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Research Article

Flood Governance in the Flood-Prone Districts of Upper Assam, India: An Analysis of Flood Management Policies

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Abstract: Flood is a recurring hazard in Assam, India, particularly in Upper Assam, which causes widespread damage to lives, livelihoods, and infrastructure. This study investigates the flood management of this region by analyzing secondary data from government reports and disaster management plans, focusing on five flood-prone districts: Dhemaji, Golaghat, Jorhat, Lakhimpur, and Sivasagar. Despite the presence of a multi-tiered institutional framework, including the Assam State Disaster Management Authority (ASDMA) and District Disaster Management Authorities (DDMAs), coordination gaps, poor policy enforcement, and inadequate maintenance of flood mitigation infrastructure remain persistent issues. Initiatives such as the Aapda Mitra volunteer program, Flood Early Warning System (FLEWS), and the inclusion of indigenous knowledge reflect steps toward resilience, yet the focus remains largely on short-term emergency response. The study highlights the urgent need for a more integrated and sustainable flood governance model that strengthens coordination among agencies, enhances community participation, and invests in capacity-building. Raising disaster awareness through education, improving communication systems, and involving local stakeholders in decision-making are essential to bridging the gap between planning and implementation. Strengthening grassroots preparedness and ensuring timely, actionable information can significantly reduce flood vulnerability and foster long-term resilience in the Upper Assam region.

Keywords: Flood management; Assam floods; Upper Assam; Governance; Assam State Disaster Management Authority; District Disaster Management Authority; Flood risk

1. Introduction

A flood is defined as an overflow or accumulation of water onto normally dry land caused by rising water levels in rivers, streams, or by heavy rainfall. They are recurring events that can last days or weeks, leading to severe loss of life, damage to livelihoods, property, infrastructure, and public utilities. Sometimes, it also affects areas not previously considered flood-prone [1,2]. Floods are among the most widespread and damaging natural disasters globally, causing significant loss of life and property. In Asia, India is one of the most affected by flooding, facing recurring and severe challenges during flood events [3]. The country's vulnerability stems from its varied geography and deep-rooted socio-economic disparities, which collectively make it one of the most disaster-prone nations in the world.

Assam is located in the Northeastern part of India. It is one of the most affected regions by floods and also has a long record of experiencing severe flood events each year [4]. Around 39.58% (31.05 lakh hectares) of the total land area of the state is officially identified as flood-prone [5, 6]. The state faced several major floods in 2012 that caused lasting damage to the lives of people and their means of livelihood [7]. In 2014, floods forced 1.6 million people to

leave their homes and affected 1,846 villages. By 2016, these figures had increased to 1.7 million people and 2,893 villages [3]. These repeated incidents highlight both the seriousness and the recurring nature of flood disasters in Assam. Flooding in the state often leads to large-scale displacement and damage to infrastructure. It continues to pose a major challenge to the economic development of Assam. Despite the frequency and intensity of these events, there is still limited understanding of how future climate change might affect flood patterns in the Brahmaputra basin and its surrounding floodplains, making it an issue that needs urgent attention [8]. The Assam government acknowledges the severity of the situation and has also reported that floods affect 17 out of 34 districts almost every year in the state.

1.1. Conceptual Understanding of Flood Risk Governance

Flood risk governance (FRG) refers to the combined system of institutions and processes that shape how flood risks are managed [9]. This field is still emerging and focuses on how societies and governments handle flood-related challenges. It involves collaboration among various sectors, such as government officials, the media, the private sector, and local communities, across different levels, from local to national and regional, to address and reduce risks related to disasters and climate change [4,10].

FRG is a distinct form of risk governance that applies core governance principles to the understanding and management of flood risks. While risk management is a part of this broader system, FRG also includes the wider network of stakeholders, rules, tools, and processes involved in collecting, interpreting, and sharing risk information, as well as making informed decisions. The term "flood" is used to specify the focus on flood-related hazards, distinguishing it from governance approaches targeting other types of risks [11].

