Climate Vulnerability Assessment (CVA)

Compiled Report on Identification of climate change vulnerabilities at the Union level

Union: Shubolong Upazila: Barkal District: Rangamati

25 May 2024

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Summary

Due to the adverse effects of climate change, Bangladesh is facing a several challenges, including droughts, floods, cyclones, waterlogging, flash floods, river erosion, and salinity, all of which are severely hindering the country's social and economic progress. In response, the Local Government Initiatives on Climate Change (LoGIC) Project is being implemented in the hilly districts of Rangamati and Bandarban. Particularly, the people of Bandarban and Rangamati are highly vulnerable to climate change impacts and associated disasters. The growing population in Bandarban and Rangamati districts has increased demand for food, leading to deforestation and unsustainable use of the hills and other resources. Human activities, such as rampant deforestation and environmental degradation, compounded by the impacts of climate change, are causing significant harm to the lives and livelihoods of the people. Households have faced damages due to increased landslides, droughts, and flashfloods in recent years, mainly driven by climatic stresses. Community resilience is vital in reducing the losses caused by climate change, and it depends on understanding perceived risks, vulnerabilities, and local efforts to mitigate them. To address these issues, the project aims to enhance the adaptive capacity of vulnerable, climate-affected, and impoverished communities while strengthening the capacity of local government institutions. As part of these efforts, a Climate Vulnerability Assessment (CVA) was conducted at the community level with selected beneficiaries across various wards in both districts, with active participation from the villagers.

This report details the Climate Vulnerability Assessment (CVA) activities conducted in the Shubolong Union of Barkal Upazila, Rangamati District. Through these efforts, the local community has gained valuable insights into assessing climate risks in their area, which will support in future planning. A summary of the key findings is provided below:

- Local communities have a brief understanding of the social and natural resources and livelihoods of their localities;
- Local people are aware of climate change hazards in their area, identifying types of disasters and strategies for prioritizing them;
- The Climate Vulnerability Assessment (CVA) report can help inform what kind of work the project can do next in the area;

Introduction

Bangladesh, situated in the lower basin of the Bengal delta, is one of the countries most affected by climate change. The adverse effects, including drought, floods, cyclones, waterlogging, flash floods, river erosion, and salinity, are creating complex challenges that significantly hinder the country's social and economic progress. In response to these challenges, the Local Government Initiatives on Climate Change (LoGIC) Project has been initiated. This project aims to enhance the adaptive capacity of vulnerable and impoverished communities affected by climate change while also strengthening the capacity of local government institutions. The project is currently being implemented in the hilly districts of Rangamati and Bandarban.

The main objective of the project is to build capacity for climate change adaptation and climate change disaster risk reduction at individual, group and institutional levels by planning and financing inclusive activities at the local level.

The Climate Vulnerability Assessment (CVA) is being carried out at the community level with selected beneficiaries of the LoGIC Project, with the aim of developing capacity for climate change adaptation and reducing the risk of climate-related disasters. The CVA is a participatory assessment method that engages communities in areas vulnerable to climate change, allowing them to actively identify local risks. This process uses various PRA tools in a multi-step approach, helping communities understand the climate risks they face and contributing to future planning. The active participation of all community members ensures that their opinions and experiences are considered, playing a crucial role in shaping subsequent plans. The CVA will be conducted across various unions in the Bandarban and Rangamati districts under the LoGIC Project. Once all assessments are completed, the risk levels will be determined, and plans will be developed accordingly, with a primary focus on community empowerment and sustainable development.

Objective: To identify climate change vulnerabilities across different wards within the area through the LoGIC project, consolidate and analyze the findings, and contribute to the formulation of local climate-resilient plans by developing strategies at the Union level. This will help accelerate the adoption of targeted programs and initiatives.

1. Shubolong Union

Shubolong Union, located about 18 kilometers from Rangamati district, is accessible only by water. This union comprises approximately 10,300 residents across 9 wards, with 3,080 families living in 41 neighborhoods. Agriculture serves as the primary livelihood for most, though many residents rely on fishing, and shift to farming as water levels recede.

Due to its close proximity to Kaptai Lake, the paddy fields in Shubolong Union remain submerged for nearly half the year. The primary agricultural crops include rice, brinjal, collard greens, mustard gourd, maize, cowpea, peas, radish, coconut, betel nut, papaya, cucumber, turmeric, chili, tomato, gourd, sweet pumpkin, sunflower, and beans. Additionally, a variety of crops are grown in Jum fields, and the region cultivates mountain fruits such as mango, litchi, malta grapefruit, banana, jackfruit, pineapple, dragon fruit, and elderberry.

Shubolong Union is home to the famous Shubolong Jharna, a popular tourist destination that draws many visitors. Around the waterfall, various establishments have sprung up, offering traditional clothing and other goods to attract tourists. The area is rich in natural resources, including diverse species of trees, bamboo, stones, and springs. Shubolong Union also boasts 41 neighborhood centers, 25 Buddhist Bihars, 2 Hindu temples, 9 mosques, 2 madrasas, 25 primary schools, a BGB camp, police outpost, army camp, 2 Ansar camps, 2 high schools, 3 lower secondary schools, 4 community clinics, 5 sawmills, and 6 bridges.

2. Summary of Results of Climate Change Vulnerability Identification:

2.1 Ward-wise area and population

Serial	Ward no.	Number of neighborhoods	Household / population
1	1	5	400
2	4	6	277
3	9	9	520

The primary sources of livelihood in Shubolong Union are agriculture and fishing. Two types of farming systems such as plain and jhum farming systems are practiced. In addition to farming, men engage in various trades such as selling turmeric, teak, and seasonal fruits like mango, lychee, banana, and jackfruit. The community also includes government and private employees, as well as blacksmiths, carpenters, chemists, barbers, goldsmiths, boat drivers, and daily laborers working in the market area. The union is home to both Chakma and Bengali communities.

