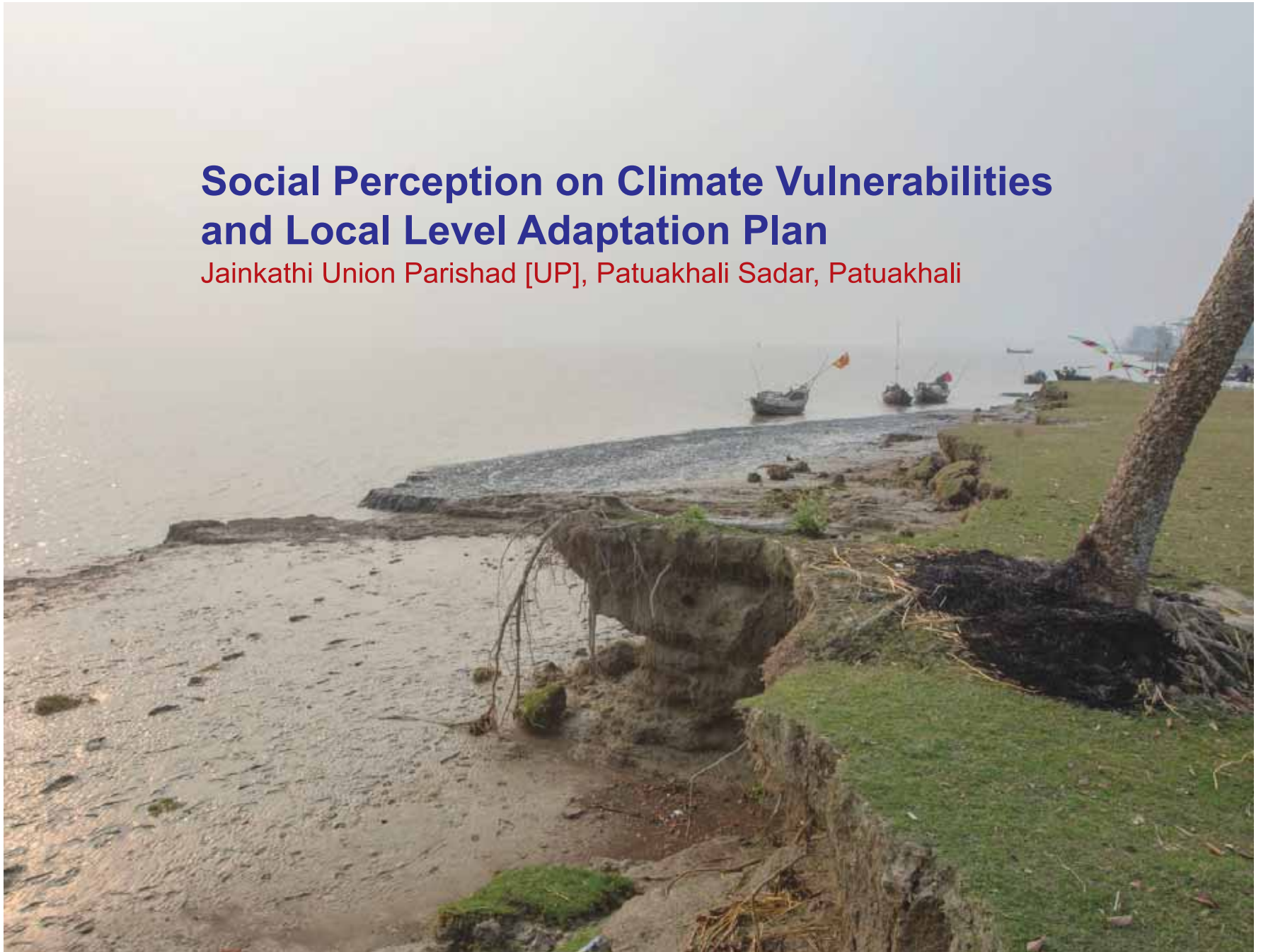


# **Social Perception on Climate Vulnerabilities and Local Level Adaptation Plan**

Jainkathi Union Parishad [UP], Patuakhali Sadar, Patuakhali



## *Social Perception on Climate Vulnerabilities and Local Level Adaptation Plan*

### **Drafting Panel:**

- Information and Data Collection : **Pintu Biswas**  
District Team Leader, CFTM Project, Patuakhali
- Sohel Mahamud**  
Programme Officer, CFTM Project, Patuakhali
- Report Drafted : **Md. Abul Hasan**  
Programme Head, COAST Foundation
- Translated : **Md. Zahidul Islam**  
Head-MEAL & Social Development, COAST Foundation
- Editing Panel : **Syed Aminul Hoque**  
Director- M&E and IA, COAST Foundation
- : **Rezaul Karim Chowdhury**  
Executive Director, COAST Foundation
- Cover Photo : **Din M. Shibly**
- Back Cover Photo : **Jainkathi Union Parishad, Patuakhali**
- Designed & Printed : **Jahangir Printers & Papers Supplier, Dhaka**
- Disclaimer: : On behalf of Jainkathi union of Patuakhali Sadar Upazila under Patuakhali District, this vulnerability assessment report is prepared and printed by the COAST Foundation. It is funded by PROKAS, British Council. This report is prepared based on the perception of the community people of Jainkathi union. So, the opinions, findings and future actions stated herein are those of the authors and do not necessarily reflect those of the funding partner.
- Published : **October 2021**
- Communication : **COAST Foundation Principal Office**  
Metro Melody (1st Floor), House# 13, Road# 2,  
Shyamoli, Dhaka 1207, Bangladesh.  
