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FLOOD GOVERNANCE IN ASSAM

Mapping the Flow of Information and Funds during Floods in Assam



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About Us

CivicDataLab (CDL) is a private research lab working at the intersection of data, tech, design and social science to strengthen access to public information and improve citizen participation in governance in India. CDL works to harness the potential of open knowledge movements and better enable citizens to engage in matters of public reform. We work closely with governments, non-profits, think tanks, media houses, universities, and other actors; to grow their data and tech capacity to enable data-driven decision-making at scale.

Disclaimer: The statements in this publication are the views of the author(s) and do not necessarily reflect the policies or the views of CivicDataLab.



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How information and funds flow during floods in Assam

Extreme weather events have been rising globally due to climate change, with floods being the most common disaster. Assam is one of the most flood-prone states in India¹. Although it seems like Assam has always battled with floods, these floods affect hundreds of thousands of lives and livelihoods and wreak havoc yearly. It affects agricultural land and granaries, livelihoods and incomes, leads to food shortage, and causes skin infections, disease outbreaks, and shortage of clean drinking water and clean and hygienic sanitation facilities, among others². The frequency and intensity of extreme weather events in India have increased by ~200% since 2005³. This year, Assam witnessed one of its worst floods in over 100 years⁴.

It takes enormous effort from citizens and the government to respond to such a situation. Sharing information with relevant individuals and/or organisations is crucial for taking necessary actions to address the situation. There is, in fact, a plethora of different kinds of information that circulates both in government and citizen groups during a crisis. However, for the purpose of this article, we are focusing on two kinds of information – from bottom to top, regarding the on-ground situation and from top to bottom about the situation of floods and early warnings.

1

<https://www.ceew.in/sites/default/files/ceew-study-on-climate-change-vulnerability-index-and-district-level-risk-assessment.pdf>

2

https://web.worldbank.org/archive/website01062/WEB/IMAGES/PAPER_5_.PDF
<https://idronline.org/ground-up-stories/women-in-assams-flooded-areas-refuse-food-to-avoid-defecation/>

3

<https://www.ceew.in/sites/default/files/ceew-study-on-climate-change-vulnerability-index-and-district-level-risk-assessment.pdf>

4

<https://www.thequint.com/climate-change/assam-the-worst-floods-in-122-years-and-how-climate-change-is-making-them-worse>



At CivicDataLab, we work towards making public information accessible using data and technology and also work on showcasing how this information could be used for informed decision-making. We undertook this exercise as a part of our ongoing work on disaster response and management in Assam. One of our projects – [Intelligent Data Ecosystem for Assam - Flood Response and Management \(IDEA-FRM\)](#) – aims to inform the flood-related procurements based on flood vulnerability at a granular level in near real-time. This will give insights for data-driven decision-making for better flood preparedness and response.

In another initiative, we are conducting a landscape study on flood governance in Assam to identify avenues for citizen participation in disaster response and management. We are conceptualising a citizen disaster reporting platform that will host localised information on the effects of floods in near real-time.

Before designing interventions, we believe that we should develop an understanding of the existing flood response and management practices, including existing practices of data collection and analysis, capacities of the stakeholders, gaps in information, challenges faced, etc.

In this article, we collate an understanding of information flows and fund flows, an essential part of flood response and management, which in our knowledge, exists only as scattered pieces of information. We discuss the information shared between multiple stakeholders, the mechanisms for sharing this information, and how and where response decisions are taken during floods.

Institutions involved in flood response and management

Flood response happens at multiple administrative levels - state, district, revenue circle and village cluster.

[The Disaster Management Act 2005](#) provides the legal framework for disaster management in India. It mandated the setting up of nodal agencies at the state and district levels to effectively manage disasters and related matters. The Assam State Disaster Management Authority (ASDMA) and the District Disaster Management Authorities (DDMAs), the primary coordinating agencies for all the measures taken for preparedness, mitigation, response and rehabilitation, were established under the Act. They work closely with the line departments at the state and district level, like the Water Resource department (for upkeep and construction



of embankments), Panchayat and Rural Development department (for roads, soil erosion measures, etc., under MGNREGA), Public Health Engineering department (for drinking water and sanitation), Public Works Department (for roads, buildings, etc.). A detailed list of the departments involved and their roles in disaster management in Assam are given in the Annexure.