2.2 Identified climate-related disasters (eg, floods, droughts, storms):

Serial	Ward No.	Name of disaster
1	1	Drought, lightning, hail, flash floods and landslides
2	4	Drought, lightning, heavy rain and landslides
3	9	Floods, droughts and cyclones

Analysis of climate-related disaster data of the above wards of Shubolong Union shows that drought is the most significant disaster in the area, followed by lightning, landslides, and flash floods. The impact of these disasters is profound, with drought causing severe food and water shortages. The lack of natural irrigation leads to the failure of fruit gardens and jhum cultivation, resulting in economic losses. Additionally, the scarcity of drinking water increases health risks and the time required to fetch water, while other disasters like lightning, hail, and landslides further disrupt lives and livelihoods.

2.3 Vulnerable sectors or groups (eg, agriculture, elderly population)

Serial	Ward No.	Vulnerable Sectors/ Groups
1	1	Agriculture, water, communication, resources
2	4	Agriculture, drinking water, communication, resources (livestock, gardens, electronics etc.)
3	9	Agriculture, water, resources (livestock, gardens, electronics etc.)

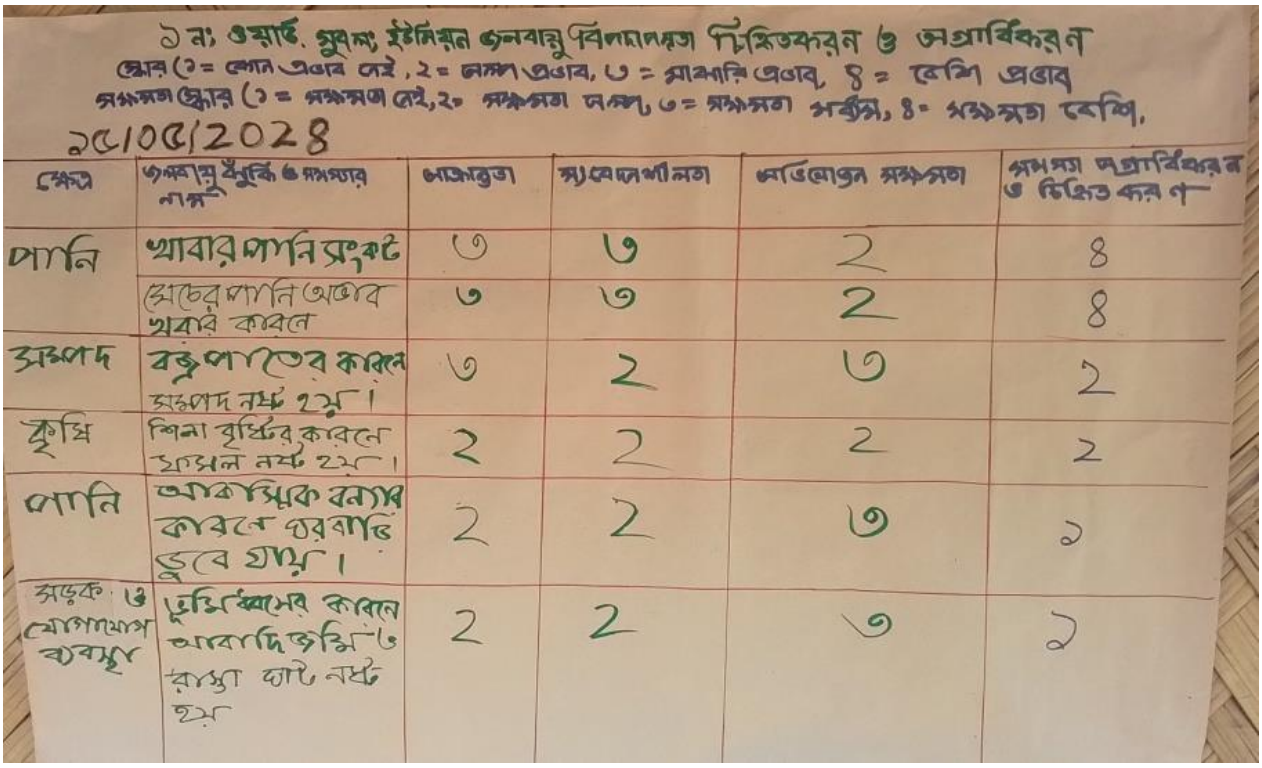
The sectors of the three mentioned wards are highly vulnerable to various threats. According to local residents, the drought caused by insufficient rainfall during the dry season leads to a severe shortage of food and irrigation water, exacerbating the crisis over time. These risks are interconnected: water scarcity hinders household chores and agriculture, leading to reduced crop yields and economic hardship. Additionally, many neighborhoods lack electricity, making them reliant on solar power, which, along with livestock, is vulnerable to lightning strikes. Flash floods and waterlogging from heavy rains further disrupt communication, submerge crops and roads, and negatively impact livelihoods.