In Assam, flood risk governance takes a multi-dimensional form. It combines institutional mechanisms, disaster risk reduction strategies, and local community involvement. The Assam State Disaster Management Authority (ASDMA) and the Water Resources Department play lead roles, supported by international organizations like the World Bank and the Asian Development Bank (ADB).

Previous studies indicate that despite taking all the measures, there remains disintegration of the system across the regions and the agencies. The researcher mentioned the importance of investment in climate change adaptation and the need for social protection in disaster management [4]. The repercussions of COVID-19 pandemic and insurgency paired up with fallacies in governance create fear and lack of accountability in the minds of the people for the government [4]. The researcher suggested that the government should focus on innovation in the governance framework and include disaster risk reduction in all development programs.

1.2. Institutional Framework at the State and the District Level

For disaster management to be effective and long-lasting, it must be supported by a formal institutional structure. The Government of India enacted the Disaster Management Act on 23rd December 2005. This Act mandates the formation of a Disaster Management Authority at the district level, designating it as the highest authority for disaster-related activities within the district.

Disaster management operates through several layers of governance, mainly at the State, District, and disaster site levels. Each of these plays a key role. At the state level, the Chief Minister heads the State Disaster Management Authority (SDMA). The SDMA works in coordination with the National Disaster Management Authority (NDMA) and follows its guidelines to prepare and implement disaster management strategies within the state. At the district level, District Disaster Management Authorities (DDMAs) have been established and are led by the District Collector, District Magistrate, or Deputy Commissioner. DDMAs are responsible for planning, coordinating, and executing disaster management activities in their respective districts. The DDMA at the district level is set up to handle unexpected disaster events. The DDMA includes seven key members: the District Commissioner, the President of the Zilla Parishad, the Additional District Commissioner, the Superintendent of Police, the Chief Medical Officer, the Executive Engineer, and the Panchayati Raj Officer. This body is responsible for planning and implementing disaster preparedness and risk reduction strategies across the district. Local bodies such as Panchayati Raj Institutions (PRIs), municipal bodies, and town planning authorities are also assigned specific roles to support disaster response and preparedness efforts [4].

In Assam, the Assam State Disaster Management Authority (ASDMA) functions under the leadership of the Chief Minister. The Chief Minister, along with other official members of ASDMA, is tasked with ensuring that all departments coordinate effectively in matters related to disaster management. The State Executive Committee (SEC) is chaired by the Chief Secretary of Assam. They assist ASDMA in fulfilling its responsibilities. It also ensures that actions are carried out in line with the disaster management guidelines by the state and that directives under the Disaster Management Act are properly followed.

The District Magistrate chairs the District Level Coordination and Relief Committees in each district. These committees work closely with both government and non-government agencies. The Collector or District Magistrate also partners with Panchayati Raj Institutions and community volunteers to strengthen disaster response. At the grassroots, Circle Disaster Management Committees provide expert and technical support to Village Disaster Management Committees, helping to manage disaster risks more effectively at the local level. The local authorities in Assam, such as PRIs (Panchayati Raj Institutions), municipalities, urban local bodies, and various councils, are responsible for disaster management at the local level. They must train their staff, keep disaster-related resources ready, follow safe construction standards, and carry out relief, rehabilitation, and reconstruction as per the state and district plans.

Disaster management has become a key part of the overall governance structure in Assam. However, effective flood risk reduction is undermined by operational and institutional shortcomings. One key challenge lies in the poor coordination between the Central Water Commission (CWC), which provides flood forecasts, and local administrations, which are often unable to act on this data due to shortages in trained manpower. Multiple state government departments share responsibilities for flood management, in collaboration with the State Disaster Management Authority (SDMA) and local district administrations. Funding for flood-related projects is sourced from both the national and state levels and allocated to designated departments and agencies [12].

