IOSR Journal of Humanities and Social Science (IOSR-JHSS)
Volume 30, Issue 9, Series 1 (September, 2025) 160-171
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Disaster Management in India: A Geographical Study with Special Reference to Rajasthan

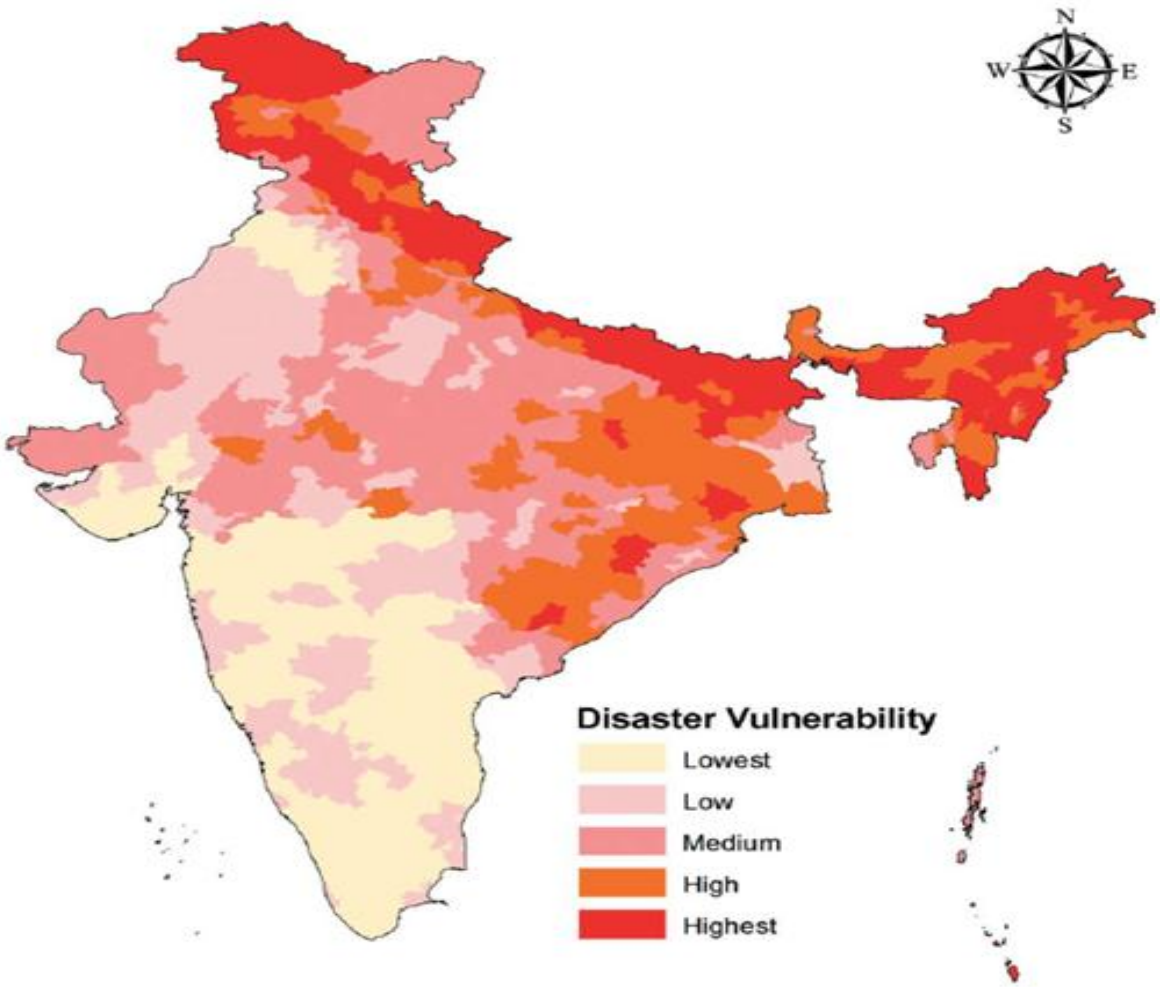
Dr. Chiranji Lal Raigar,
Assistant Professor, Department of Geography, Government P.G.College, Rajgarh, Alwar (Raj.)

Abstract
Disaster management in India is an important geographical study because the country's diverse geo-climatic conditions (earthquakes, floods, droughts, cyclones) make it highly vulnerable to natural disasters, requiring a strong, institutional, and community-centered framework for prevention, mitigation, and preparedness under a top body like the National Disaster Management Authority (NDMA), focused on achieving the goal of a disaster-resilient India.
India is one of the most disaster-prone countries in the world due to its unique geo-climatic and geographical conditions. Approximately 59% of the country's land area is vulnerable to earthquakes, 12% to floods, and 76% to coastal areas to cyclones. Rajasthan, India's largest state, was once known primarily for droughts due to its arid climate, but in recent years, climate change has increased the frequency of disasters such as floods and heatwaves.
The number and severity of natural disasters are increasing. In 2022 alone, 387 natural disasters were recorded, exceeding the average for the previous 20 years.
Federal, state, and local governments play a vital role in preparing for, managing, and responding to natural disasters. The Federal Emergency Management Agency (FEMA), local law enforcement agencies, and other organizations play a crucial role in ensuring that people affected by natural disasters—whether earthquakes, hurricanes, tornadoes, wildfires, or other events—receive the assistance they need to rebuild their lives and communities. They provide affected people with shelter, food, medical assistance, financial guidance, and more.
In this research, we will examine the role of government during a natural disaster. We will also examine the various agencies involved in disaster and emergency response and how they coordinate to help communities recover and rebuild after a devastating event.
Key Points: Geographical Aspects of Disaster Management, Effectiveness of India's Disaster Management Framework, India: Statistics of Natural Disasters, Disaster Situation in Rajasthan, District-wise Disaster Vulnerability and Management in Rajasthan, Limitations and Strategies of Disaster Management, Role of Local Communities in Disaster Management, and Conclusions.

