of the most important lessons. The authors believe that through information, innovation, and education it is also meant to build a culture of prevention, readiness, and resilience at all levels. The study has provided various challenges with respect to disaster management in India but fails to give any relevant suggestions to overcome these challenges.

Amita Singh, Milap Punia, Nivedita P. Haran, Thiyam Bharat Singh state that in order to comply with the requirements of the Disaster Management Act of 2005, authors suggested a concerted effort to coordinate interagency operations, as well as active participation in local governance, the mobilisation of community-based organisations (CBOs), and the implementation of education-focused curricula in both technical and tertiary institutions. Governments in these north eastern states of India should hold State Disaster Management Authorities responsible for their creation and give them the tools they need to actively contribute to the successful reconstruction of the local populations. The study only concentrated on one consequence of disaster that is livelihood but fails to focus on other aspects such as essential commodities and services which are required just after the disaster has occurred.

Dr. Nandan S. Bisht, Miss Renuka Sharma and Mr Thakur Dev Pandey, states that as far as natural disasters are concerned, they are impossible to avoid, however their impact on human can be reduced by taking precautionary measures. A disaster causes damage to life, property as well as to the psychology of the people. So, it becomes mandatory to follow those strategies in advance which can minimise the losses in case of any disaster. Although the authors have very well focused their study on precautionary measures that should be taken before the disaster arrives but fails to provide views on implementation part of these measures.

Sushil Khanduri and Piyoosh Rautela assessed economic impact of disaster and utilisation pattern of the relief through empirical study conducted in worst affected district of Uttrakhand, i.e. Rudraprayag, and are of the opinion that state should initiate an organised scheme with the involvement of financial institutions to facilitate replenishment of productive assets lost in disaster. The study comprehensively focused on livelihood as a consequence of disaster but fails to explain other aspects such as essential commodities and services which are required just after the disaster has occurred.

Neelakshi Joshi 's paper approaches the issue of urbanization and its effects in the mountainous economy like Uttrakhand from a governance perspective. It does so by examining the process of urban development and the actors involved in addressing risk. Results from the study conducted indicate that the municipality is severely constrained in its capacity to address risk in the built form.

Ravinder S Gill has made another attempt to come out with various innovative ways to prepare and mitigate disaster in Uttrakhand. Some of the appropriate steps are advised by the author to mitigate the disaster such as encouraging continued mobilization of domestic and international resources for disaster reduction activities and Promotion and dissemination of information on disaster-resistant construction methods and technologies for buildings and public works and many more such suggestions.

Mitthan Lal Kansal and Sachchidanand Singh, in their research briefly cover the most significant flood damage episodes, describes the state's delicate geology in the Himalayas, and examines both the natural and artificial causes of the tragedy. Additionally, it draws attention to the state's climate change problem and how excessive precipitation is one of its negative effects. In addition to this, it examines the difficulties associated with managing floods and shows the efficient flood risk management strategy that may be used to lessen their negative effects.

Dr. S. Ananda Babu 's book on The World Congress on Disaster Management (WCDM) brings together researchers, policymakers, and practitioners from all over the world to discuss complex issues in disaster risk management, advance knowledge of risks, and advance initiatives for risk reduction and disaster resilience building. The fifth WCDM examines three crucial problems that present the greatest difficulties and offer the greatest potential for increasing catastrophe resilience. These include capacity, finance, and technology. Outside of the UN system, WCDM has grown to be the largest international conference on disaster management. Despite the widespread epidemic, more than 2500 scientists, professionals, policy makers, and practitioners from all over the world attended the fifth WCDM. The book is a comprehensive collection of technologies that should be brought in use to reduce the risk of disasters but their implementation in a country like India is still a challenge.

Ekta Sood in her recent paper focuses on all the legislations under which our government is empowered to issue guidelines and instructions to control the pandemic situation. In her papers the author has focused on recent pandemic. However, It is silent on deeper examination of the effectiveness of these old laws in addressing the unique challenges of a modern pandemic in a densely populated country like India.

In conclusion, the literature review on disaster management in India emphasises the national and global importance of this topic. While substantial research is being conducted in a variety of academic fields, it is evident that the legal aspects of disaster management in India have not received sufficient attention in the existing literature. The literature review emphasises the urgent need for additional research and focus on the legal implications of disaster management in India. By expanding research on this topic, policymakers, practitioners, and researchers can develop more effective strategies and frameworks to address the challenges posed by natural disasters and climate change, thereby enhancing disaster preparedness and response to protect lives and property.