Despite these institutional arrangements, there is a gap between policy and practice; a lack of coordination during the execution of flood management responsibilities frequently leads to haphazard implementation. Crucial mitigation structures like embankments, silt traps, and bridges often go unmonitored and poorly maintained, significantly weakening their ability to mitigate the impact of floods. While Assam has established policies for both structural and non-structural flood measures, the enforcement and consistent monitoring of these policies remain inadequate. There is an urgent need for a dedicated nodal agency to oversee implementation and ensure regular evaluation, especially given the fragmented approach currently in place [12].To address these identified gaps and challenges, the paper attempts to examine the existing institutional mechanisms, including ASDMA, DDMAs, and local bodies, in managing floods in five highly flood-prone districts of Upper Assam and identify gaps between planned and actual implementation.

1.3. Flood Management in Assam

Following the severe flood disaster of 1954, the Government of India introduced a national flood policy that emphasized immediate, short-term, and long-term measures to address flood-related issues. Assam also initiated a flood control policy after the formulation of the National Water Policy in India, which helps in focusing on identifying priority areas that also need urgent attention.

The Water Resources Department of Assam undertook various structural and non-structural measures. The flood control activities implemented in the state included flood zoning, improvement of drainage systems, construction of embankments and flood walls, development of flood forecasting and warning systems, and protective works for towns vulnerable to flooding and riverbank erosion. In some critical areas, river training and bank stabilization measures were also taken up. However, long-term strategic interventions for flood and erosion management remain largely unimplemented. But till now, the state approach has been dominated by short-term and emergency responses instead of sustainable solutions.

The vulnerability of floods in Assam is primarily driven by its geographic and climatic conditions. It is identified from secondary data sources, including India Meteorological Department reports, Geological Survey of India documents, and existing disaster management literature of the districts and state-level policy of Assam [5,13]. The state experiences heavy rainfall during the southwest monsoon (June to September), causing river systems to overflow due to intense precipitation over short periods [14]. Given that these climatic conditions are largely unchangeable, flood governance should focus on improving land-use zoning, strengthening embankments, enhancing community-based early warning systems, and promoting local-level preparedness to mitigate flood impacts more effectively.

The state experiences heavy rainfall during the southwest monsoon, which is active between June and September, causing most rivers to overflow due to intense precipitation over a short duration. The susceptibility of this region is further worsened by factors such as seismic activity, fragile geological formations, dynamic river systems, and unstable slopes, all of which contribute to continual natural hazards, particularly floods.

In recent years, the Government of Assam, with support from the Ministry of Development of the North Eastern Region and funding from the Asian Development Bank, has introduced the Integrated Flood and Riverbank Erosion Risk Management Project. This project

focuses on reducing the impact of floods through a set of coordinated measures aimed at improving community resilience. One key component of this initiative is the Flood Early Warning System (FLEWS), which has been in place since 2009. FLEWS provides timely alerts about the possible location, intensity, and timing of flood events, as well as rainfall forecasts and updates on the condition of embankments during both pre- and post-monsoon seasons.

The Assam State Disaster Management Authority (ASDMA) has also placed strong emphasis on building local capacity. It regularly conducts training sessions and awareness programs to enhance disaster preparedness within communities. ASDMA's efforts further reach the grassroots level, where it promotes the development of flood-resilient model villages under the panchayat system and incorporates sustainable livelihood practices into disaster risk reduction plans.

Local communities, particularly indigenous groups, hold valuable traditional knowledge that helps them adapt to and manage the effects of natural hazards. Practices such as crafting flotation devices from locally available materials and modifying homes to withstand flooding highlight the vital role of indigenous strategies in disaster preparedness. Given the time-consuming nature of post-disaster relief and rehabilitation efforts, localized responses are crucial. Strengthening community-level preparedness and enhancing local capacity through training and awareness is essential to minimize the loss of lives, assets, and livelihoods during flood events in Assam [15,16].