2. 4 Assessment of existing adaptive capacity development and climate resilience:

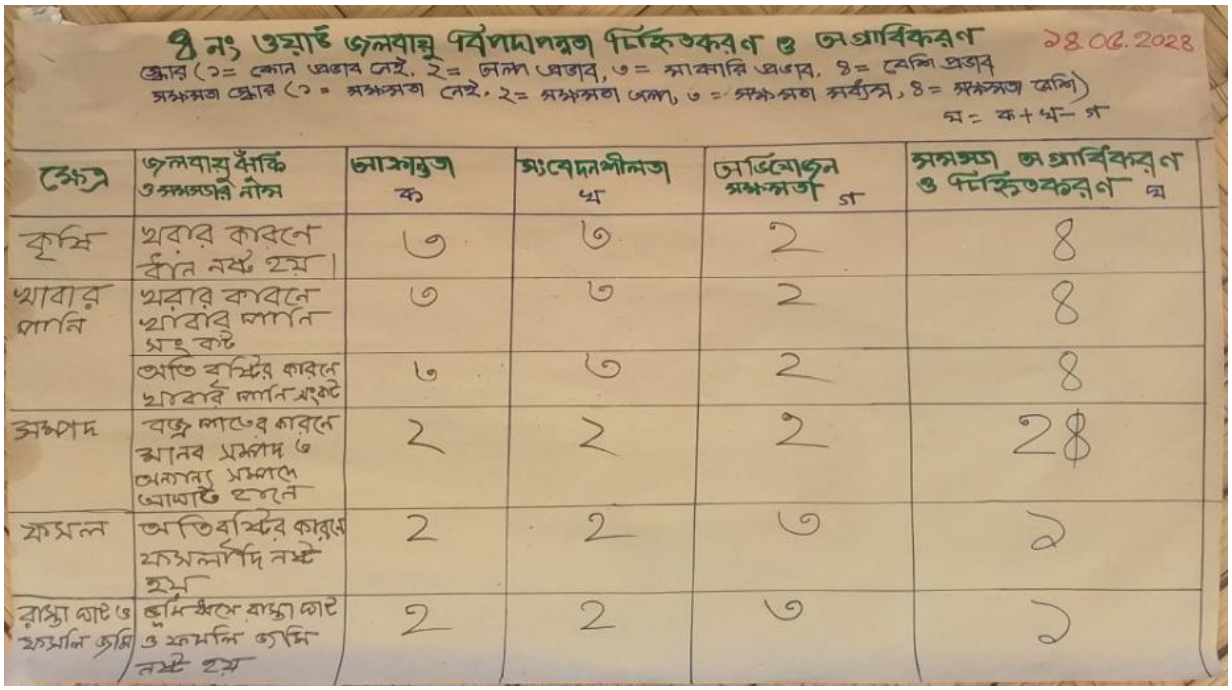
Serial	Ward No.	Identified Risk	Vulnerability	Sensitivity	Adaptive Capacity
1	1	Drought	Moderate	Moderate	Low
		Lightning	Moderate	Low	Moderate
		Hail	Low	Low	Low
		Flash flood	Low	Low	Moderate

		Landslide	Low	Low	Moderate
2	4	Drought	Moderate	Moderate	Low
		Lightning,	Low	Low	Low
		Heavy rain	Moderate	Moderate	Low
		Landslide	Low	Low	Moderate
3	9	Waterlogging	Moderate	Moderate	Moderate
		Drought	Moderate	Moderate	Moderate
		Cyclone	Low	Low	Moderate

When identifying and prioritizing climate vulnerabilities, the risks and challenges in any livelihood sector are assessed by considering three key criteria: exposure, sensitivity, and adaptive capacity. The priority value for a given problem is determined by subtracting the adaptive capacity from the combined values of exposure and sensitivity. This method helps to clearly identify which issues are most critical based on their vulnerability and the community's ability to adapt to those risks.Upon analyzing the climate vulnerability identification and prioritization map of Shubolong Union, it becomes evident that drought is the most destructive natural disaster. The data reveals that in all three wards, the vulnerability and sensitivity to drought are notably high, while the adaptive capacity is low, making drought the primary threat in this region. The agricultural population, along with those relying on water for daily use and drinking, show heightened vulnerability and sensitivity to drought, with very limited adaptive capacity. The hazard identification diagrams for the three wards are attached below:



Shubolong Union Climate Hazards Identification and Prioritization in Ward No. 1

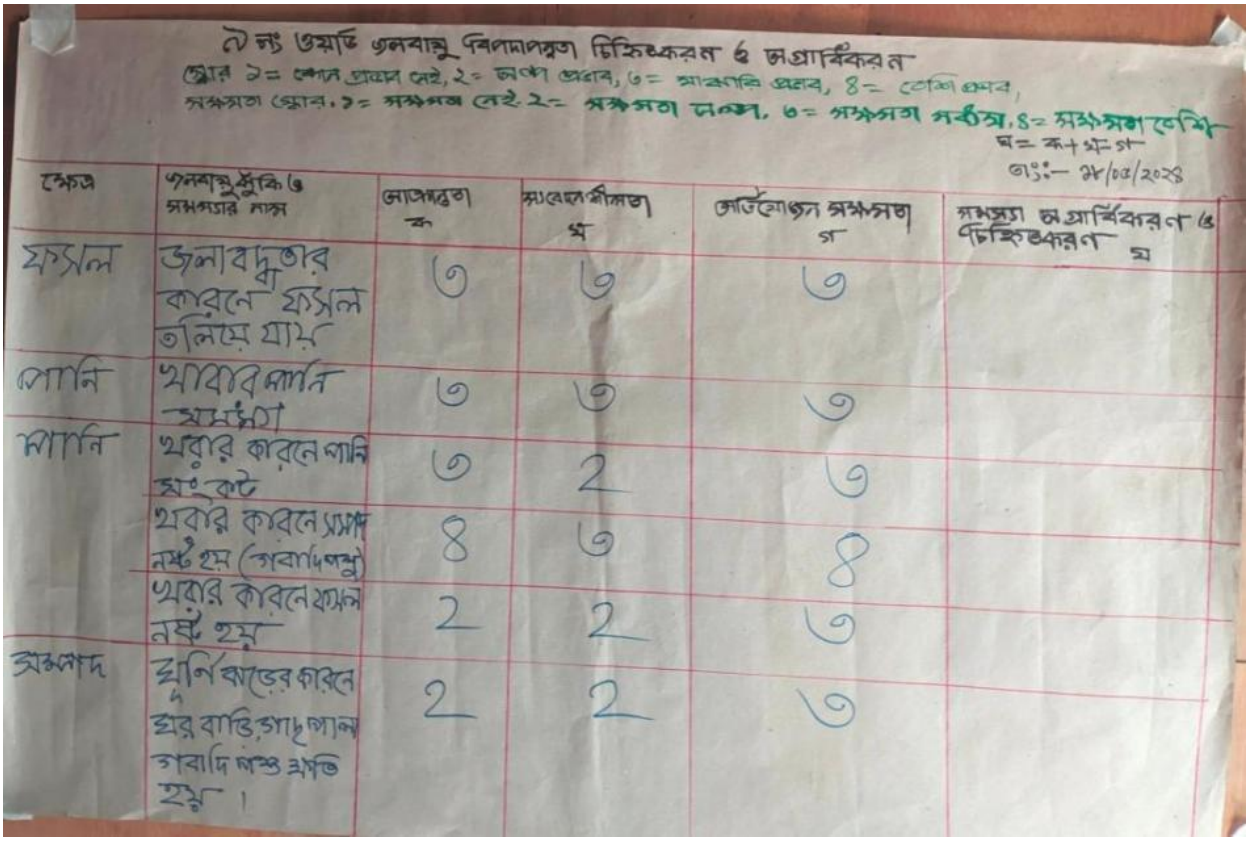


৪ নং ওয়ার্ড জলবায়ু বিপদাপন্নতা চিহ্নিতকরণ ও অগ্রাধিকরণ 28.06.2023

স্কোর (০= কোন প্রভাব নেই, ২= অল্প প্রভাব, ৩= মাঝারি প্রভাব, ৪= বেশি প্রভাব
সক্ষমতা স্কোর (০ = সক্ষমতা নেই, ২= সক্ষমতা অল্প, ৩ = সক্ষমতা মাঝারি, ৪= সক্ষমতা বেশি)
ঘ = ক + খ - গ

ক্ষেত্র	জলবায়ু ঝুঁকি ও সমস্যার নাম	সংবেদনশীলতা ক	সংবেদনশীলতা খ	অভিযোজন সক্ষমতা গ	সমস্যা অগ্রাধিকরণ ও চিহ্নিতকরণ ঘ
কৃষি	খরার কারণে ফসল নষ্ট হয়।	৩	৩	2	8
খাবার পানি	খরার কারণে খাবার পানি সংকট	৩	৩	2	8
	অতি বৃষ্টির কারণে খাবার পানি সংকট	৩	৩	2	8
সম্পদ	বজ্রপাতের কারণে মানব সম্পদ ও অন্যান্য সম্পদে আঘাত হানে	2	2	2	28
ফসল	অতিবৃষ্টির কারণে ফসলাদি নষ্ট হয়	2	2	৩	২
রাস্তা ঘাট ও ফসলি জমি	ভূমিধসে রাস্তা ঘাট ও ফসলি জমি নষ্ট হয়	2	2	৩	১

Shubolong Union Climate Hazards Identification and Prioritization in Ward No. 4



৯ নং ওয়ার্ড জলবায়ু বিপদাপন্নতা চিহ্নিতকরণ ও অগ্রাধিকরণ

স্কোর ০= কোন প্রভাব নেই, ২= অল্প প্রভাব, ৩= মাঝারি প্রভাব, ৪= বেশি প্রভাব,
সক্ষমতা স্কোর, ০= সক্ষমতা নেই ২= সক্ষমতা অল্প, ৩= সক্ষমতা মাঝারি, ৪= সক্ষমতা বেশি
ঘ = ক + খ - গ
তাং:- ২৮/০৫/২০২৩

ক্ষেত্র	জলবায়ু ঝুঁকি ও সমস্যার নাম	সংবেদনশীলতা ক	সংবেদনশীলতা খ	অভিযোজন সক্ষমতা গ	সমস্যা অগ্রাধিকরণ ও চিহ্নিতকরণ ঘ
ফসল	জলাবদ্ধতার কারণে ফসল তলিয়ে যায়	৩	৩	৩	
পানি	খাবার পানি সমস্যা	৩	৩	৩	
পানি	খরার কারণে পানি সংকট	৩	2	৩	
	খরার কারণে ফসল নষ্ট হয় (গবাদিপশু)	৪	৩	৪	
	খরার কারণে ফসল নষ্ট হয়	2	2	৩	
সম্পদ	ঘূর্ণিঝড়ের কারণে ঘর বাড়ি, গাছপালা গবাদি পশু ক্ষতি হয়।	2	2	৩	

Shubolong Union Climate Hazards Identification and Prioritization in Ward No. 9

2.5 Significant demographic characteristics of the assessed population (eg, source of income, access to resources):

Serial	Ward No.	Main occupation or source of income
1	1	Agricultural work, fishermen, shopkeepers, traders, day laborers, boat drivers, jobs and rearing of various types of domesticated animals and birds.
2	4	Agricultural work, fishermen, shopkeepers, traders, day laborers, boat drivers, jobs and rearing of various types of domesticated animals and birds.
3	9	Fishermen, agricultural work, fish, vegetable, seasonal crops business, day laborers, jobs and rearing of various types of domesticated animals and birds.