## 3. Statement Of Problem

The Disaster Management Policy framework at the national and state level exhibits gaps and shortcomings and it does not effectively mitigate and manage disasters.

Due to its topology's tendency for natural disasters, our country confronts considerable difficulties in reducing disaster risk. This research aims to assess the effectiveness of the disaster management policy framework concerning its ability to mitigate and manage disasters. The study will comprehensively analyze the impact of this framework on disaster preparedness, response, and recovery efforts keeping in mind the international conventions like Hyogo Framework (2005), Sendai Framework (2015) and United Nation Disaster Risk Reduction Framework (2019).

## 4. Research Objective

The researcher posits that legislations and legal mechanisms play a pivotal role in not only streamlining organizations but also safeguarding the rights and liabilities of stakeholders. Accordingly, the study aims to achieve the following objective: "To critically analyse the National Disaster Management and State Disaster Management Framework"

## 5. Research Question

- I. What are the loopholes within the current legal framework concerning disaster management in India?
- II. What are the ways in which these loopholes can be resolved?

### 6. Research Methodology

The researcher used the doctrinal research study in order to find out the lacunae in legal framework. The researcher has used important international conventions and treaties such as the *Hyogo Framework for Action (2005, Sendai Framework for Disaster Risk Reduction, (2015-2030), United Nation Disaster Risk Reduction (2019)* online sources, majority of which are from United Nations. Various legal framework relating to Disaster management in force in India such as *Disaster Management Act,2005, National Disaster Management Authority, State Disaster Management Authority etc.*.are critically analysed. The researcher has then applied the analytical research model by critically analysing the collected information and make recommendations on it. The analysis is based on a comprehensive examination of literature by various authors.

#### 7. Disaster Governanace At The International Level

Some major international frameworks related to disaster management and risk reduction are discussed as follows:

The "Hyogo Framework for Action" (HFA) was a global blueprint for disaster risk reduction adopted in 2005 during the World Conference on Disaster Reduction held in Hyogo, Japan. It aimed to guide the efforts of nations and communities in reducing disaster risks and building resilience to disasters. India actively participated in the formulation and implementation of the Hyogo Framework for Action.

The Sendai Framework is a global agreement adopted in 2015 during the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan. India actively participates in its implementation. The framework focuses on reducing disaster risk and enhancing resilience through a comprehensive approach that encompasses various sectors and stakeholders.

The United Nations Office for Disaster Risk Reduction (UNDRR) is an agency of the United Nations that focuses on disaster risk reduction and building resilience to disasters worldwide. In 2019, UNDRR released the "Global Assessment Report on Disaster Risk Reduction" (GAR 2019), which provided a comprehensive analysis of disaster risk and its implications for sustainable development.

India, being highly vulnerable to various natural hazards such as earthquakes, floods, cyclones, and landslides, actively engages with UNDRR and participates in its initiatives. The GAR 2019 report highlighted India's progress and challenges in disaster risk reduction, emphasizing the importance of a comprehensive and integrated approach to managing disaster risks in the country.

## 8. Disaster Governance At The National Level

The institutional framework for disasters in India prior to the Disaster Management Act, 2005, was totally response-driven and concentrated on relief, rescue, and financial aid. The District Collector/District Magistrate and the State Relief Commissioner (SRC), who is directly responsible to the Chief Secretary, were principally responsible for coordinating relief and rescue activities at the district and state levels, respectively. The Act, 2005 then established a number of new institutions at the national, state, and district levels, respectively.

Significantly, the Act established the following permanent organisations in place of the interim committees created during a disaster:

- 1. The nationwide Disaster Management Authority (NDMA), National Executive Committee (NEC), National Institute for Disaster Management, and National Disaster Response Force operate on a nationwide scale.
- 2. The State Disaster Response Force (SDRF), the State Executive Committee, and the State Disaster Management Authority (SDMA) at the state level.
- 3. District Disaster Management Authority (DDMA) at the district level.