2. Materials and Methods

According to the State profile given by the government of Assam, the state has five regional divisions. The divisions are Barak Valley, Central Assam, Lower Assam, North Assam, and Upper Assam [17]. The districts that are in Upper Assam are Charaideo, Dhemaji, Dibrugarh, Golaghat, Jorhat, Lakhimpur, Majuli, Sivasagar, and Tinsukia. The divisional office of Upper Assam is in Jorhat. For this study, we employed two approaches. Firstly, we selected Upper Assam based on the frequency of floods that occurred between 2010 and 2024 in Assam. Because this division has the highest flood occurrence in these years. We chose districts that experienced floods at least ten times in the last ten years. The five districts are Dhemaji, Golaghat, Jorhat, Lakhimpur, and Sivasagar, which are the most vulnerable districts in Upper Assam for floods every year. Therefore, we selected these districts from Upper Assam for this research because they had the highest number of flood events, as per data from the Assam Disaster Risk Reduction Roadmap by the Government of Assam [13].

Secondly, we utilized secondary data collected from various journal articles [3,4,7,8,15,16] and government reports, including Assam State Disaster Management plans and District Disaster Management Plans (Dhemaji, Golaghat, Jorhat, Lakhimpur, and Sivasagar). The main sources of this information are the ASDMA, the Department of Water Resources, including the Revenue and Disaster Management Department under the Government of Assam [5,18,19]. The data were extracted from the journals and reports, including the following.

- Institutional data: information about the structure and functioning of the Assam State Disaster Management Authority (ASDMA), District Disaster Management Authorities (DDMAs), and Panchayati Raj Institutions (PRIs).

- Policy data: details of disaster management plans, guidelines, frameworks, and flood management policies.
- Program data: descriptions and evaluations of initiatives such as the Aapda Mitra volunteer program.
- Impact data: data about the damages caused by floods in terms of lives lost, livelihoods affected, and infrastructure damage in the selected five districts.
- Coordination and implementation data: information on how well policies are implemented at ground level, and the effectiveness of coordination among different levels of governance.
- Community preparedness data: coverage of public awareness measures, education, communication systems, and local participation in flood risk reduction.

The study employed simple statistical methods. Descriptive statistics were used to summarize flood occurrence data, while content analysis was applied to review institutional frameworks, policy gaps, and community-based practices drawn from secondary sources. After collecting secondary data from different agencies, the study analyzed how ASDMA, DDMAs, and PRIs work and coordinate in managing floods. It looked for gaps between what the disaster plans say and what happens on the ground. It also assessed programs like Aapda Mitra and FLEWS to see how well they work and what their limitations are. The study examined how community participation, local knowledge, and disaster education help people prepare for floods. Finally, it compares the policies and practices across Dhemaji, Golaghat, Jorhat, Lakhimpur, and Sivasagar from the District Disaster Management policy of each of these five districts to find common challenges and strengths, and uses these findings to suggest a better, community-based flood governance model.

3. Results and Discussion

3.1. Flood Response Coordination and Volunteer Programs

ASDMA holds annual consultations every February with district-level stakeholders, including DDMAs, Circle Offices, and line departments, to review flood preparedness. These meetings check the status of relief camps, shelters, response teams, boats, equipment, medicines, and disinfectants needed during floods. Regular review meetings also take place before, during, and after floods. Field officers at Circle Offices visit vulnerable areas to identify possible flood and erosion mitigation measures. ASDMA promotes community volunteer services through the *Aapda Mitra* program. Volunteers from local communities are selected, trained in search and rescue, and help provide immediate relief and rescue after disasters. Additionally, consultations are held at the grassroots level with flood-affected communities. The program exists, but ASDMA guidelines provide limited information about gender inclusivity or the role of women volunteers, as the information they provided is outdated. No data have been provided in recent years about the training and involvement of women volunteers. They are not mentioning women volunteers. From the documents, we find out that the previous training information of Aapda Mitra volunteers is available only till the year 2019. In there, there is no female volunteer's name listed in the document [20].

Our study finds that the importance of flood volunteerism in a community depends on its knowledge, attitude, and practices towards it [21]. Community involvement is crucial in flood risk management. It is always significant to include women as well as men as volunteers in flood response because women are mostly aware of the impacts of floods. Based on the Reference [21], the Bangladesh context additionally highlights how women face a number of barriers that restrict their participation despite high awareness levels, including a lack of training and social norms. But if we can see according to the document [20], in the Assam context, the National Disaster Management Authority funded a project on Training of Community Volunteers in Disaster Response. In Assam, "AAPDA MITRA" Kamrup Metro, on Training of Community Volunteers in Disaster Response, Assam, and "AAPDA MITRA" Jorhat District, the list of all trained participants is male. This shows a critical gap in policy implementation and gender inclusiveness, suggesting the need for structured training programs that encourage and empower female volunteers.