3. Proposed Actions or Recommendations at Ward Level:

Ward No.	Infrastructural improvements (eg flood protection systems, water management systems)	Community-based adaptation projects (eg afforestation, tex-agriculture, disaster risk reduction training)	Capacity building activities (eg workshops on alternative livelihoods)
1 No.	1) According to information from the Union Parishad of Ward No. 1, the villagers independently funded and installed a pipeline to bring water from Moner to Chapakia. 2) Due to the rocky terrain and elevated ridges in Chapakia, installing deep tube wells is not feasible, leaving river water as the only available source. 3) To safeguard against sudden floods, residents have constructed their homes on higher ground. 4) To minimize the risk of landslides, houses are being built on flat land.	1) Surrounding the ponds with trees and bamboos will help preserve them. 2) Teak trees should be avoided in this context. 3) To protect against lightning, trees known for their lightning protection properties, such as palm and banana trees should be planted.	• Fostering the growth of cottage industries. • Training in bamboo and cane work, as well as loincloth weaving. • Through the provision of skill development training. • Training in the care and management of domestic animals and poultry. • Training in mushroom cultivation techniques. • By providing instruction in various handicrafts.
4 No.	1)Ensuring a reliable water supply through the installation of deep tube wells.	1) Surrounding the ponds with trees and bamboo will help preserve them.	• Fostering the growth of cottage industries. • Training in bamboo and cane craftsmanship, as well as loincloth weaving. • By providing instruction in the care and management of domestic animals and poultry.
9 No.	1)Shelters with sanitation facilities 2)Availability of pump machine during drought 3)Availability of vaccines for livestock		• Fostering the growth of cottage industries. • Training in bamboo and cane craftsmanship, as well as loincloth weaving. • By providing instruction in the care and management of domestic animals and poultry.

4. Strategy for implementation of proposed recommendations at the Union level: (This discussion will include all union members, including representatives from the union's disaster management committee)

4.1 Actions undertaken by the Union Parishad through Local Government in accordance with the recommendations at the Ward level:

- Union Parishad's own initiative, Kabita (cash for work), is a forty-day program that provides seed and sapling incentives to flood victims.
- The implementation will involve collaboration between the local government department, LCD, the Ministry of Chittagong Hill Tracts, and both national and international non-governmental development donor organizations.

4.2 Proposed strategies by the Union Parishad for enhancing climate change resilience:

1. Promoting afforestation.
2. Conserving forests on hill slopes.
3. Implementing an official ban on teak plantations.
4. Initiating government projects to establish bamboo groves.
5. Preserving natural forests.
6. Prohibiting the killing of fish and crabs in ponds.
7. Preventing the cutting of hills.

4.3 Policy initiatives (e.g. mainstreaming climate adaptation into development planning):

Sl. No.	Sector and project location	Ward No.	Allocated Budget Amount	Remarks
1	Construction of irrigation canals in Shilchari agricultural land.	5		
2	Building paved drains on agricultural land in Maichhari village.	4		
3	Outstanding payments for the construction of paved irrigation canals in West Kadamtali.	5		
4	Providing training to farmers in Shubolong Union.			
5	Distributing saplings for afforestation efforts in Shubolong Union.			
6	Constructing passenger canopies and paved stairs in the college neighborhood.	1		
9	Construction of irrigation canals in Shilchari agricultural land.	9		
8	Building paved drains on agricultural land in Maichhari village.	3		
9	Outstanding payments for the construction of paved irrigation canals in West Kadamtali.			
10	Providing training to farmers in Shubolong Union.	5		

4.4 Allocation of resources for adaptation and mitigation measures: 3,026,900/- (Thirty Lakh Twenty Six Thousand Nine Hundred Taka only.)

4.5 Multi-stakeholder engagement in building climate resilience: Union Parishad members, Headmen, Karbari, Teachers, Line Department, Traders, Farmers and the general public.

4.6 Proposal for a monitoring and evaluation framework to assess the effectiveness of various measures:

Development actions and initiatives should be designed with sustainability in mind.

5. Conclusion: The impact of climate change is increasing the frequency and severity of natural disasters in Shubolong. Consequently, the socio-economic conditions of the local population and the extent of environmental damage are becoming increasingly apparent. Approximately 70% of residents in Shubolong Union are affected, both directly and indirectly, by these changes in socio-economic activities. Additionally, global climate change is diminishing the capacity to adapt to local impacts. Therefore, conducting a climate vulnerability assessment in the union is essential. A thorough climate risk assessment can uncover existing problems and provide targeted solutions.

6. Annexure

A summary of the disaster assessment results at the ward level, including the Disaster Map, Social Map, Disaster Inventory, and Annual Disaster Information Image.