The establishment of a permanent National Disaster Management Authority (NDMA), presided over by the Prime Minister and governed by a nine-member board of designated experts in disaster management, is one of the measures taken by the Act to address issues like political interference in the accessibility of the National Clarity Contingency Fund. But the paradigm shift from a "response and relief-centric" to a "prevention-mitigating"-centric strategy, as well as the development of institutional/governance processes over the past two decades, have also resulted in several significant drawbacks, as shown as follows:

- 1. Encroachment of authority and activity types: central coordination of crisis response, coordination of training and research, formulation versus analysis and advocacy of policy, etc.
- 2. Problems with hierarchy, autonomy, and reporting amongst authorities in various sectors of disaster governance at the same level (e.g., NDMA, NIDM, NDRF, NEC, etc.).

- 3. Staffing: Some organisations use a sizable but unsustainable professional or unprofessional workforce, while other organisations employ far fewer people with capabilities and hierarchies that are incompatible with their mandates.
- 4. There is a lack of transparency on some funding and financial mechanisms, such as the disaster mitigation fund and the effects of implementing the State Action Plan on Climate Change on disaster risk reduction.

#### 9. Disaster Governance At The State Level

The Disaster Management Act of 2005 (DM Act 2005) establishes institutional and coordinating frameworks for efficient Disaster Management (DM) at the national, state, regional, and district levels.

Uttarakhand is one Indian state that has seen several numbers of devastation caused by natural calamities. However, its distinct geographical features present substantial obstacles in disaster management. The majority of the state's northern region is dominated by the towering peaks and glaciers of the Himalayas. High elevation and difficult terrain in the area make it difficult to conduct rescue and relief activities, which delays assistance and worsens the effects of disasters. These elements work together to increase Uttarakhand's vulnerability to catastrophes, necessitating effective environmental governance and disaster management policies to reduce risks and improve resilience in the area.

In light of the recurrent incidence of calamities in Uttarakhand, both the state and central governments have implemented legislative measures and devised strategic frameworks aimed at bolstering disaster preparedness and response capabilities. The objective of these laws is to establish a comprehensive structure for the management of disasters, encompassing various elements including risk assessment, early warning systems, evacuation plans, search and rescue operations, relief and rehabilitation measures, and long-term recovery strategies.

In Uttarakhand, specific measures have been implemented to address the region's unique challenges. The Uttarakhand Disaster Mitigation, Management and Prevention Act of 2005 complements the national legislation and establishes the Uttarakhand State Disaster Management Authority (USDMA) as the apex body responsible for disaster management in the state. It outlines the roles of various departments, agencies, and organizations in disaster response and recovery efforts. Furthermore, considering the religious significance of Uttarakhand and the large influx of pilgrims, the state government has taken additional steps to ensure their safety during disasters. In Uttarakhand, disaster management is organised using a structured framework with the goal of successfully preventing and responding to calamities.

## At the State Level

The State Disaster Management Authority (SDMA) is in charge of supervising and coordinating disaster management efforts in the state at the highest level. The State Executive Committee (SEC) functions as a subcommittee charged with implementing disaster management policies and strategies while coordinating with the SDMA. The SDMA is responsible for establishing policies and plans for disaster management, ensuring implementation of State Disaster Management, recommending fund provisions for mitigation and preparedness measures, and reviewing the departmental development plans to ensure that prevention, preparedness, and mitigation measures are integrated into these plans.

# At the District Level

When it comes to coordinating disaster management efforts within their respective regions, the District Disaster Management Authority (DDMA) functions in each district at the local level. The DDMA, which is chaired by the District Magistrate or Collector, is made up of representatives from the police, fire, health, and other relevant local government departments. Their main duties include creating and carrying out district-level disaster management plans while promoting effective collaboration amongst various agencies in times of need.

### At the Sub-District Level

There may be Sub-Divisional and Block-Level Committees devoted to resolving disaster-related issues to support management and preparedness at sub-district levels. These committees collaborate closely with the DDMA and other authorities to ensure that disaster response and management takes place at the local level.

The National Disaster Management Authority (NDMA), co-chaired by the Chairpersons of the local bodies, the State Disaster Management Authorities (SDMAs), headed by the respective Chief Ministers, and the District Disaster Management Authorities (DDMAs), headed by the District Collectors, has been established as required by the Act. The state government's central planning, coordination, and monitoring body for programmes relating to disaster prevention, mitigation, preparedness, and management is the Uttarakhand State Disaster Management Authority (USDMA). The

state's disaster management policies are established by the USDMA, which also approves disaster management plans in conformity with National Authority regulations and coordinates their implementation. It offers recommendations, examines the steps the government is taking to create capacity and be prepared, and issues directives as needed. The USDMA advises allocating money for preparedness and mitigation efforts. The state's chief minister serves as the chairman of the USDMA, or Uttarakhand State Disaster Management Authority.