At the sub-district level as well, there are different government actors like Lot Mandals and Gaon Burahs, and government offices like the revenue circle office involved in flood response and management. Table 1 outlines the roles played by these departments and actors in disaster management.

Table 1: List of departments and roles played by them in disaster management in Assam

Department/ Organisation	Administrative level	Roles and functions in disaster management
Assam State Disaster Management Authority (ASDMA)	State	<ul style="list-style-type: none">- State nodal agency- Coordinate response, procure and distribute relief materials, and disburse funds for relief materials from the State Disaster Response Fund (SDRF)⁵
State Executive Committee (SEC)	State	<ul style="list-style-type: none">- Advise the state government regarding all financial matters related to disaster management- Administer the SDRF
Finance Department, Government of Assam	State	<ul style="list-style-type: none">- Establish State/District Mitigation Fund, State/Disaster Response Fund and State/District Recovery and Rehabilitation Fund- Estimate central and/or state assistance required- Determine preliminary allocation to undertake relief measures
Revenue & Disaster Management Department	State	<ul style="list-style-type: none">- Approve repair and restoration works to be undertaken through SDRF- Review the measures taken by various departments for mitigation and prevention (including budget allocation), monitor the field situation, and direct the disaster response

⁵ State Disaster Response Fund (SDRF) is the primary fund available with the state governments for responses to notified disasters. It is usually earmarked for immediate relief materials required during disasters.

Department/ Organisation	Administrative level	Roles and functions in disaster management
District Disaster Management Authority (DDMA)	District	<ul style="list-style-type: none"> - District-level nodal disaster management agency - Coordinate with relevant departments and agencies during floods for monitoring and response
Deputy Commissioner (DC)	District	<ul style="list-style-type: none"> - Heads the DDMA and the Incident Response Team (IRT) at the district level - Approve works to be undertaken from the SDRF proposed by various line departments (district level) - Arrange and manage donations from individuals and organisations for distribution to flood-affected people
District Project Officer (DPO)	District	<ul style="list-style-type: none"> - Works closely with the DC in all matters related to disaster management - Undertake efforts to procure and distribute relief materials
Water Resource Department (WRD/DoWR)	State, District	<ul style="list-style-type: none"> - Take measures against flood and river bank erosion, and drainage development
Public Health Engineering Department	State, District	<ul style="list-style-type: none"> - Provides safe drinking water and hygienic sanitation facilities
Public Works Department	State, District	<ul style="list-style-type: none"> - Emergency repair of roads, construction of temporary structures and emergency structures, removal of debris
Panchayat & Rural Development department/District Rural Development Authority	State, District	<ul style="list-style-type: none"> - Undertake repair and maintenance of works undertaken through MGNREGA and other rural development schemes or programmes
Revenue Circle Office	Revenue Circle	<ul style="list-style-type: none"> - Nodal agency for disaster management at the revenue circle level

Department/ Organisation	Administrative level	Roles and functions in disaster management
		<ul style="list-style-type: none"> - Coordinate the response at the revenue circle level - Revenue Circle Officer heads the department and is assisted by the Field Officer
Lot Mandal	Village cluster	<ul style="list-style-type: none"> - Verify the on-ground situation and inform the revenue circle office
Gaon Burah	Village cluster	<ul style="list-style-type: none"> - Collect on-ground situation reports and share them with the revenue circle office - Coordinate distribution of relief materials

Information flows during floods

As per our understanding, there are primarily two kinds of official information shared: (i) Flood early warnings and (ii) On-ground situation or situation reports.

Flood Early Warnings System (FLEWS) is a system where floods are forecasted, and early warnings are given based on hydrological modelling using near real-time data so necessary measures can be taken to prevent the adversity of floods. FLEWS Assam provides information on flood severity, location (at the granularity of revenue circle), probable time, high rainfall warning and status of embankments in flood-causing rivers. The flood early warning is developed by [North-East Space Applications Centre \(NESAC\)](#)⁶ in close collaboration with the [Indian Meteorological Department \(IMD\)](#)⁷ and [Central Water Commission \(CWC\)](#)⁸, among others.