Email: info@coastbd.net ; web: www.coastbd.net  
Tel: (+88 02) 58150082/ 58152821/ 8152790/ 48113744/ 58152555

## Table of Contents

---

<b>1. Introduction</b>	<b>1-2</b>
a. Context: Global warming, Climate Change and Bangladesh	
b. Impact on Livelihood and Economy of Bangladesh	
c. Adaption Initiatives in Bangladesh	
d. Why Local Adaptation plan is required	
<b>2. Objective of this vulnerability assessment and adaptation planning</b>	<b>2-3</b>
<b>3. Methodologies are followed for this assessment</b>	<b>3-5</b>
a. Collect basic information of selected UP	
b. Desk study and analysis different reports and documents	
c. Field visit and community sharing	
d. Interview with different stakeholder	
e. Conducte Inception Workshop and signed MoU	
f. Conduct ward level climate vulnerability and need assessment meeting	
g. Conduct Focus Group Discussion (FGD)	
h. Limitation of this assessment	
<b>4. Geographical and Socio-economic status of Jainkhati Union</b>	<b>5-10</b>
a. Geographical location,natural structure and boundaries	
b. Population of Jainkhati union and its structural distribution	
c. Economic Scenario: Major economic activities, and sources of income of the UP	
d. Education, Health and Sanitation	
e. Transportation and connectivity	
f. Social Infrastructure and Comunication	
g. Natural resource ecosystem [natural wetlands, forests, etc.]	
<b>5. Risks of climate change and its impact on livelihoods</b>	<b>10-14</b>
a. Natural Disasters [Analysis on the History and Damages during Last 10 Years]	
b. Artificial or man-made crises	
c. Embankment Management and its Problems	