Annexure – 1

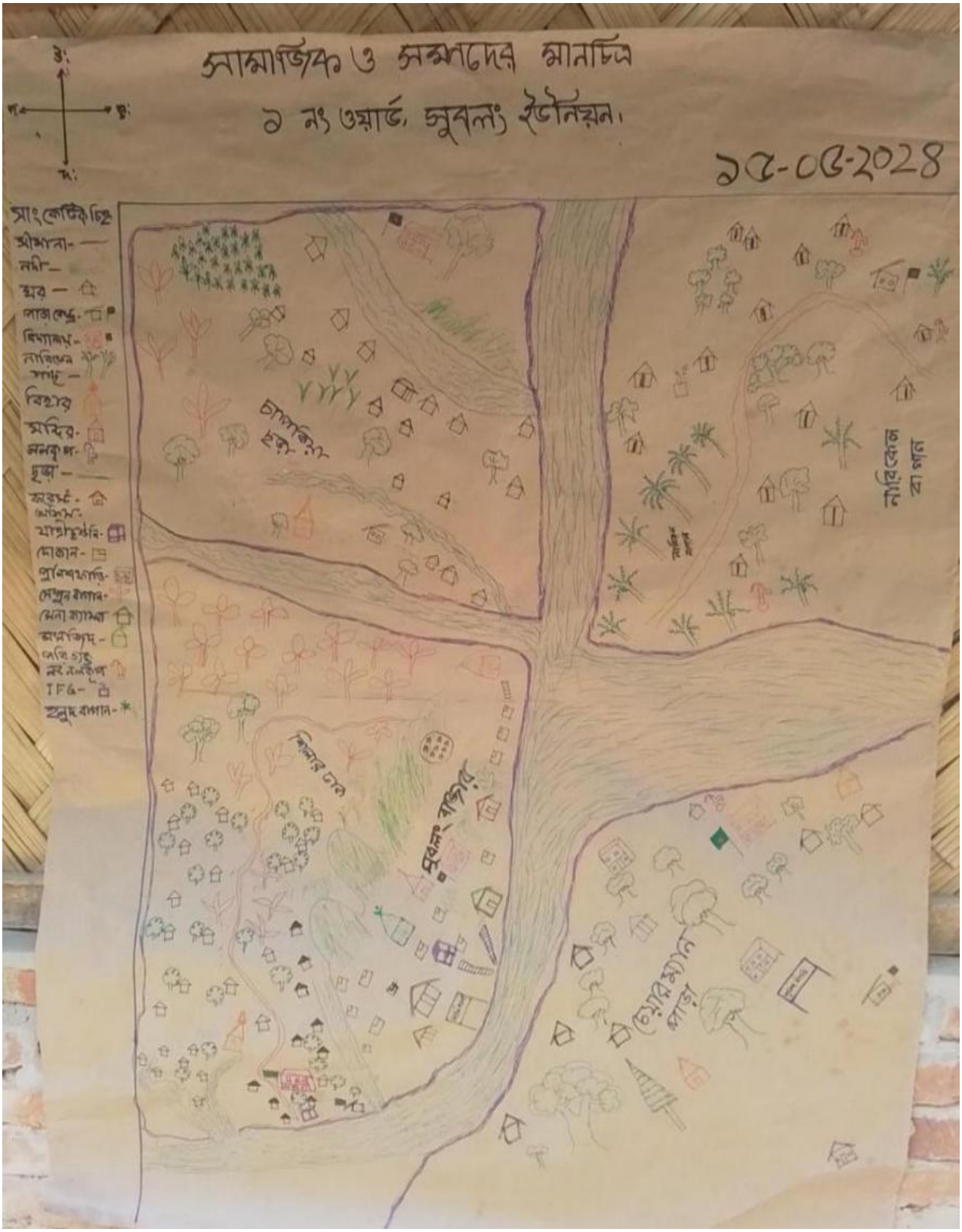


Figure 1 - Social, Natural Resource, and Livelihood Map of Ward No. 1

Annexure – 2

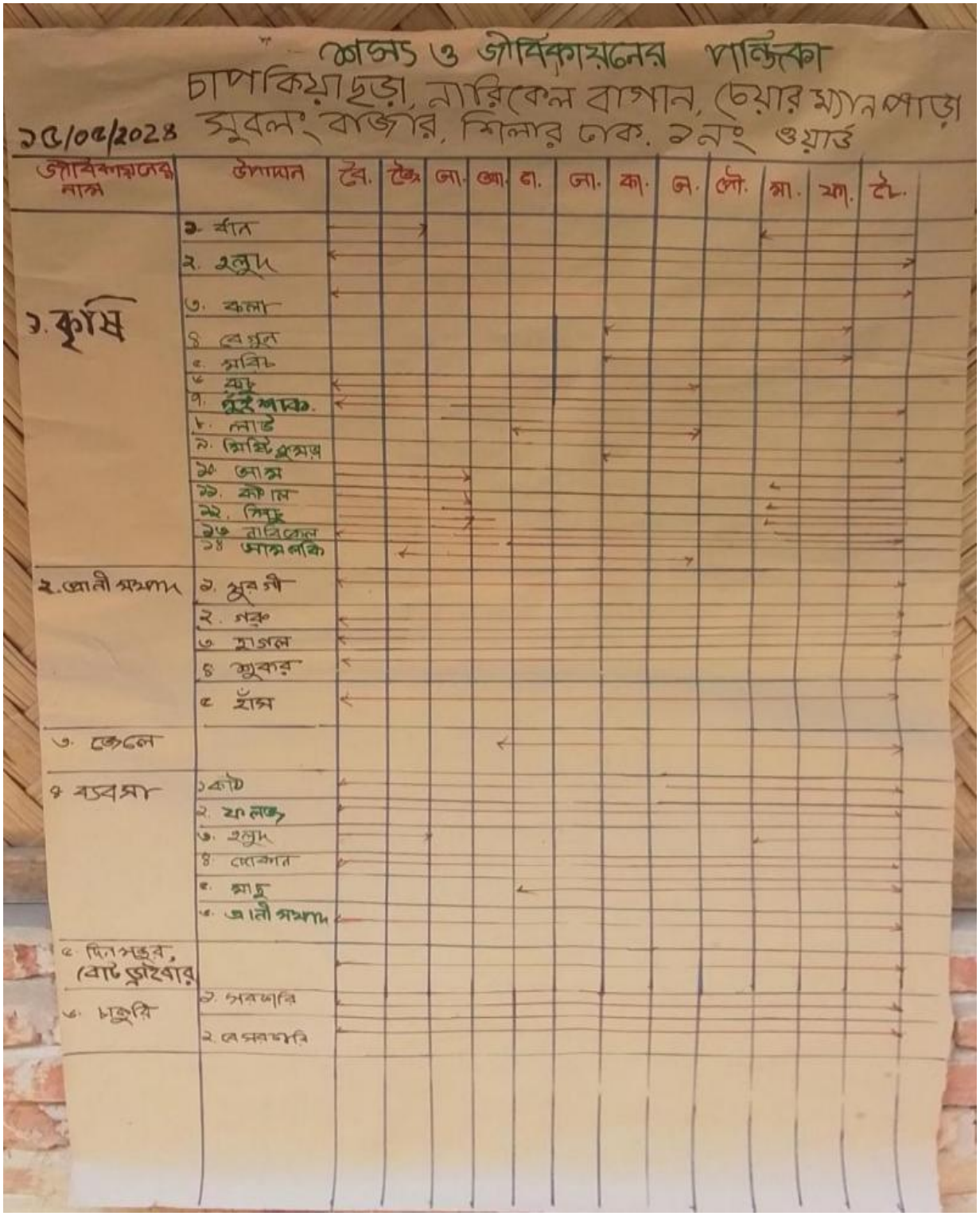