NESAC, IMD, and CWC share location-specific early warnings with ASDMA, which is responsible for coordinating the flood response at the state level. Figure 1 shows how the state-level departments share information on flood early warnings with the residents and other departments involved. The information on early flood warnings

⁶ NESAC (North Eastern Space Application Centre) is a joint initiative of the Department of Space and the North Eastern Council, which provides remote sensing and geographic information system-based support for disaster management in the region.

⁷ IMD (Indian Meteorological Department) is under the Ministry of Earth Sciences, it monitors rainfall and gives flood alerts.

⁸ CWC (Central Water Commission) falls under the Ministry of Jal Shakti and gives information on the level of water in rivers.



allows different departments and organisations at different administrative levels to take necessary preparatory measures like repairing road breaches, monitoring water levels, mobilising medical response teams, evacuating people to safer places, etc.

The information exchanges across this channel happen through SMS and/or phone calls. Maps and other information are shared over email.

The on-ground situation report gives information on the effects of floods in a particular area. The effect of flood varies across regions, making it ideal for collecting this information at a granular level and sharing it at higher administrative levels for decision-making purposes.

Gaon Burah, which literally translates to a village elder, is the official head person responsible for a cluster of about 10-15 villages. They are a local person, familiar with the context and local people, and are the bridge between the district administration and the village. Each Gaon Burah collects information about the situation in their respective cluster through their networks and shares it with the revenue circle office. The Lot Mandals⁹, who are responsible for land and revenue-related matters in villages, verify this information. Gaon Burah and Lot Mandal become the most crucial source of localised information on the effects of floods. They share this information with the Field Officer (at the revenue circle office) as and when the situation demands via WhatsApp and phone calls. Each Field Officer coordinates with approximately 20-160 Gaon Burahs.

The Field Officer and the Revenue Circle Officer use this information to estimate the need for relief material and repair & restoration works. They collate this scattered information, process it to calculate the needs and share it with the concerned line departments (at the district level) and the DDMA or the DC. The revenue circle office updates the DC about the situation hourly and requests for mobilising resources as required. They also input this information into a state online platform called FRIMS¹⁰ (Flood Reporting and Information Management System). One can

⁹ Lot Mandals are responsible for matters related to land and revenue in villages, including revenue collection. Each Lot Mandal (Mandal is also known as Tehsil in some parts of the country) is responsible for 5-10 villages, and the number of villages in each revenue circle varies widely from 1 to over 450.

¹⁰ ASDMA publishes daily reports about the situation of floods in the state during the monsoon season (May 15 - October 15) under an initiative called Flood Reporting and Information Management System (FRIMS). FRIMS is an online platform for automated data compilation.

download the daily FRIMS report from the [ASDMA website](#). Figure 1 shows how on-ground situation reports are shared with the decision-making agencies at the district level and the state level.