I. Introduction :-

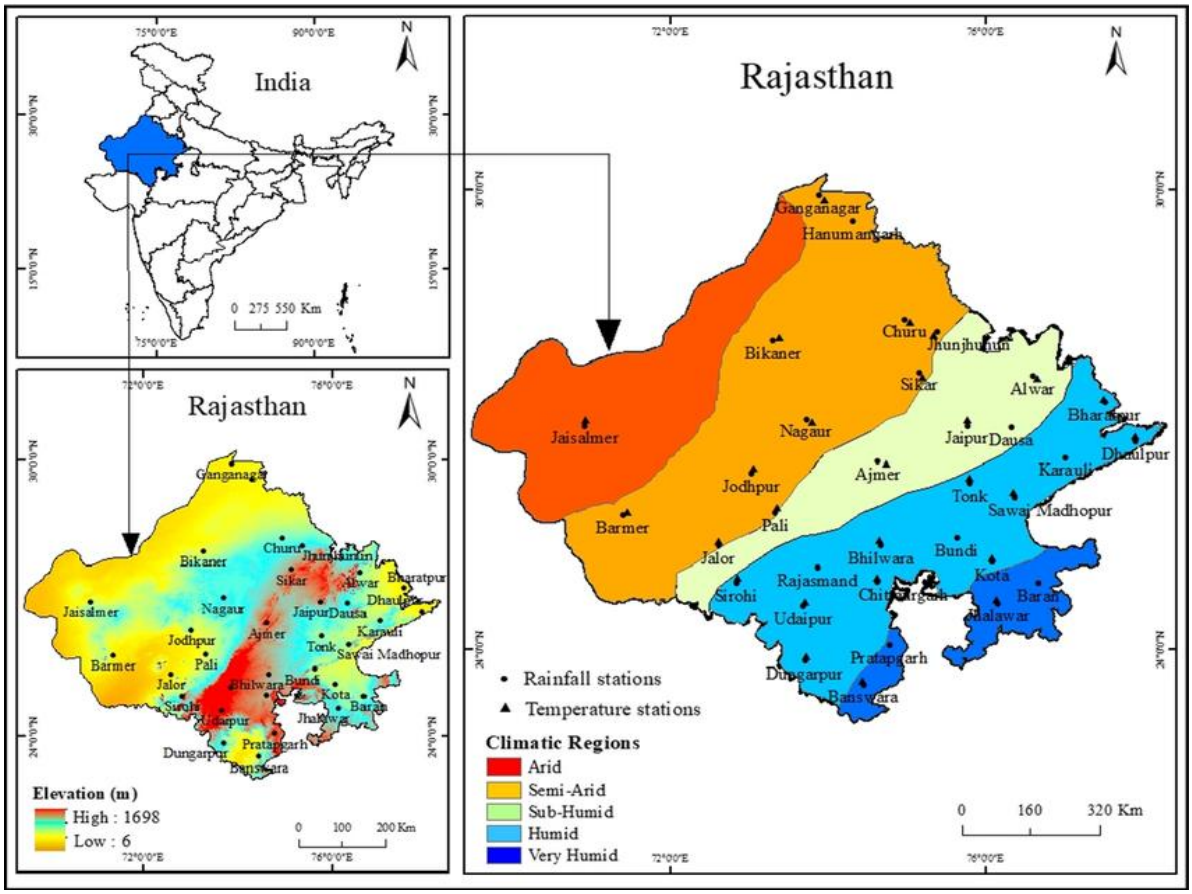
India, frequently affected by various natural disasters, has developed a robust disaster management framework under the Disaster Management Act, 2005. However, factors such as climate change, rapid urbanization, and environmental degradation have increased India's vulnerability to these disasters, increasing both the frequency and severity of such events.

Acuity International stands ready to assist in disaster management and rehabilitation efforts wherever needed. Our disaster and emergency response capabilities are aligned with FEMA's National Response Framework and Community Lifelines. Through its in-house resources and strategic partnerships, Acuity provides comprehensive, targeted response and logistics services, including on-site and mobile medical assistance, emergency shelters, and more. Our teams are always ready to respond to any crisis anywhere in the world within 48 hours. Disaster management in India is not just an administrative function, but a deep geographical study that works towards building a resilient and secure future by understanding the risks posed by the country's diverse terrain, climate, and human activities.



Geographical introduction of Study Area

Rajasthan, "The Land of Kings," is India's largest state by area (342,239 sq km), covering 10.4% of the country. Located in the northwestern region, it is characterized by the arid Thar Desert in the west, the ancient Aravalli Range dividing the state, and fertile plains in the east. It borders Pakistan to the west and five Indian states, with a varied climate and geography, including the Chambal River and the Sambhar salt lake. Location & Extent: Situated between 23°3' to 30°12' N latitude and 69°30' to 78°17' E longitude. It is shaped like an irregular rhombus, extending 869 km east-west and 826 km north-south. Border: Shares a 1,070 km international border with Pakistan (Radcliffe Line) and internal borders with Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, and Gujarat. Physical Divisions: Divided into four main regions: the Northwestern Desert (Thar), the Aravalli Range and Hilly Region, the Eastern Plains, and the South-eastern Plateau (Hadoti Plateau). Climate: Predominantly arid to semi-arid, with extreme temperatures in both summer and winter. Key Features: The Aravallis are one of the world's oldest fold mountains, with Guru Shikhar (1,722m) as the highest peak. The Chambal is the only perennial river, while the Indira Gandhi Canal acts as the lifeline for the arid western region. Rajasthan's geography ranges from rocky terrain and rolling sand dunes to fertile plains, deeply influencing its culture and economy.