The results of our study suggested the importance of regulating flood volunteer programs, including modification of the disaster management policies in a timely manner whenever it is required to change. The volunteer program should give equal opportunity to female volunteers to participate in training and contribute to all phases of disaster management. All these policies have the same purpose of resilience, which means that the community plays an important role in disaster resilience, so the importance of establishing and preparing community members during any emergency is essential. Therefore, if we can start giving training to the volunteers from the community, it will be better to reduce the impact of disasters. The volunteering programme should also support and include women and give them some special training, education, and awareness programmes. Adapting the community knowledge, attitude, and practice can improve the flood volunteerism [21]. This can lead to initiating flood volunteers, which will be sustainable. Therefore, we should give the centre of attention to regulating the flood volunteers in the flood-affected regions of Assam.

3.2. State Profile: Floods in Assam

The state of Assam, with its extensive river network, including the Brahmaputra and Barak rivers, along with over 50 tributaries, faces severe and recurring floods and erosion during the monsoon. These disasters significantly hinder the development of the state. Since independence, Assam has experienced major floods in years such as 1954, 1962, 1972, 1977, 1984, 1988, 1998, 2002, 2004, and 2012. Each year, the state typically faces three to four waves of flooding in its vulnerable regions. The average annual flood-related loss of Assam is around ₹200 crore, with particularly severe damages in 1998 and 2004 (₹500 crore and ₹771 crore in Indian rupees) [5].

Our analysis finds that flood data from 2010 to 2024 (Figure 1) provides a year-wise overview of flood impact in Assam from 2010 to 2024, highlighting three critical indicators: the number of districts affected, population impacted (in lakhs), and human lives lost. The data reveals the pattern of flood vulnerability across the state. Notably, years such as 2012, 2017, and 2022 stand out with exceptionally high human fatalities that are 149, 160, and 181 lives lost, respectively.

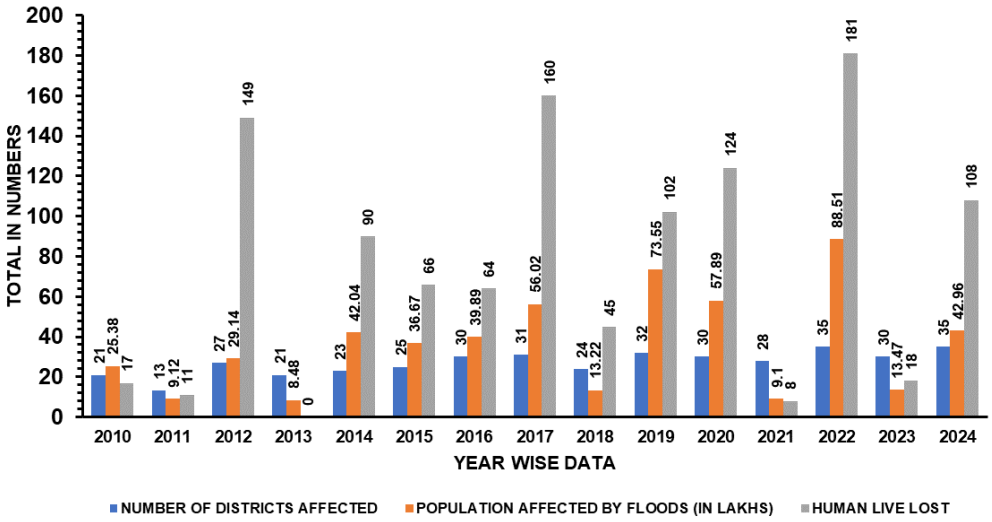

Figure 1. Flood situation in Assam from 2010-2024 [18]