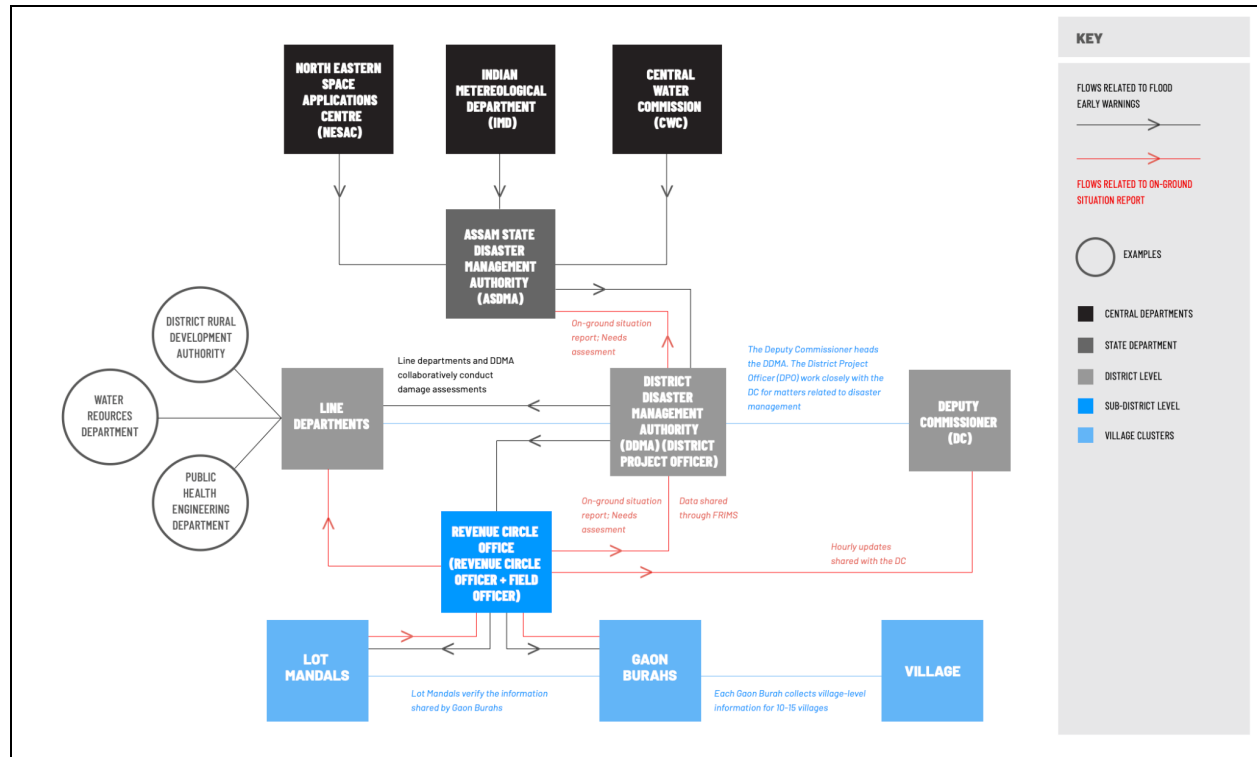


Figure 1 The flow of information in the event of floods

Fund flows for flood response

The information exchange between various administrative levels explained above is used for making decisions around responding to floods. The immediate response to floods involves distributing relief materials like food, clean water, tarpaulin sheets, food for infants and children, fodder for cattle, etc.¹¹, and repair and restoration of basic services and infrastructure like roads, embankments, bridges, etc. The major source of funds available for immediate response to disasters is the State Disaster Response Fund (SDRF). It is usually earmarked for immediate relief materials.

¹¹ The list of relief materials includes over 130 items.



Gratuitous Relief (GR)¹² and Rehabilitation Grant (RG)¹³ are the two major heads of SDRF.

Apart from SDRF, there are other funds like SOPD (State Owned Priority Development), RIDF (Rural Infrastructure Development Fund), and LTIF (Long Term Irrigation Fund) available for disaster management. However, the primary focus of these funds is on mitigation, preventive and control measures.

(i) Fund flow and distribution of relief materials

The procurement and distribution of relief materials happens through SDRF.

The revenue circle office shares the need assessment of relief materials (to be addressed through Gratuitous Relief) and the list of beneficiaries eligible for the Rehabilitation Grant (RG) with the DDMA.

- Gratuitous Relief (GR)

The Deputy Commissioner (DC) and the District Project Officer (DPO) arrange for the procurement of the required relief materials within the scales prescribed for the DC. The requests for relief materials beyond this scale are forwarded to ASDMA. ASDMA, after consultation with and approval from the State Executive Committee (SEC), procures the required relief materials and sends them to the concerned DDMA for its distribution. DC distributes the relief materials (i) procured by the DDMA/DC office, (ii) procured by ASDMA, and (iii) the donations received through the concerned revenue circle office or the Responsible Officers¹⁴ (of the Incident Response System). The Responsible Officers distribute the relief materials to the flood-affected people through the Incident Response Teams.