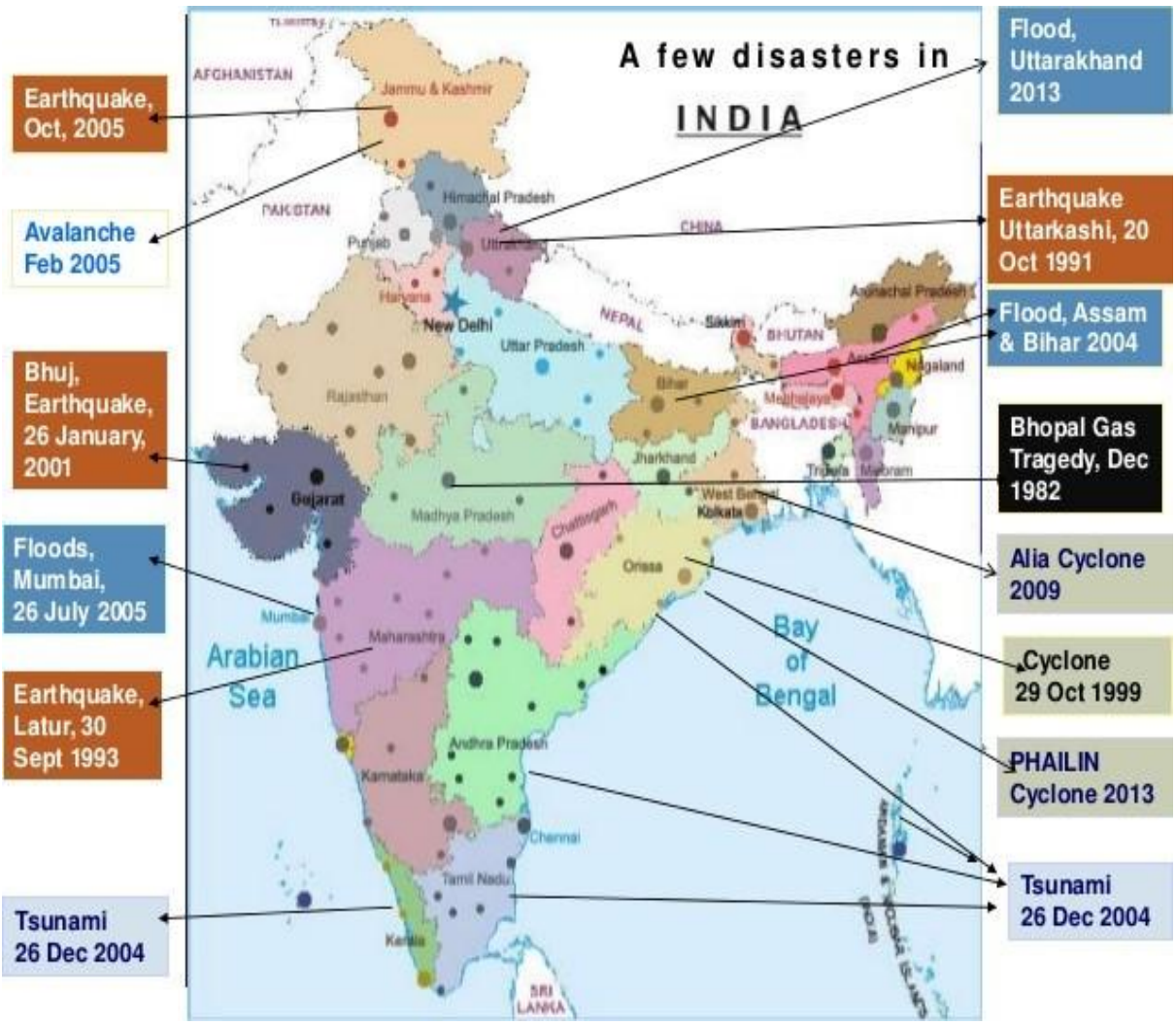


Objectives:
1. To conduct a geographical study of disaster management in India.
2. To analyze disasters in the specific context of Rajasthan.

Hypothesis:
Both the central and state governments are involved in rescue, relief, and management of disasters.

Data Sources
This study of disaster management in India is based on secondary data and information in the specific context of Rajasthan.

Geographical Aspects of Disaster Management
Geographical Vulnerability: Approximately 60% of India's land area is vulnerable to earthquakes, 40 million hectares to floods, and 69% to drought, reflecting the country's geographical diversity and its spatial risks.



Types and Locations of Disasters:

Earthquakes: High-risk areas such as the Himalayan region, the Northeast, Gujarat, and Maharashtra have high seismic activity, which is further exacerbated by continuous urbanization and vulnerable infrastructure.

Floods: River plains and coastal areas such as the Brahmaputra, Ganga, and Godavari are vulnerable to floods, affecting approximately 12% of the geographical area.

Drought: 68% of the country's agricultural area is affected by drought, especially in Central and South India, due to erratic monsoons.

Cyclones: The eastern and western coastal states are vulnerable to cyclones, which cause heavy rainfall and storm surges.

Landslides: Landslides are a common problem in the Himalayan and Northeastern states, especially due to heavy rainfall and human activities.

Human-caused disasters: Urban flooding, poor water management, and unplanned infrastructure development also contribute to disasters, which are linked to geographical factors.