Five of the most flood-prone districts in Upper Assam, In the period from 2019 to 2024, five of the most flood-prone districts in Upper Assam - Dhemaji, Golaghat, Sivasagar, Lakhimpur, and Jorhat are together reported 62 flood-related human fatalities. This equals approximately 12.42% of the human fatalities in Assam that occurred as a result of flooding during that period. Golaghat reported the highest number of fatalities among these five districts, making it the most severely affected area in Upper Assam in recent years. This indicates major flood events that overwhelmed existing response capacities. The highest number of flood-affected people was recorded in 2022, with 88.51 lakhs in Assam, reflecting the widespread and severe nature of floods. Among these five Upper Assam districts, floods have the highest impact on the people of the Lakhimpur district during this period. While the number of districts affected has remained relatively consistent over time, ranging mostly between 25 to 35 districts annually.

3.3. Floods in "Upper Assam"

Figure 2 presents an analysis of human lives lost and the number of affected revenue circles across five flood-prone districts, namely Dhemaji, Lakhimpur, Jorhat, Golaghat, and Sivasagar, over the period from 2020 to 2024. This five-year dataset identifies the inter-district variations in flood impact. While the number of affected revenue circles remained relatively consistent across districts and years, meaning that most of the revenue circles were affected by floods each year. The districts such as Dhemaji and Golaghat recorded the highest number of fatalities, with 16 and 19 human lives lost respectively, followed by Sivasagar (14) and Lakhimpur (12).

From the existing literature, we find that there is no one-size-fits-all model for flood risk governance [22]. The experiences from around the globe about flood risk governance highlight the areas that are important, such as the significance of local bodies, trust among stakeholders, and the use of local knowledge in building effective collaboration. This aligns with the lesson from the Japanese practice of the Tsurumigawa River basin, where integrated community-based approaches have been verified as successful. Therefore, the integration of these approaches is important at present because of climate change.

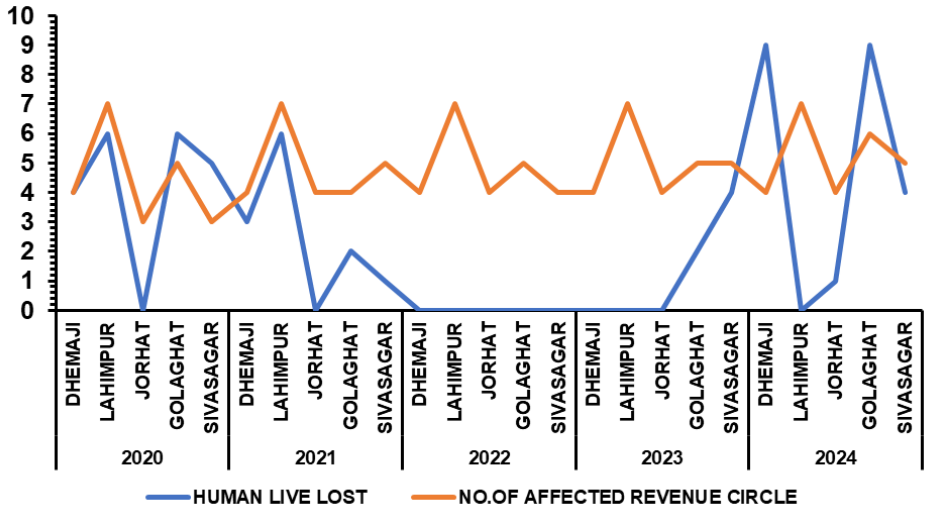

Figure 2. Flood situation in Upper Assam from 2020-2024 [18]

The ASDMA and the flood management policies of Golaghat, Sivasagar, Lakhimpur, Dhemaji, and Jorhat in Assam do not fully reflect the realities on the ground. These plans rarely strengthen, but stakeholders' insight reveals that these often remain on paper and are inadequately translated into practice [12]. Local stakeholders, especially panchayat leaders and local authorities, mentioned that during the process of making the policy and decision-making, they are unaware of the process.