- Rehabilitation Grant (RG)

¹² Gratuitous Relief (GR) is used for immediate relief. For instance, ex-gratia payment to families of deceased persons, Payment for loss of limbs or eye(s), Hospitalisation, Clothing, utensils and other household goods, Gratuitous relief for families whose livelihoods are adversely affected, Provision of temporary accommodation, food, clothing and other essential supplies.

¹³ Rehabilitation Grant (RG) is for rehabilitation. For instance, compensation given for partially and fully damaged houses.

¹⁴ Responsible Officers (ROs) are designated at the state and district level and are responsible for overall incident response management. They delegate responsibilities to Incident Commander (IC), who has Incident Response Teams (IRTs) to manage the response.



The DC and the DPO assess and approve the beneficiaries eligible for compensation based on the information shared by the revenue circle office. The amount is directly transferred to the beneficiaries' bank accounts.

Figure 2 explains how proposals for relief materials are approved and relief material distributed.

(ii) Fund flow for repair and restoration works

The primary fund available for immediate repair and restoration works is the department's regular maintenance & repair fund. According to the Assam State Disaster Management Manual 2015, SDRF is used for such works only if the department fund is exhausted.

The revenue circle office and the respective line departments (at the district level) conduct the damage assessment of infrastructure and services. For example, the Water Resource department conducts a damage assessment of embankment breaches, and PWD (roads) conducts a damage assessment of road breaches (for roads constructed by the department) in collaboration with the revenue circle office.

Based on the damage estimate, the concerned line department (at the district level) prepares a work proposal and shares it with the DC. The DC approves the proposal and sends it back to the respective line department. The DC checks whether the proposed work can be undertaken from SDRF.

The line department then forwards the proposal to the Revenue & Disaster Management Department if the work has to be undertaken through SDRF. If not, the line department forwards the proposal to its respective state-level department requesting funds from the department budget. Once the proposal is approved, a notice inviting tenders is published by either the district or state line departments or the Revenue & Disaster Management department. Through the tendering process, an agency is finalised and awarded the work contract.

Figure 2 shows the process of requesting funds for repair and restoration works and how procurements are done for these works.