Effectiveness of India's disaster management framework:

Institutional framework and financial support: The establishment of the National Disaster Management Authority (NDMA), State Disaster Management Authorities, and district-level agencies has improved coordination during disasters.

₹68,463 crore has been allocated under the National Disaster Risk Management Fund (NDRMF) for the period 2021-25.

Of this, 80% is earmarked for the National Disaster Response Fund (NDRF), while 20% is allocated to the National Disaster Mitigation Fund (NDRF), reflecting a balanced focus on both immediate relief and long-term preparedness.

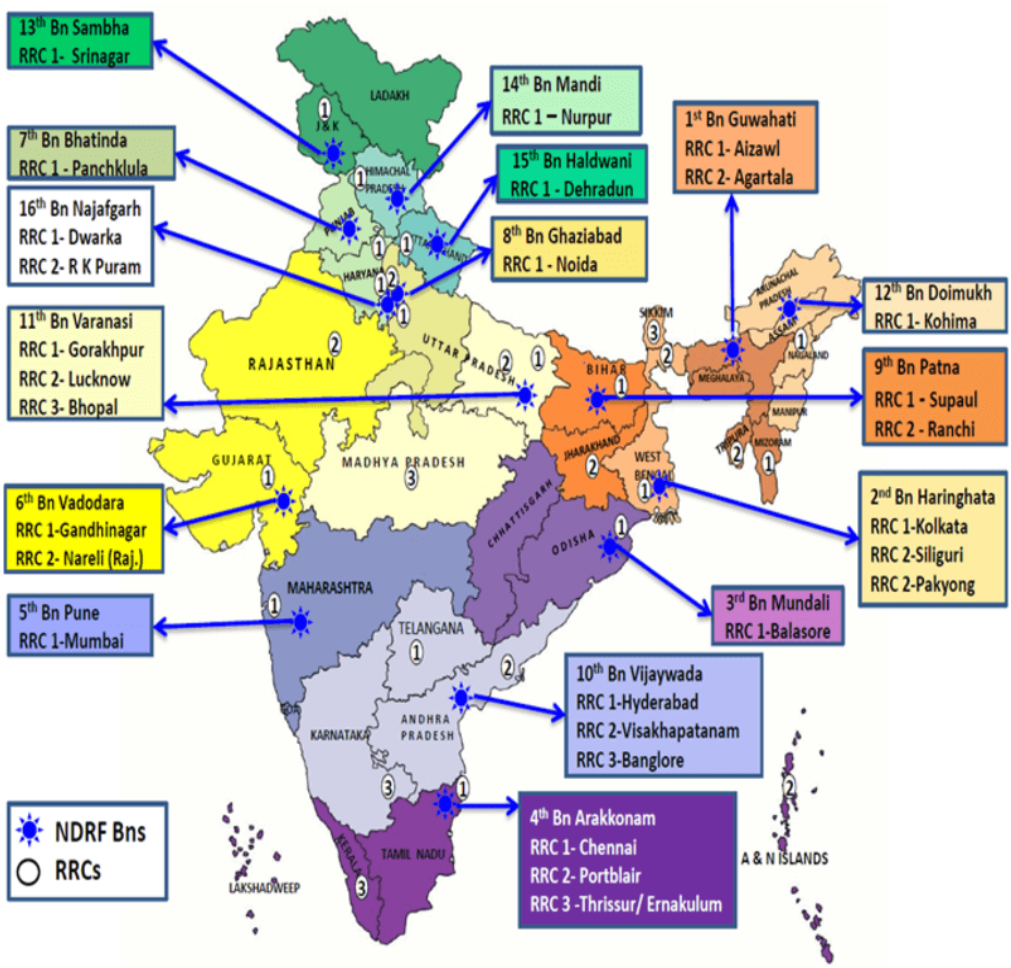
Focus on Preparedness: The National Disaster Management Plan (NDMP) emphasizes disaster preparedness, with state and local authorities developing disaster management plans. Initiatives such as the National Cyclone Risk Reduction Project have enhanced early warning systems (Indian Meteorological Department alerts) and shelter infrastructure.

Community Participation: This framework encourages community-based disaster management (CBDM) programs that involve local stakeholders, making disaster response more inclusive and context-specific.

Programs such as the 'Village Disaster Management Plan' have been effective in rural areas.
The following are the latest available data (2024-25) related to disasters and their management in India and Rajasthan:

1. India: Natural Disaster Statistics (2024-25)
Natural disasters in India have caused significant loss of life and property in 2024-25. According to the Ministry of Statistics and Programme Implementation (MoSPI)'s EnviStats India 2025 report, the key figures are as follows:
Details (2024-25)
Total Human Lives Lost: 3,080, the highest in the last 11 years (up from 2,616 in 2023-24).
States with the highest number of deaths: Himachal (452), Kerala (387), Madhya Pradesh (373). Himachal Pradesh was the worst affected by the disaster.
Houses Damaged: 361,124, a significant increase compared to last year (1.4 lakh); Assam is the most affected.
Agricultural area affected: 1.424 million hectares. Crop losses also increased compared to last year.
Livestock loss: 61,960. This is approximately 48% lower than last year.
Disaster analysis of the last 25 years (1999-2024) in India shows that due to the country's geographical diversity, the nature of disasters has also been region-specific. During this period, India has moved away from a reactive approach to proactive disaster management.