## **Judicial Interpretation On Disaster Mamnegement Act-2005**

There have been notable instances in India in recent years that have called into question disaster management practises and policies in response to both natural disasters and public health emergencies.

In the landmark case of *Swaraj Abhiyan vs. Union of India & Ors.* the provisions of the DM Act of 2005 were examined thoroughly. The court issued several directives to the central and state governments to implement the provisions of the DM Act in their entirety. This was a public interest litigation filed by Swaraj Abhiyan to draw the attention of the apex court to the drought-like situation in the states of Bihar, Gujarat, and Haryana, and to request that these three states declare a drought and provide essential relief and compensation to drought-affected people.

After providing a brief summary of the various provisions of the DM Act, the court ruled that drought is a disaster as defined in section 2(d) of the DM Act, and that "risk assessment, risk management, and crisis management of a drought are fully covered by the Disaster Management Act, 2005." The court was surprised to discover that the Union Government of India had not yet drafted the National Plan as required by Section 11 of the Act, nor had the National Disaster Mitigation Fund been established after 10 years of the Disaster management Act's enforcement.

In *Gaurav Kumar Bansal v. Union of India*, the Supreme Court of India had another opportunity to examine the implementation of the 2005 Disaster Management Act. The case was presented before the court against the backdrop of the 2013 flood and landslide disaster that affected Uttarakhand. Allegedly, the adverse impacts of the disaster could have been mitigated if the Disaster Management Act of 2005 had been effectively implemented and the Uttarakhand State Government had been adequately prepared. In the writ petitions, it was also alleged that a number of other states were not adequately prepared to deal with a natural calamity, and thus the Court ought to issue the necessary directives to ensure the Act is implemented properly.

The case of *Russel Joy v. Union of India* arose in the aftermath of the Kerala flooding. In this public interest writ petition, a prayer was made to "appoint an international agency with the technical expertise to study and to adjudge the lifespan of Mullaperiyar Dam and to determine the date/period on which the said dam must be decommissioned; appoint a High-Powered Committee to suggest to this Court to declare a date/period for decommissioning of Mullaperiyar Dam; direct the State owning the dam, namely Tamil Nadu. In this case, the court issued the following orders invoking various provisions of the Disaster Management Act:

- A. The Central Government shall establish a separate Sub-Committee under Section 9 of the 2005 Act to monitor the measures for ensuring a high level of preparedness to face any disaster, which is unpredictable in relation to the Mullaperiyar Dam.
- B. Both the State of Kerala and the State of Tamil Nadu shall establish separate Sub-Committees in accordance with Section 21 of the 2005 Act in order to monitor the measures taken to ensure a high level of preparedness for any calamity resulting from the Mullaperiyar Dam. They must provide a separate arrangement under the State plan, as outlined in Section 23(4) of the 2005 Act.

In another case of *Dr. Sanjay Lakhe Patil* The Bombay High Court has ordered the Maharashtra government to expedite the process of drafting rules as required by Section 78 of the DM Act so that the provisions of the Act can be implemented. The court noted that ordinarily it does not issue writs to the state government to exercise its rule making power, but in exceptional cases, such as this one, when there is no implementation of a significant central law like the DM Act, the court has no choice but to "issue appropriate writ, order or direction requiring the State Government to take all steps to implement the provisions of the DMA in general and to frame Rules in particular."

The court also ordered the State Disaster Management Authority and the State Executive Committee to review and update the State disaster management plan in accordance with Section 23(5) of the DM Act in order to make it consistent with the "guidelines laid down by the National Disaster Management Authority, particularly in the matter of addressing "drought" or "drought-like" conditions in Maharashtra."

These cases collectively underscore the significance of effective disaster management policies and implementation in India, whether it be in response to natural calamities or public health crises. They emphasize the need for better coordination, preparedness, and measures to safeguard the well-being of citizens during challenging times.