Figure 2 - Livelihood Map of the Area

Annexure – 3

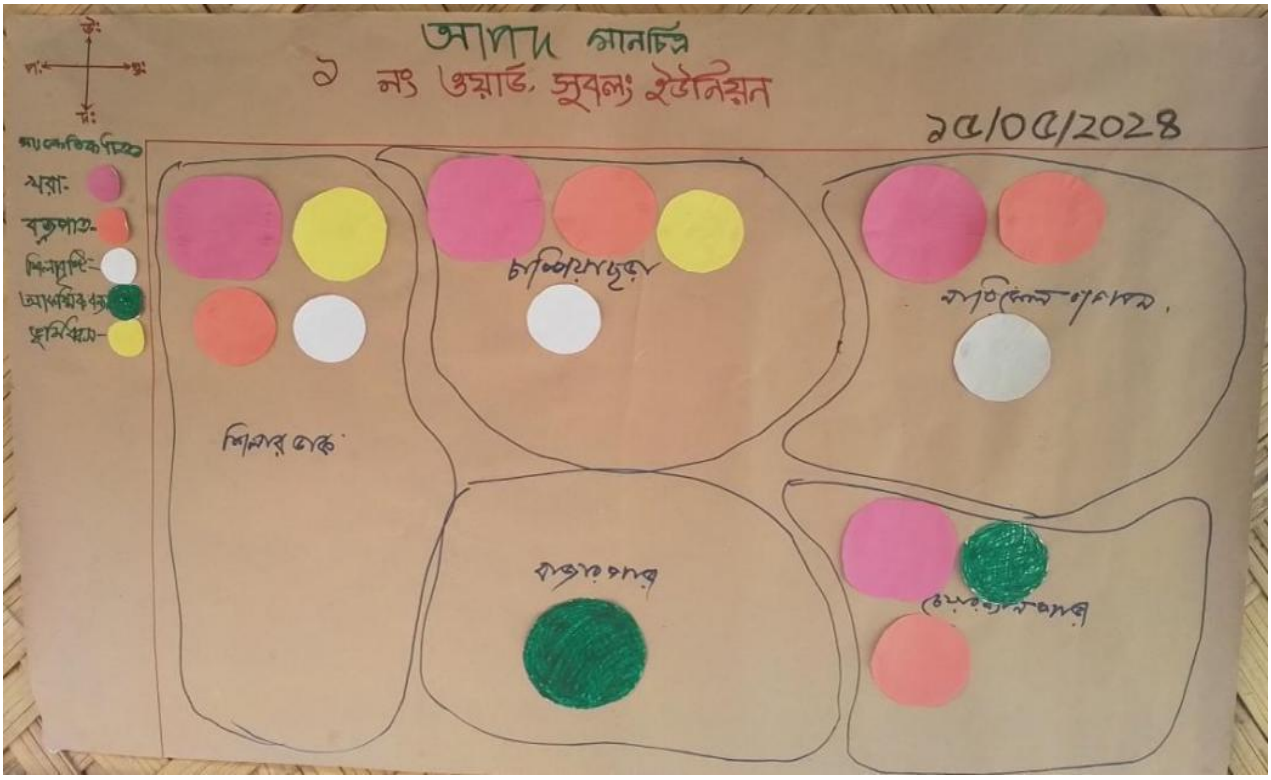


Figure 3 – Flood map of the area

Annexure – 4

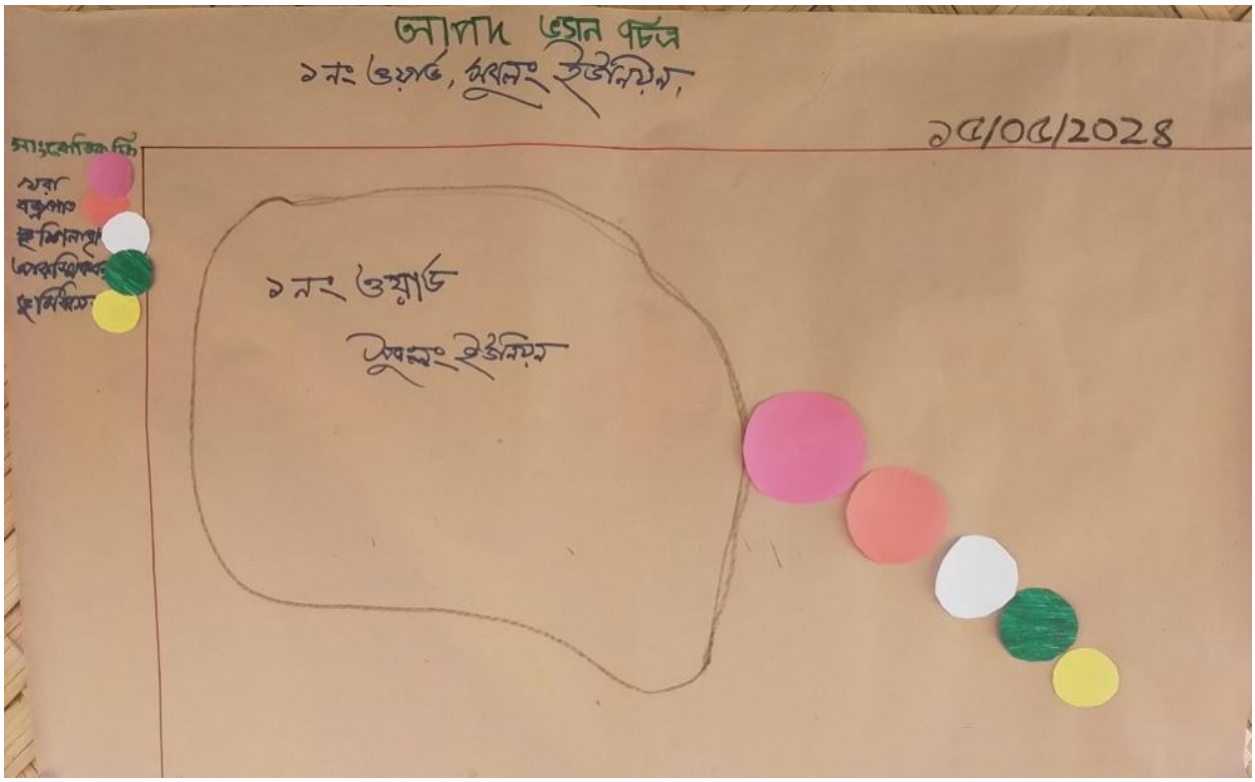