1. State-wise Disaster Analysis (Regional Trends)
Based on data from the past two and a half decades, states can be divided into the following categories according to their vulnerability:
Region: Major Affected States: Type of Disaster: Major Historical Events
Coastal Region: Odisha, Andhra Pradesh, West Bengal, Tamil Nadu: Cyclones, Sea Erosion: 1999 Super Cyclone, Phani (2019), Amphan (2020)
Himalayan Region: Uttarakhand, Himachal Pradesh, Sikkim, J&K: Landslides, Flash Floods, Cloudbursts: Kedarnath (2013), Himachal Floods (2023)
Plains: Bihar, Uttar Pradesh, Assam: Floods: Kosi Floods (2008), Annual Floods in Assam
Central and Western Gujarat, Maharashtra, Rajasthan: Earthquakes, Droughts, Cyclones: Bhuj Earthquake (2001), Latur Aftershocks



2. Key Statistics and Trends of 25 Years

The past 25 years have seen some significant changes in disaster management:

Reduction in loss of life: Advanced warning systems in cases like cyclones The Early Warning System has led to a decline in mortality rates by over 90%. For example, the 1999 Odisha cyclone caused over 10,000 deaths, while the 2019 cyclone Phani resulted in fewer than 100.

Increasing Economic Losses: Due to infrastructure development, economic losses from disasters have increased. According to one estimate, India loses an average of $10 billion annually due to disasters.

Flood Frequency: Approximately 12% of India's land area is affected by floods. Bihar and Assam have seen a 20% increase in flood frequency over the past 10 years.

3. Disaster Management Structure (Institutional Development)

Over 25 years, India has developed a robust legal framework:

Disaster Management Act, 2005: This Act established the NDMA (national level), SDMA (state level), and DDMA (district level).

NDRF Formation: A dedicated disaster response force was created in 2006, and today it is one of the most efficient forces in the world.

Zero Casualty Goal: States like Odisha have successfully implemented this.

4. Key Challenges

Urban Flooding: Failure of drainage systems in cities like Bengaluru, Chennai, and Mumbai has emerged as a new disaster.

Climate Change: Unpredictable monsoons and heatwaves are severely impacting agriculture and health.

Data Gaps: Accurate data management at the rural level is still lacking, leading to delays in relief distribution.

Over the past 25 years, India has shifted its focus from relief distribution to risk reduction. While technological advancements have occurred, ecological imbalances and increasing urbanization in the Himalayan states have given rise to new disasters.

2. Rajasthan: Disaster Situation and Management (2024-25)

Rajasthan experienced excessive rainfall during the 2024 monsoon season, leading to flood-like conditions.

Monsoon 2024 Situation: Rajasthan received 156% more rainfall than average. Eastern Rajasthan received 147% and Western Rajasthan received 171%.

Disaster Management Budget: The Rajasthan government has allocated a budget of ₹730.10 crore for drought, flood, and cyclone relief for the financial year 2024-25.

Management Infrastructure: District Disaster Management Plans (DDMPs) 2025 have been prepared for all districts of the state (such as Jodhpur and Hanumangarh), which include pre- and post-disaster action plans.

The distribution of disasters on the geographical map of Rajasthan is as follows:

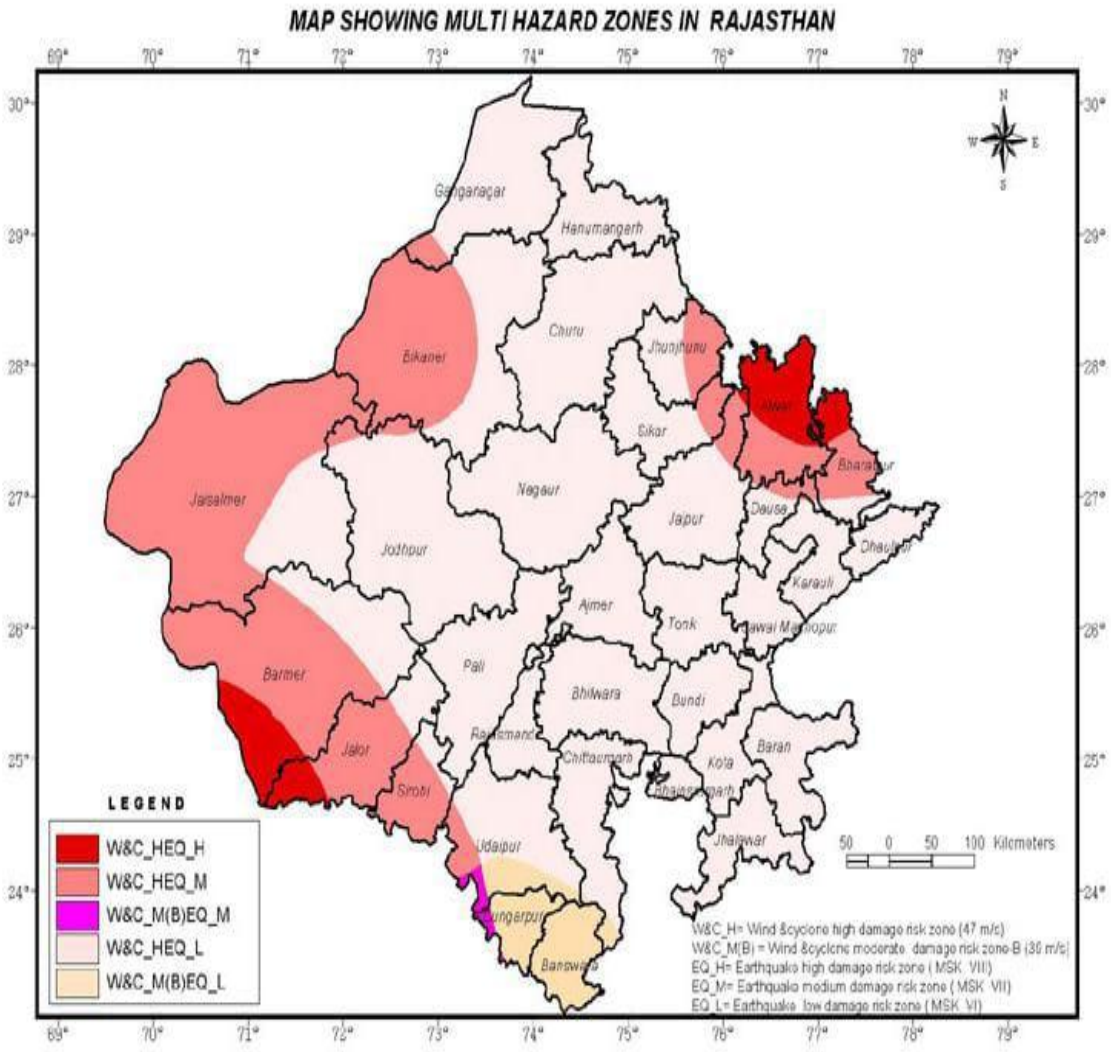
Zone Major Disaster-Prone Districts

Western Rajasthan Drought (Jaisalmer, Barmer, Bikaner, Jodhpur)

North-Eastern Rajasthan Earthquake (Zone IV) Alwar, Bharatpur, Jhunjhunu

South-Eastern Rajasthan Flood (Flood) Kota, Jhalawar, Dholpur (Chambal Basin)

Central Rajasthan Heat Wave (Heat Wave) Churu, Nagaur, Pali



The following is detailed information related to district-wise disaster vulnerability and management in Rajasthan:

1. District-wise Monsoon Rainfall and Flood Risk (2024-25)

During the 2024 monsoon season, most districts in Rajasthan received above-average rainfall, leading to "Large Excess" conditions in several districts.

District Actual Rainfall (mm) Deviation from Normal (%) Category
Dausa 1409.4 +137% Large Excess
Dhaulpur 1211.8 +107% Large Excess
Tonk 1115.6 +97% Large Excess
Jaisalmer 438.2 +148% Large Excess
Jodhpur 507.6 +73% Large Excess
Jaipur 986.6 +88% Large Excess
Kota 901.5 +23% Excess

Flood-prone districts: Ajmer, Barmer, Jodhpur, Pali, Jalore, Sirohi, Udaipur, Chittorgarh, Bundi, Kota, Jaipur, Jhalawar, Baran, Bharatpur, Alwar, and Sriganganagar are historically prone to floods.

2 District-wise Seismic Zones

According to the latest 2025 map of the Bureau of Indian Standards (BIS), several districts in Rajasthan have been moved to the high-risk category.

Zone IV (High Risk): Jaipur, Alwar, and Bhiwadi (Khairthal-Tijara) are now placed in Zone IV. Barmer, Jalore, and parts of Bharatpur also fall in this zone.

Zone III (Moderate Risk): Ajmer, Bikaner, Jodhpur, Udaipur, Jhunjhunu, Sikar, and the rest of Alwar.

Zone II (Low Risk): The rest of the state.

3 Drought and Climate Vulnerability

Seventeen districts in Rajasthan have been classified as having a 'Very High' risk of drought, and 10 districts in the 'High' risk category.

The Driest District: Jaisalmer remains the driest district, with annual rainfall of less than 100 mm.

Climate Vulnerability: According to the Jaisalmer Action Plan 2025, Jaisalmer, Jalore, Jodhpur, and Barmer are 'highly vulnerable' to climate change.

4. District Disaster Management Plan (DDMP) 2025

All major districts have updated their District Disaster Management Plan (DDMP) 2025. Some of the major districts included are:

Jaipur: Special action plan for floods, earthquakes, and heat waves.

Kota: Plan focused on industrial and chemical disasters.

Pali: Pre-disaster preparedness with flood and drought risk assessment.

Between 1990 and 2024, Rajasthan has faced several severe natural disasters. Here is a chronological description of the major disasters:

1. Severe Droughts and Famines

Droughts have been the most persistent disaster for Rajasthan.

1999-2003 (Trikal): This was one of the worst famines in the state's history. It created a situation of 'Trikal' (shortage of food, water, and fodder). In 2002, all 32 districts of the state were hit by drought.

2018-2019: Western Rajasthan (Barmer, Jaisalmer) experienced a severe drought, causing massive losses to livestock.

2. Devastating Floods

Despite being a desert state, it has experienced several unexpected floods:

2006 (Barmer - Kawas): This was the most shocking disaster. Heavy rains in Barmer (Kawas) in the Thar Desert submerged the entire area, which remained submerged for several months.

2017 (Jalore and Sirohi): Heavy monsoon rains caused floods in southwestern Rajasthan, causing massive loss of life and property.

2024 (Monsoon): Rajasthan received record rainfall in the recent year 2024. In August 2024, flood-like conditions occurred in districts like Jaipur, Karauli, and Dausa, completely disrupting normal life.

3. Cyclones & Dust Storms

2018 (Dust Storm): In May 2018, a severe storm struck eastern Rajasthan (especially Alwar and Bharatpur) killing over 100 people.

2023 (Biparjoy Cyclone): In June 2023, Cyclone Biparjoy, originating from the Arabian Sea, wreaked havoc in Rajasthan (Jalore, Barmer, and Pali) and caused record-breaking rainfall.

4. Locust Attack

2019-2020: Rajasthan witnessed the largest locust attack in nearly 26 years. It destroyed millions of hectares of crops in the western districts.

5. Health Disaster (Pandemic/Epidemic)

2020-2022 (COVID-19): Like other states, Rajasthan was severely affected by the COVID-19 pandemic.

2022 (Lumpy Skin Disease): This was a major livestock disaster, resulting in the deaths of thousands of cows across the state.