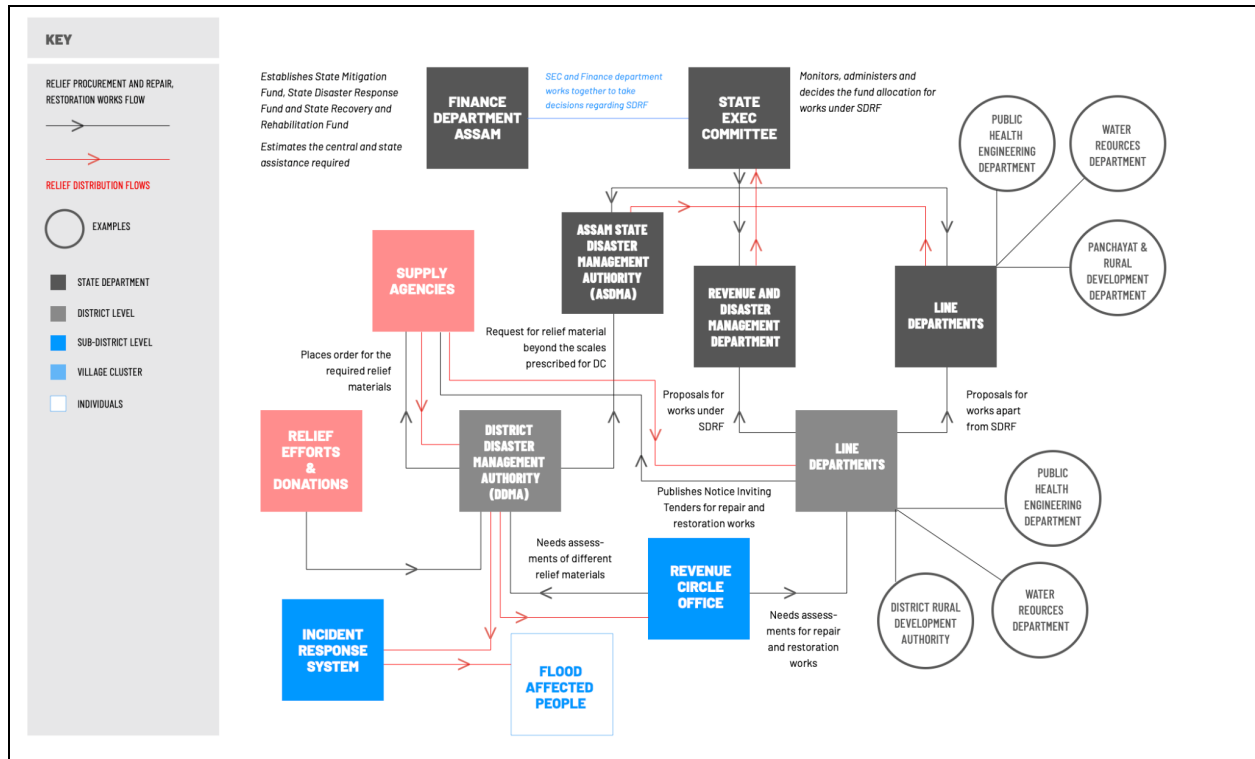


Figure 2: Process of requesting and approving funds, distribution of relief materials, and repair & restoration works

Conclusion

This study was an attempt to learn the complexities of the information flow, multiple departments and actors involved at different administrative levels, the important decision-making nodes, the constraints and challenges faced by them, and the existing information gaps in disaster response. Though there are protocols for information-sharing and relief distribution, in practice, there are challenges and limitations which affect data-driven decision-making and slow responses. We realise that there is a need to understand these nuances before intervening, and more so because very little is documented systematically about these issues, at least in the context of Assam.



Notes

1. This exercise was done as a part of our [ongoing work](#) on disaster response and management in Assam that aims to inform the flood-related procurements based on flood vulnerability at a granular level in near real-time.
2. This article is based on the information shared by different government officials involved in flood response in Assam and the act and the guidelines that direct the flood response mechanisms in the state.
3. In the case of Assam, disaster management efforts are led by the Revenue & Disaster Management department; therefore, the sub-district level at which disaster management happens is the revenue circle level.
4. In our understanding, line departments at the district level are generally involved in conducting damage assessment and preparing work proposals, whereas the state-level departments are responsible for approving the works proposed and for publishing tenders for these works.
5. The lowest administrative level at which needs assessment for relief material happens is the revenue circle level, and damage assessment of infrastructure and services happens is the district level.



Annexure

Table 2: Roles of the concerned line departments

Primary Responsibility	Department
DM Operations and Plans, Warnings	Revenue & DM Department
Medical Care and Health Services	Health & Family Welfare Department
Law & Order, Safety & Security	Home Department
Emergency Response, Search & Rescue	Home Department
Buildings & Lifeline Infrastructure / Communication Infrastructure (Roads & Bridges)	Public Works Department
Drinking Water Supply & Sanitation	Public Health Engineering Department
Transport Systems	Transport Department
Emergency supply of food & basic needs	Food & Civil Supplies Department
Broadcasting & relay of public information	Information & Public Relations Department
Welfare Services	Social Welfare Department
Drought management	Agriculture Department
Flood protection and river erosion management & Drainage development works	Water Resources Department
Power supply	Power (Electricity) Department
DM Education & School/Institution Safety	Education Department
Vulnerability reduction in rural areas	Panchayat & Rural Development Department
Vulnerability reduction in rural areas	Revenue Department
Vulnerability reduction in urban areas & built environment	Urban Development Department



Primary Responsibility	Department
Finance arrangements	Finance Department
Livestock management, animal care services	Animal Husbandry & Veterinary Department
Protection of natural resources and environment	Environment and Forests Department
Soil erosion and soil conservation	Soil Conservation Department
Earthquake & Landslide	Department of Geology & Mines
Fire	Department of Fire & Emergency Services

Source: Assam State Disaster Management Plan

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