Our analysis is supported by secondary data and existing literature, which indicates that the affected population lacks awareness about the available relief funds, preparedness programs, and early warning systems. Therefore, this study recommends establishing strong communication between the affected people. The authorities can listen to the community's perception before making the policies. However, in Upper Assam, a key gap lies in the absence of formal regulation to ensure that community suggestions are turned into effective flood response plans. In particular, in the most vulnerable villages, the number of affected people and fatalities keeps rising each year as a result of this ineffective mechanism.

The coordination among the implementation will be improved with periodic joint exercises, for example, community-based flood education, locally available early warning systems, and planning for preparedness and recovery must be scaled up. Floods in Assam, particularly in the Upper Assam region, continue to cause avoidable human and economic losses year after year. This is not merely a failure of infrastructure but of governance and communication. Therefore, there is a need for an integrated approach that can reduce the impact of floods with the help of community participation, using experience from past flood events to help institutions like ASDMA, DDMA in making better flood control policies.

4. Conclusions

This study indicates the varied challenges involved in managing floods every year in Upper Assam, including poor coordination among state, district, and local level agencies, inadequate enforcement of disaster management plans, insufficient maintenance of flood control infrastructure, limited community participation, involvement in awareness programme, and a continued focus on short-term emergency measures rather than long-term resilience. A specific focus on coordination, community volunteerism, and policy implementation in the Upper Assam region is needed.

The research finding shows that while Assam has a well-structured institutional framework at the state, district, and local levels, major gaps remain in converting policy into effective ground-level action. The findings also reveal that ASDMA-like institutional mechanisms conduct preparedness and awareness, and involve the community through various programs, such as Aapda Mitra. However, there is still a gap in inclusivity, sustainability, and on-the-ground execution. The exclusion of female volunteers from the Aapda Mitra training programs and the involvement of limited stakeholders during policy formulation indicate a disconnection between policy and practice.

The impact of floods given by data from 2010 to 2024 shows that Assam suffers human and economic losses during the year, with some major floods in 2012, 2017, and 2022. These trends of increasing losses indicate that without community participation and adaptive governance, the structural measures are not able to manage on their own. To enhance resilience, it is important to integrate community-based approaches, strengthen local knowledge, and improve institutional partnerships. Flood mitigation efforts can become more sustainable and effective by addressing the gap between policy and ground realities through a shift toward inclusive and participatory flood governance.

The study recommends the urgent need for a more integrated approach to flood management that combines community participation, improving coordination between institutions and local communities, regulating and expanding inclusive volunteer programs, especially involving women, and increasing public awareness of relief mechanisms. The policies must not be relayed in documentation but should be rooted in ground realities. In the making of these policies, they must be guided by local knowledge with the help of community experience and sustained by collaborative efforts to strengthen the flood risk governance.

Multidisciplinary Domains

This research covers the domains: (a) Disaster Management, (b) Public Policy, and (c) Governance.

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Conflicts of Interest

The authors declare no conflict of interest.

Declaration on AI Usage

This manuscript has been prepared without the use of AI tools.

References

[1] Floods, NDMA, Government of India. Available online: https://ndma.gov.in/Natural-Hazards/Floods (Accessed on 5 June **2025**)

[2] US Department of Commerce, NOAA, National Weather Service. Flood and flash flood definitions **2019**. Available online: https://www.weather.gov/mrx/flood_and_flash (Accessed on 5 June **2025)**

[3] Mohanty, M. P., Mudgilt, S., and Karmakar, S., Flood management in India: A focussed review on the current status and future challenges. *International Journal of Disaster Risk Reduction [Internet]**2020.** 49,* p.101660.38-47, 10.1016/j.ijdrr.2020.101660

[4] Gupta, B., and Hazarika, D., Disaster Risk Reduction Governance in Assam: A Study. Journal of Public Administration. Bihar Journal of Public Administration **2024**, *XX*, 66–76 ISSN: 0974-2735

[5] Water Resources, Government of Assam, India. Available online: https://waterresources.assam.gov.in/ (Accessed on 5 June **2025**)

[6] National Remote Sensing Centre (2016), Flood Hazard Atlas for Assam State (1998- 2015), Technical Report for Assam State Disaster Management Authority. Available online: https://asdma.gov.in/flood_hazard.html(Accessed on 5 June **2025**)

[7] Pal, I., Singh, S., and Walia, A., Flood Management in Assam, INDIA: A review of Brahmaputra Floods, **2012**. *International Journal of Scientific and Research Publications 2013*. *3,* ISSN-2250-3153.