Key Disaster Management Initiatives:

2005: The state's disaster management system was strengthened following a central government act.

Formation of the SDRF: Rajasthan has established its own dedicated State Disaster Response Force (SDRF), which is now immediately activated in response to disasters, whether large or small.

3. Disaster Management Funding - Latest Data

Amounts released by the central government to states for disaster relief and mitigation (advances for FY 2025-26):

Fund Type:

Under the SDRF (State Disaster Response Fund), an amount of ₹16,118.00 crore (₹crore) was released to 28 states for relief operations.

Under the NDRF (National Disaster Response Fund), an amount of ₹2,854.18 crore was released to 18 states for assistance in severe disasters.

Under the SDMF (State Disaster Mitigation Fund), an amount of ₹5,273.60 crore was released to 21 states for disaster risk reduction.

Special Update: To further strengthen disaster management, the Government of India has introduced the Disaster Management (Amendment) Bill, 2024, which aims to establish urban disaster management authorities and create a national disaster database.

Limitations and Gaps:

Inadequate Climate Adaptation Strategies: The increasing frequency and intensity of climate-related disasters, such as floods and droughts, are not adequately addressed by current frameworks, as they lack a strong focus on climate adaptation.

The government allocated ₹2,000 crore under the National Adaptation Fund for Climate Change (NAFCC) in 2021, but its implementation remains inadequate.

Slow response to emerging risks: While this framework is effective for traditional disasters like cyclones and earthquakes, it struggles with emerging risks like heat waves, urban flooding, and landslides due to inadequate forecasting and response systems.

Weak integration of disaster risk reduction (DRR): There is a need for better integration of DRR into development planning.

Urbanization without adequate disaster risk assessment often leads to disproportionate damage during disasters.

Key reforms to strengthen preparedness and resilience:

Climate-resilient strategies: Given increasing climate risks, India should incorporate climate-resilient infrastructure and DRR strategies into development projects, especially in vulnerable areas.

The Smart Cities Mission aims to build climate-resilient urban infrastructure with a focus on flood management and urban heat islands; implementation requires rapid expansion.

Decentralized Disaster Management: Greater emphasis on decentralizing disaster management to the district and local levels will enhance timely decision-making and local resilience building.

The capacity of Panchayats and Urban Local Bodies (ULBs) should be strengthened for local response, including the integration of highly localized weather forecasts, to enhance disaster management and decision-making at the grassroots level.

Integration of Technology: Disaster forecasting, monitoring, and early warning systems can be improved by leveraging technology such as GIS mapping, AI, and satellite data.

Better data-sharing among agencies will ensure faster and more coordinated responses.
For example, the Indian Space Research Organization (ISRO) uses remote sensing technology for flood forecasting, as seen during the 2018 Kerala floods, where satellite imagery helped pinpoint the most vulnerable areas.
Public Awareness and Education: Continuous training and awareness programs, including in schools and communities, can ensure better preparedness, especially for persistent hazards such as floods, heat waves, and earthquakes.
Strengthening Insurance and Financial Security Mechanisms: Establishing comprehensive insurance models and financial risk management mechanisms for vulnerable communities can help mitigate the financial impact of disasters.

Disaster Management Structure and Strategy
NDMA: Chaired by the Prime Minister, the NDMA formulates policies and guidelines that enable disaster management at all levels.
Disaster Management Act, 2005: This Act provides a legal framework for prevention, mitigation, preparedness, response, relief, and rehabilitation.
Multi-Pronged Approach: The NDMA adopts a proactive, multi-disaster, and multi-pronged strategy, emphasizing technology and community participation.
Impact of Climate Change: Climate change is increasing the frequency and intensity of disasters, making management more challenging.

Government agencies preparing for natural disasters in a situation room
Government response to natural disasters begins long before an event occurs. Government agencies regularly prepare for adverse events to improve response and outcomes. During and after an event, teams respond quickly to provide immediate relief. They continue to help victims by assisting with long-term rehabilitation and reconstruction in the days, weeks, and months following the disaster.

Preparedness and Prevention Strategies
Government preparedness for natural disasters continues 365 days a year. Federal, state, and local agencies continually develop and improve emergency response plans, including:
Pre-disaster mitigation efforts, such as updating building codes; building disaster-resilient infrastructure that can withstand high water levels, extreme heat, etc.; creating water retention areas in case of flooding; etc.
Preparing government employees. This includes training government employees to respond to various situations, helping them understand their roles, and providing them with tools that will help them respond during an emergency (for example, geographic information systems that show the location of hospitals, police and fire stations, etc.).
Disaster preparedness and response go beyond just saving lives. According to the Pew Charitable Trusts, every $1 spent on disaster mitigation saves government agencies $6 and creates jobs.

Immediate Response and Relief Efforts
When a disaster strikes, government agencies implement their plans and respond quickly and definitively. Emergency managers and first responders are dispatched to the scene to engage in search and rescue operations, provide immediate assistance to victims, assess damage, and more. During this initial phase, the agencies in charge may also set up and manage shelters and provide clothing, food, and water to victims.
While first responders are assisting victims, other government agencies are working hard to restore power and communications, provide transportation, and restart essential services. Meanwhile, law enforcement officials are working to ensure public order and safety.
Long-Term Recovery and Reconstruction
Recovery and reconstruction after a natural disaster can take months or years. It is a highly complex process that involves:
Close cooperation between federal, state, and local governments.
Constant communication between recovery managers and other resources.
Careful planning to ensure that what is built afterward will be more resilient than before.
Attention to the needs of and assistance to those displaced by the event.
Financial resources play a vital role in recovery and reconstruction, both for individuals and communities. For example, FEMA provides financial assistance to both individuals and governments. The agency also provides grants to support critical recovery initiatives.