## Table of Contents

---

<b>6. Climate Adaptive plan: A development determinative for this UP</b>	<b>14-18</b>
a. Adaptation planning for Jainkhathi union: what changes may create	
b. Construction of sustainable embankments will protect the life and livelihood of communities	
c. Canal re-excavation program to ensure adequate irrigation facilities	
d. Improving drainage system by constructing drains and culverts to reduce waterlogging of the land	
e. Construction of shelters and Killa considering disaster risk and protect communities	
f. Extension of rainwater harvesting system will minimize the shortage of water	
g. Extension social forestry to reduce land erosion and global warming	
h. Expansion of climate-adaptive technology to reduce losses in agriculture and fisheries production, increase efficiency as well as provide loans on easy terms	
i. Creating alternative employment opportunities through skill development in the socio-economic development of the disadvantaged and backward communities	
<b>7. Adaptation planning; Issues may get the priority</b>	<b>18-19</b>
<b>8. Adaptation plan and financial projection-at a glance of Jainkhathi UP</b>	<b>19-31</b>
<b>9. Budget for the current fiscal year</b>	<b>32</b>
<b>Annexure-1: Development Plan and Annual Budget Book</b>	<b>33-36</b>
<b>Annexure-2: Focus Group Discussion [FGD] Report</b>	<b>37-41</b>



## 1. Introduction

### a. Context: Global Warming, Climate Change and Bangladesh

Our global climate has been warming due to excessive Green House Gases [GHG]. The Intergovernmental Panel on Climate Change [IPCC] has warned to increase temperature up to 1.8 C to 4.0 C by the end of 21st century if such trend continue.

Meantime the Sixth Assessment Report of IPCC is already published where scientists have claimed that unequivocal human influence has warmed the atmosphere, land, and ocean. They also expressed their concern, the global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO<sub>2</sub>) and other greenhouse gas emissions occur in the coming decades<sup>1</sup>.

The negative impacts of global warming and climate change will be varied on a regional basis and all countries will be sufferers. Bangladesh is one of them continuously facing the adverse impact of changing climate despite having a very less contribution to GHG emission. Bangladesh might face 1.5 degrees warmer and 04 percent wetter by 2050 [World Bank assessment]. This resulted to increase and exacerbate the existing climatic risks and impact to increase sea-level rise with salinity intrusion, inundation of land from flooding, and storm surges in coastal areas. The prediction already manifested and the country is becoming vulnerable gradually due to the increasing trend and intensification of natural calamities like cyclones, sea-level rise, salinity, and river erosion, etc. The global climate risk index 2021 [German Watch report] has ranked Bangladesh as 5th position among the top ten vulnerable countries in the world.

### b. Impact on Livelihood and Economy of Bangladesh

Monsoon flood inundated over two-thirds of Bangladesh and resulted in damages and losses of over \$2 billion, or 4.8 percent of GDP [Economics of Adaptation to Climate change, Bangladesh]. The losses are split among agriculture, infrastructure, industry, and commerce. Evidence has shown that the “Cyclone Sidr” resulted in damages and losses of \$1.7 billion, or 2.6 percent of GDP in 2007 [UNDP Assessment and early recovery plan 2008]. Apart from a common assessment to loss around 1.5-2.0% of GDP every year in Bangladesh due to climate change and extreme weather events.

The government continuously effort to attain her sustainability to food production and ensure food security. Bangladesh is already overburdened with high population and it's projected to be 260 million by 2050. The slow onset negative impact of climate change especially saline water intrusion into aquifers, groundwater and land submergence have been damaged and livelihoods of the rural poor living in low-lying coastal areas. The IPCC predicts that by 2050, Bangladesh is on course to lose 17 percent of its land and 30 percent of its food Production<sup>2</sup>.

Displacement of population is one of the critical negative impacts of climate change in Bangladesh. The country has been suffering mostly due to river erosion, coastal inundation, and salinity intrusion with chronic water logging in coastal areas. Every year around 700 thousand people are internally being displaced and migrated where most of people are climate displaced. The latest report IDMC [Internal Displacement Monitoring Center report 2020] stated approximately 4.4 million displaced temporarily due to natural calamities where most of them from coastal areas and many of them might be displaced permanently.



River erosion is a cause being displaced of people from their local areas. Photo Credit: Din M. Shibby

This has been creating pressure on urbanization and its management and the government must have to take additional responsibility to manage these migrated populations.