Figure 4- Venn diagram of the area

Annexure – 5

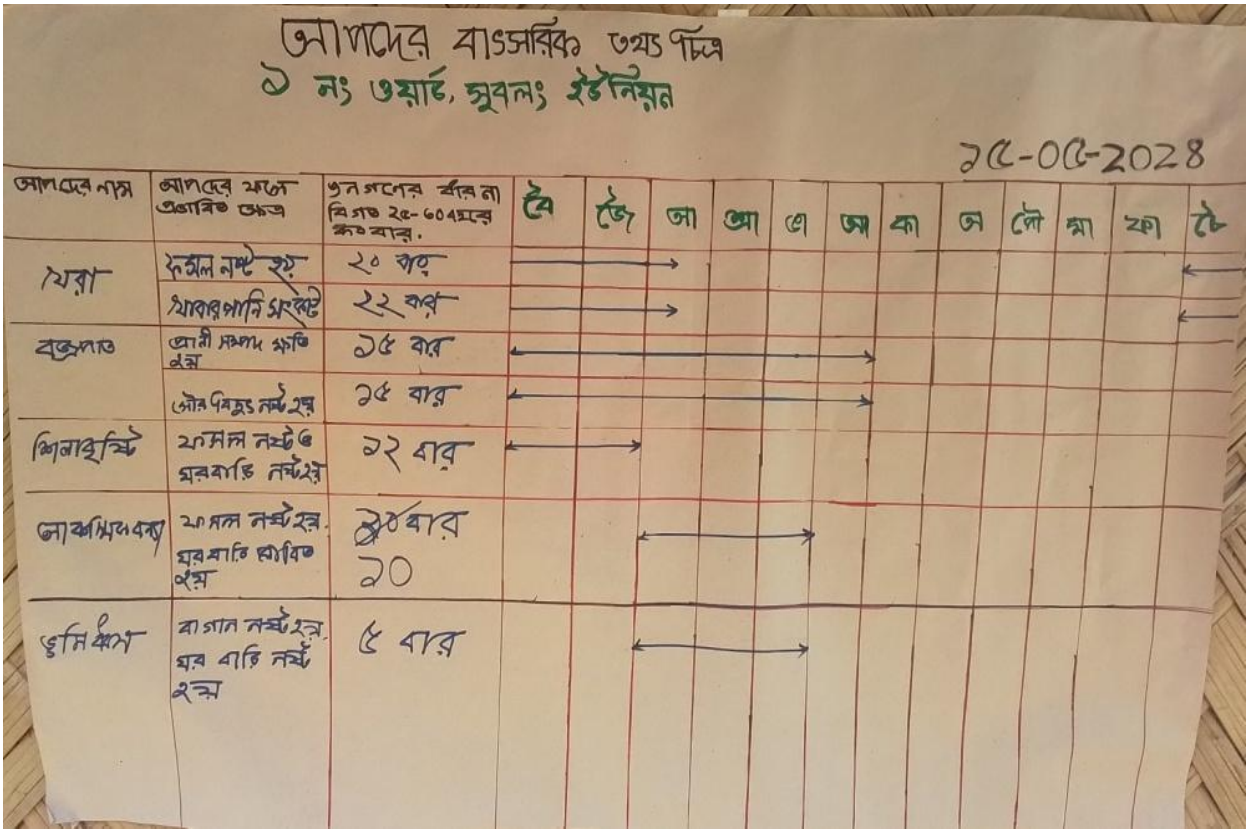


Figure 5- Annual Data Figure of Disaster in the area

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