#### 10. Suggestions And Recommendations

After conducting a comprehensive analysis of all the legal frameworks pertaining to disaster governance, several suggestions and recommendations for enhancing disaster risk reduction have been identified.

- **Definition of Disaster-:** The definition under Section 2(d) of The Disaster Management Act, 2005 has to be broader and capable of encompassing all dimensions of disasters. Disasters that are not unexpected (due to climate change, environmental degradation, etc.) should be handled by the Act. The Act's definitions should be amended according to current usage.
- Review Provisions-: After five years, the DM Act's review provisions must be implemented, and stakeholders and DM experts must be consulted. A disaster management act that is effective and flexible enough to handle any type of disasters as well as enhances finance management will result from such consultation.
- Qualification: It is imperative that the members nominated under the National Disaster Management Authority (NDMA) and State Disaster Management Authority (SDMA) possess requisite qualifications and expertise in the field of disaster management. The selection and appointment of individuals to such critical positions should be based on their demonstrated knowledge, skills, and experience in disaster risk reduction, response, and recovery strategies.
- Megastructures-: Megastructures (Dams, Hydro Power Projects, etc) should not be built in weak lithological sensitive high terrain areas; instead, minor projects in upper catchment areas should be taken into consideration based on the stream flow and distribution of contours.
- Group Training and Early Warning-: The National Disaster Management Authority (NDMA) can assist in the preparation of groups trained in early warning systems, efficient evacuation plans, and responsive disaster management groups. These groups can be deployed block by block with the active involvement of local residents.
- **Grievance redressal:** The Act should incorporate grievance redressal for effective implementation of relief, rehabilitation and reconstruction measures taken by the government. It will ensure that no victims are left behind.
- Inclusion of rights and duties: The responsibilities, rights, and duties of people and the communities should be mentioned in the act. Community participation and disaster preparedness at the community level should be incorporated into the act. These can be integrated with the role of local government.

#### 11. Conclusion

Disaster occurrences have increased dramatically in recent years as a result of anthropogenic activity and climate change. This situation presents both a risk and an opportunity to improve disaster management effectively. The destructive human ambition for rapid progress has heightened and accelerated the impacts of disasters. The National Disaster Management Authority (NDMA) can assist in preparing groups trained in early warning systems, efficient evacuation plans, and responsive disaster management groups, which can be deployed block by block with the active involvement of local residents.

The Disaster Management Act, 2005, must effectively address the challenges in disaster prevention and mitigation through the implementation of various measures. Firstly, it should establish clear and robust criteria for classifying disasters based on factors such as magnitude, intensity, frequency, and risk. This classification will facilitate the prioritization of support required for each type of disaster. Secondly, the Act should include provisions for the establishment of an Early Warning System, as recommended by the Judiciary. This system would play a crucial role in timely alerting and preparedness efforts.

Additionally, addressing gaps in financial resource management is essential. Developing a comprehensive financial strategy that emphasizes preparedness and resilience-building is necessary. This includes improving fund disbursement mechanisms, integrating insurance schemes, and enhancing financial accountability. By ensuring adequate and timely financial resources, India can better manage disaster risks and enhance overall disaster resilience.

In conclusion, India's disaster management framework needs to evolve to address both the increasing frequency of disasters and the financial complexities involved. By incorporating the suggested improvements, particularly in financial resource management, and by fostering greater inter-agency coordination and local community empowerment, India can

significantly strengthen its disaster resilience, safeguard lives and livelihoods, and mitigate the far-reaching effects of disasters