1. IPCC-AR6, WGI: Headline Statements from the SPM [Summary for Policymakers] also see at: <https://www.ipcc.ch/report/ar6/wg1/#SPM>

2. Climate Financing for Sustainable Development: Budget Report 2021-22. Ministry of Finance, GoB.

### c. Adaption Initiatives in Bangladesh

To fight and adaptation to climate change impact and its negative phenomenon, Bangladesh has drafted her first national strategic plan “BCCSAP 2009” [Bangladesh Climate change Strategy and Action Plan 2009]. The BCCSAP was a knowledge-based document with a 10-year action plan to build capacity and resilience over the next 20-25 years under six thematic areas for action like; (i) food security, social protection, and health; (ii) comprehensive disaster management; (iii) infrastructural development; (iv) research and knowledge management; (v) mitigation and low-carbon development; and (vi) capacity building and institutional strengthening. Government and her ministries & development authorities still have been following the above thematic areas to develop their climate change plan and financing.

Bangladesh has also developed a Climate Fiscal Framework [CFF] in 2014 with its objectives to track and mobilize necessary resources from national and international sources for climate change action in a systematic manner. Following this framework, the government has included 25 ministries under the climate financing mechanism and allocating funds from the national budget [around 7-8%] since 2015. e.g., the government has allocated US\$ 2960 million as climate finance for the fiscal year 2021-2022, which is around 7.6% of the total national budget<sup>3</sup>.

To achieve poverty reduction with climate-resilient in long term perspectives, the government has developed “Delta Plan 2100” [Bangladesh Delta Plan 2100] for sustainable management of the environment, ecology, land, and water resources. Delta plan has estimated an investment of US\$37 billion by 2030, where most of the funds are planned to invest in coastal areas. Bangladesh as her latest initiative is going to develop the NAP [National Adaptation Plan] document. This plan will support and capacitated the government to assess climate vulnerabilities, adaptation requirement with identifying priorities for investment and lead toward an appropriate direction in financing strategies to fight with adverse impacts of climate change in Bangladesh. The NAP will be used as a facilitative document for resource mobilization in both the national and global level also.

### d. Why Local Adaptation plan is required

This has been assuming that micro-macro linkage is very essential in the perspective of government planning and its local level implementation.

As our government planning process is top-down and we are experienced that plan is hardly being addressed the local problem and their effective solution based on their local context. We have tried to link local-level planning systems with government existing development strategies. The government has started climate planning since 2015, where local government [Here call “Union Parishad-UP” a lower-level administrative tire of government] don't have such exercise yet and is somehow unable to align their traditional development planning process with the latest government strategies. So that, a local climate-adaptive development plan is needed to develop that could make an alignment with the existing government's long-term climate-resilient plan and with her financing strategies.

Realizing the above perception, we have identified and selected a local government unit [Name: Jainkathi UP] in the Patuakhali district. This UP is situated in an extreme disaster-prone coastal area and treated as most vulnerable due to facing all sorts of climatic impacts like cyclones, tidal surges & river erosion, and salinity impact etc. This capacity building initiates for “Local government adaptation planning” is a piloting and action research activity that will support and capacitated local government units [respective UPs] to assess their climate vulnerabilities and developing the adaption plan in long term accordingly.

### 2. Objective of this vulnerability assessment and adaptation planning

a. The process of vulnerability assessment will ensure local community participation that will support local communities to enhance their conceptual understanding of climate change and its associated impacts those are occurring in the selected areas. Based on the communities' interaction and sharing their empirical learning, the process will identify & assess climate impact realities at the ground level, understating their adaptation requirement in the present and future perspective and try to way out their resilient opportunities.

b. Institutional knowledge will be enhanced as the selected-UP officials and their political representatives have participated in the whole process of vulnerability assessment, plan and budgeting .