The Role of Local, State, and Federal Governments
Immediate Government Response with Medical Tents in Suburban Disaster Area
Federal, state, and local governments have unique and vital roles in responding to disasters and assisting with recovery efforts.

Local Government First Response

Local government agencies are the first line of defense when a natural disaster strikes. Local police, firefighters, emergency medical personnel, and others arrive immediately on the scene and are ready to provide assistance, coordinate rescue and recovery efforts, and ensure the safety and well-being of those affected. These organizations work closely with state and federal agencies to assist individuals and families in need, resulting in a well-organized and effective response.

In addition to first responders, public utility organizations also restore power and heating, initiate debris removal, and perform other tasks to help communities reopen.

State Government Coordination and Support

Often, disasters affect far more than a single town, county, or tribal area, or are so severe that they require assistance that exceeds what local governments can provide alone. In such cases, municipalities may need state government assistance to assist with response and recovery efforts.

Upon receiving a request for assistance, the State Emergency Management Office will evaluate the request and advise the Governor on the necessary action. The Governor may then declare a state of emergency and make available government resources to assist in the response and recovery process. For example, the state may assist in determining evacuation routes, controlling the movement of people in the affected area, suspending state laws and ordinances that may hinder rescue operations, etc. The state may also request assistance from neighboring states.

The state government is also a conduit for obtaining assistance from the federal government. The Governor may request the President of the United States to issue a Presidential Disaster or Emergency Declaration, which authorizes the affected area to receive federal assistance.

Federal Government and National Agencies

A disaster or emergency declaration by the President prompts the federal government and national agencies to begin providing assistance to affected areas.

First, FEMA prepares a document called a FEMA-State Agreement. According to FEMA, "This agreement describes the duration of the incident (or disaster), the types of assistance to be provided, the areas eligible for assistance, agreed-upon cost-sharing provisions, and other terms and conditions."

Once all parties agree on the terms outlined in the document, FEMA coordinates the incident response. The agency uses its National Disaster Recovery Framework to coordinate the response, which details the roles and responsibilities of response teams, management of communication lines, and more.

At the ground level, FEMA establishes a disaster field office—essentially a headquarters where all relief and rescue operations are coordinated. Assistance provided includes:

Food for affected individuals and families.

Housing assistance.

Loans for individuals and businesses.

Clothing, household goods, vehicles, and other essential needs.

Collaborative Efforts and Community Participation

Community participation in setting up temporary shelters after a natural disaster.

Effective disaster response and recovery requires close cooperation between the government, local communities, and private companies. Here are some examples of how these partnerships prove helpful in times of crisis.

The Role of Local Communities in Disaster Management

Local leaders and residents know their communities better than anyone else and are therefore crucial to response and recovery. In fact, local communities can help with disaster management in many ways, including:

Local residents and groups can volunteer to help coordinate response efforts, including donating and providing supplies, and providing input into decision-making to help prepare for future events.

Residents with specialized skills (doctors, engineers, contractors, etc.) can apply those skills to the recovery effort.

Local leadership can provide strong and consistent guidance to state and federal responders and local volunteers to expedite operations.

Public-Private Partnerships in Disaster Response

Private sector organizations play a vital role in disaster response. In addition to providing financial assistance and support, companies also provide resources and solutions that can help increase the efficiency and effectiveness of disaster response. Resources can include advanced technologies, equipment, and even personnel, who often volunteer their time to help with response efforts.

II. Conclusion:

While India has achieved success in reducing loss of life in disasters like cyclones and floods, urban flooding and increasing uncertainty due to climate change are posing new challenges. Efforts like the Desert Development Programme in Rajasthan need to be further strengthened technologically to prevent desertification. Over the past 25 years, India has moved beyond relief distribution and focused on risk reduction. While technological advancements have occurred, ecological imbalances and increasing urbanization in the Himalayan states have given rise to new disasters.

India's disaster management framework has made progress in improving preparedness and response processes. Addressing the above limitations and gaps requires a shift toward climate adaptation, decentralized management, and the integration of advanced technology into disaster risk reduction strategies. A proactive, well-resourced, and resilient approach is essential to protect lives and livelihoods against future disasters.

All levels of government—local, state, and federal—play a critical role in disaster management. Each level brings its own unique expertise and resources to recovery and response efforts. While specific guidelines must be followed before federal assistance is provided, this assistance also comes with substantial support that significantly enhances the tireless efforts of local and state governments.

Finally, local communities and private sector organizations are also crucial to an effective response. Residents and local leaders who know their communities well can provide valuable perspectives on what is best for their communities, as well as practical assistance. Private sector companies provide financial, technical, and human resources that can be invaluable in communities' reconstruction and recovery efforts.

Bibliography:

[1]. Singh, Savindra (2024): Environmental Geography, Prayag Pustak Bhawan.
[2]. Kapoor, A.S. (2022): Disaster Management, McGraw-Hill Education.
[3]. Singh, R.B. (2025): Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications.
[4]. National Disaster Management Authority (NDMA)
[5]. India Disaster Report (Annual Report): Annual report published by the Ministry of Home Affairs, MHA Disaster Management Division.
[6]. Third Report of the Second Administrative Reforms Commission (ARC): "Crisis Management: From Despair to Hope."
[7]. Disaster Management Atlas of India: Vulnerability map atlas prepared by the Indian Institute of Remote Sensing (IIRS) and ISRO.
[8]. BMTPC (Vulnerability Atlas of India): Digital atlas published by the Building Materials and Technology Promotion Council.