#### References

- 1. Mitthan Lal Kansal & Sachchidanand Singh, Flood Management Issues in Hilly Regions of Uttarakhand (India) under Changing Climatic Conditions, 14 WATER (SWITZERLAND) (2022).
- 2. Anil Kumar Gupta, Disaster Governance and Legal Systems in India, 39 (2018).
- 3. National Policy on Disaster Management, *available at*, https://ndma.gov.in/ima ges/guidelines/national-dm-policy2009.pdf, 2009.
- 4. National disaster management plan, Available at, https://ndma.gov.in/images/p olicyplan/dmplan/National%20Disaster%20Management%20Plan%20May%202 016.pdf, 2016.
- 5. Aditya Bahadur, Emma Lovell & Florence Pichon, Strengthening disaster risk management in India: A review of five state disaster management plans (2016).
- 6. West Bengal, Oxford India Short Introductions "Natural Disasters and Indian History" By Tirthankar Roy, Oxford University Press, New Delhi, Tapas Debnath, 23 80 (2018).
- 7. M N RAJEEVAN, M.N. RAJEEVAN SHAILESH NAYAK (2017).
- 8. Deepa Badrinarayana, *Climate Change Law and Policy in India*. THE OXFORD HANDBOOK OF INTERNATIONAL CLIMATE CHANGE LAW Edited by KEVIN R. GRAY, RICHARD TARASOFSKY, AND CINNAMON CARLARNE. Oxford.
- 9. SAUMITRA MOHAN. INDIAN POLICY AND DEVELOPMENT, McGraw-Hill Education, 472 (2017)
- 10. Indrajit Paul & Shaw Rajib, Disaster Risk Governance in India and Cross Cutting Issues (2018).
- 11. Bupinder Zutshi, Manipur flood 2015: Preparedness and disaster risk reduction strategies (2018).
- 12. Pandey, Bisht, and Sharma, *supra* note 11.
- 13. Sushil KHANDURİ & Piyoosh RAUTELA, Disaster and Livelihood of the Affected Population: Case Study of June 2013 Disaster in Rudraprayag District of Uttarakhand, 2 ACAD. PLATF. J. NAT. HAZARDS DISASTER MANAG. 74 (2021).
- 14. Joshi, supra note 9.
- 15. Ravinder S Gill, NATURE 'S FUERY, A FLASH FLOOD IN UTTARAKHAND 2013: A CRITICAL (2022).
- 16. Kansal and Singh, *supra* note 3.
- 17. Babu, S. A. (Ed.). (2022, September 21). 5th World Congress on Disaster Management: Volume I. Routledge.
- 18. Critical Analysis of the Indian Laws Relating to Recent Pandemics, (2021).
- 19. De Guttry, Andrea, Marco Gestri, and Gabriella Venturini. *International disaster response law*. The Hague: TMC Asser Press, 2012.
- 20. Gabrielle, S. I. M. M. "Disaster response in Southeast Asia: The ASEAN agreement on disaster response and emergency management." *Asian Journal of International Law* 8.1 (2018): 116-142.
- 21. Chisty, Musabber Ali, et al. "Sendai Framework for Disaster Risk Reduction (SFDRR) and disaster management policies in Bangladesh: How far we have come to make communities resilient?" *International Journal of Disaster Risk Reduction* 76 (2022): 103039.
- 22. George, Shine, and PP Anil Kumar. "Indicator-based assessment of capacity development for disaster preparedness in the Indian context." *Environment Systems and Decisions* 42.3 (2022): 417-435.
- 23. A. Ogra et al., Exploring the gap between policy and action in Disaster Risk Reduction: A case study from India, 63 INT. J. DISASTER RISK REDUCT. 102428 (2021), https://doi.org/10.1016/j.ijdrr.2021.102428.
- 24. Mohanty, Mohit Prakash, Sahil Mudgil, and Subhankar Karmakar. "Flood management in India: A focussed review on the current status and future challenges." *International Journal of Disaster Risk Reduction* 49 (2020): 101660.
- 25. Poonia, Vikas, et al. "Drought occurrence in different river basins of India and blockchain technology-based framework for disaster management." *Journal of Cleaner Production* 312 (2021): 127737.
- 26. Aggarwal, Monika Gupta. "DISASTER MANAGEMENT AND RESPONSE MECHANISM IN THE STATE OF UTTARAKHAND, INDIA." (2022).
- 27. Dash, Pratik, and Milap Punia. "Governance and disaster: Analysis of land use policy with reference to Uttarakhand flood 2013, India." *International Journal of Disaster Risk Reduction* 36 (2019): 101090.

- 28. Pandey, Pratima, et al. "Cause and process mechanism of rockslide triggered flood event in Rishiganga and Dhauliganga River Valleys, Chamoli, Uttarakhand, India using satellite remote sensing and in situ observations." *Journal of the Indian Society of Remote Sensing* 49 (2021): 1011-1024.
- 29. 2016 SCC Online SC 485
- 30. (2017) 6 SCC 730
- 31. (2018) 3 SCC 179
- 32. 2018 SCC Online Bom 1661
- 33. 2018 SCC Online Bom 1661 Para 59(c)