3. Climate Finance for Sustainable Development: Govt. budget report 2021-2022. Also see at: <https://mof.portal.gov.bd/site/page/a9e79828-cef8-4920-97b5-c65ba4134605>

This vulnerability assessment and its conceptual understanding process will support them to separate climate adaptive development activities from existing traditional exercise on development planning. Thus, they will be able to make their plan more climate-adaptive addressing the local requirement and align with national climate financing strategie

c. The selected UP will develop a long-term five-year climate adaptation-plan based on their vulnerability assessment report. This report will create a systematic advantage for UPs to lobby & advocacy with local government authorities, NGOs, and private sectors to get climate finance. As local government departments or authorities have been dealing with government climate finance through the national budgeting process. So that the five-year planning document will build up UP's capacity and facilitate opportunities to direct access to the national climate finance mechanism.

### 3. Methodologies are followed for this assessment

#### a. Collect basic information of selected UP

To gain primary knowledge and understanding, the assessment team has collected basic information about Jainkathi UP. The assessment team has developed a comprehensive data collection format and has collected necessary information followed by a questionnaire method with respective UP officials and representatives.

Apart, the team has collected different documents, records, and necessary information especially on UP's geographic location, population & poverty, social and economic infrastructures & activities, previous and ongoing development plan & budget documents, and implementation mechanism, etc. The team has studied and tried to assess the origin and authenticity of the information through sharing and taken their opinion with respective UP officials [chairman, members, and UP secretary].

#### b. Desk study and analysis different reports and documents

The team has collected and studied some reports and documents especially Civil Society opinion & comments on the IPCC reports, German Watch, IDMC latest report on climate risk & vulnerabilities in Bangladesh. The team also went through the country's long term climate change strategic documents like BCCSAP 2009, CPEIR [Climate Public Expenditure Institutional Review, Bangladesh 2012], Bangladesh Climate

Fiscal Framework 2014, World Bank report on Economic adaptation to climate change, government national budget on climate finance and climate budget report, etc. The objectives to study these reports are to have knowledge and understanding on what national and international views on climate vulnerabilities, their impact and future intensification in the case of Bangladesh and how the country has been addressing the issues strategically through planning and financial context. Through this desk study, the assessment team has synthesis the learning and tried to link and align with the existing climate realities being happened in the gound level.

#### c. Field visit and community sharing

The team has completed a nine-day field visit in the selected Union Parishad. These field visits are included to overall transaction walk throughout the UP and covering its nine administrative areas [here area is called as "Ward" and a UP is divided into nine small administrative Wards] and community sharing on the issue of livelihood, climate change, and adaptation, etc. Through the field visit, the assessment team has observed the community livelihood practices, economic & social conditions, impact of climate change phenomenon, and local adaptation exercise. The team has discussed with different levels of communities' stakeholders on the basic information those have collected from UP and other different sources and shared their empirical learning on livelihood practices in the context of climate change.

#### d. Interview with different stakeholder

One of the methods of climate vulnerability assessment was to conduct direct interviews with government and private officials at different levels to verify the accuracy of the data provided by the Union Parishad and the local people. In this process, we interviewed the Deputy Assistant Agriculture Officer, Upazila Agriculture Extension Officer, Upazila Livestock, and Fisheries Office, NGO representative and local journalists etc. Apart, we have reviewed the existing impact of climate change on irrigation and agriculture, the current scenarion of erosion, and the demands and financial projections provided by the Union Parishad and local communities to enhance adaptive capacity to address future climate change. We have also interviewed the Upazila Engineer and Water Development Board [WDB] official on coastal protection issues including construction of existing physical infrastructure such as roads, culverts, embankments, switch gates, cyclone shelters/killia [a high place filled by

earth]. Through these interviews, the team reviewed the local demand and financial projections on climate risk mitigation and disaster risk reduction based on the information provided by the Union Parishad and the local population.