[8] Chaliha, S., Sengupta, A., Sharma, N., and Ravindranath, N.H. Climate variability and farmers' vulnerability in a flood-prone district of Assam. *International Journal of Climate Change Strategies and Management **2012**. 4(2),* pp. 179-200, https://doi.org/10.1108/17568691211223150

[9] Dordi, T., Henstra, D., and Thistlethwaite, J., Flood risk management and governance: A bibliometric review of the literature, *Journal of Flood Risk Management* **2022**. *15(2*). 10.1111/jfr3.12797.

[10] Issue brief: Disaster Risk Governance. Bureau for Crisis Prevention and Recovery, UNDP, New York. Available online: https://www.undp.org/ (Accessed on 5 June **2025**)

[11] Alexander, M., Priest, S., and Mees, H., A framework for evaluating flood risk governance. *Environmental Science & Policy* **2016**. *64,* pp.38-47, 10.1016/j.envsci.2016.06.004.

[12] Bezboruah, K., Sattler, M., and Bhatt, A., Flooded Cities: A Comparative Analysis of Flood Management Policies in Indian States. *International journal of water governance* **2021**. *8,* pp. 1-20, 10.59490/ijwg.8.2021.5782.

[13] Envisioning a Disaster Resilient Assam, Assam Disaster Risk Reduction Roadmap, 2030, Assam State Disaster Management Authority, Government of Assam, India. Available online: https://asdma.assam.gov.in/resource/assam-drr-roadmap(Accessed on 5 June **2025)**

[14] The State Magazine, Government of Assam, India 2025. Available online: https://dgm.assam.gov.in/frontimpotentdata/the-state-magazine (Accessed on 5 June **2025**)

[15] Jagnoor, J., Bhaumik, S., Christou, A., Azad, A.K., and Ivers, R., Weaved into the fabric of life: A qualitative exploration on the impact of water-related disasters in the Char Community of Assam, India. *International Journal of Disaster Risk Reduction* **2020**. *47,* p.101551, https://doi.org/10.1016/j.ijdrr.2020.101551

[16] Debbarma, A., and Deen, S., Flood Disaster Management in Assam. *SHODH SANCHAR BULLETIN* **2020**. *10,* pp.105-109.ISSN - 2229-3620.

[17] Districts of Assam, Raj Bhavan Assam, Government of Assam, India. Available online: https://rajbhavan.assam.gov.in/districts-assam (Accessed on 5 June **2025)**

[18] Assam State Disaster Management Authority. Available online: https://asdma.assam.gov.in/ (Accessed on 5 June **2025**)

[19] Revenue & Disaster Management, Government of Assam, India. Available online: https://landrevenue.assam.gov.in/ (Accessed on 5 June **2025**)

[20] Training and Capacity Building, Assam State Disaster Management Authority, Government of Assam, India. Available online: https://asdma.assam.gov.in/frontimpotentdata/training-and-capacity-building (Accessed on 5 June **2025**)

[21] Ali Chisty, M., Khan, N. A., Syeda Sumaya, I.A., and Rahman, M.M., Knowledge, Attitude, and Practice Toward Flood Volunteerism in Bangladesh: A Gender-Based Analysis with Policy Implications. *Global Social Welfare* **2023**. *10*, pp. 225-233, https://doi.org/10.1007/s40609-023-00276-9.

[22] Ishiwatari, M., KhanFlood risk governance: Establishing collaborative mechanism for integrated approach. *Progress in Disaster Science* **2019**. *2*, p. 100014, https://doi.org/10.1016/j.pdisas.2019.100014