#### e. Conduct Inception Workshop and signed MoU

We have organized a day-long workshop with the participation of all the UP members, secretary, and chairman of the Union Parishad in order to analyzing the climate vulnerabilities of Jainkathi Union and formulating a five-year climate adaptation plan. In this workshop, we presented our objectives, requirements, and rationale of such vulnerability assessment and adaptation plan. The workshop has done a discourse on the issue of climate finance concept, government national budgeting process, difference between general and climate budget planning strategy and national and international climate financing mechanism. Workshop has finalized the procedures and detailed plans on vulnerability assessment activities based on the consensus of all. A Memorandum of Understanding (MoU) was also signed between the Jainkathi Union Parishad and the COAST-CFTM Project to implement the objectives and define their responsibilities based on mutual cooperation.

#### f. Conduct ward level climate vulnerability and need assessment meeting

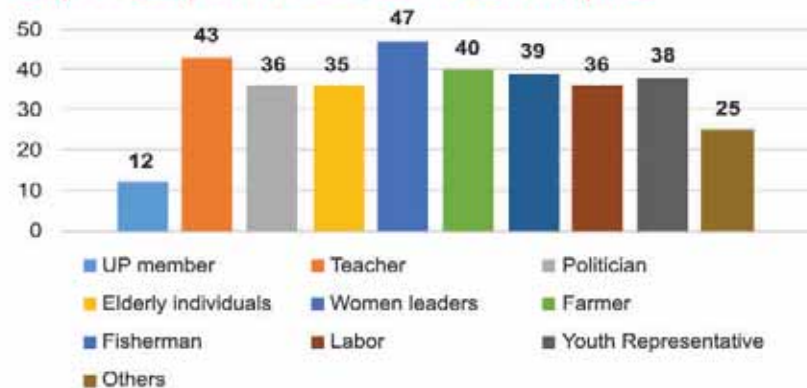
The team has conducted nine ward level meeting in the selected UP. Main objective is to assess the climate vulnerabilities and the adaptation requirement in present and future perspective. The team has conducted meeting directly with participation of respective UP members and some of selected social leaders those experience on current development issues. The UP members currently responsible for all sort of development planning of his respective ward and has vast experience and knowledge following climate adaptation. He has given to the team a detail information on existing problems and the development requirements of present and in future. The team has documented all the information and assessed a financial estimation also for the present and future context. These information provided by the member also validated through FGD and interview with different government stakeholders.

#### g. Conduct Focus Group Discussion (FGD)

The team has conduct the FGDs [Focus Group Discussions to validated

the quality of information and climate adaptive development requirements those come from the ward-level meeting with respective UP

**Graph-1: Comparative Numbers of FGD Participants**



members. A total of 19 FGDs have been conducted in nine wards of Jainkathi Union parishad. A total of 341 participants where UP members, teachers, local political & social activist , elderly people, women leaders, laborers, and youth representatives have participated in these events. The team has developed a structured questionnaire to analyze, validation and views of the local communities on the ward level assessment. The questionnaire was developed focusing on the climate change impacts on natural disasters and climate hazards, socio-economic condition, agriculture and irrigation, health, drinking water management, transportation, & physical infrastructure and disaster risk reduction like Shelters/Killa repairs, etc. the communities have provided their views and opinion accordingly.

#### h. Limitation of this assessment

a. The assessment team has faced some limitations on the availability of basic information of selected UP while visited. The selected Union Parishad somehow lack of documentation, especially previous cyclone & disaster record and their loss and damages, natural water system like river erosion & seasonal waterlogging & agricultural damage, groundwater condition, salinity trend, etc. In such conditions, the assessment team has communicated with different local government officials where necessary and have collected data on these issues. The team has also discussed



these data with UP officials & representatives and local communities and tried to come up with a common consensus.

b. The assessment team has been observed that community participation in FGDs [Focus Group Discussion] was somehow not much spontaneous that was expected. This was happened due to lack of communities' perception of climate change-specific issues, that's why the FGDs were time-consuming and had to elaborate the issues to make more easier for understanding. The team has got their livelihood experiences and cross checking with climate science and tried to draw out the inferences based on the real scenarios.

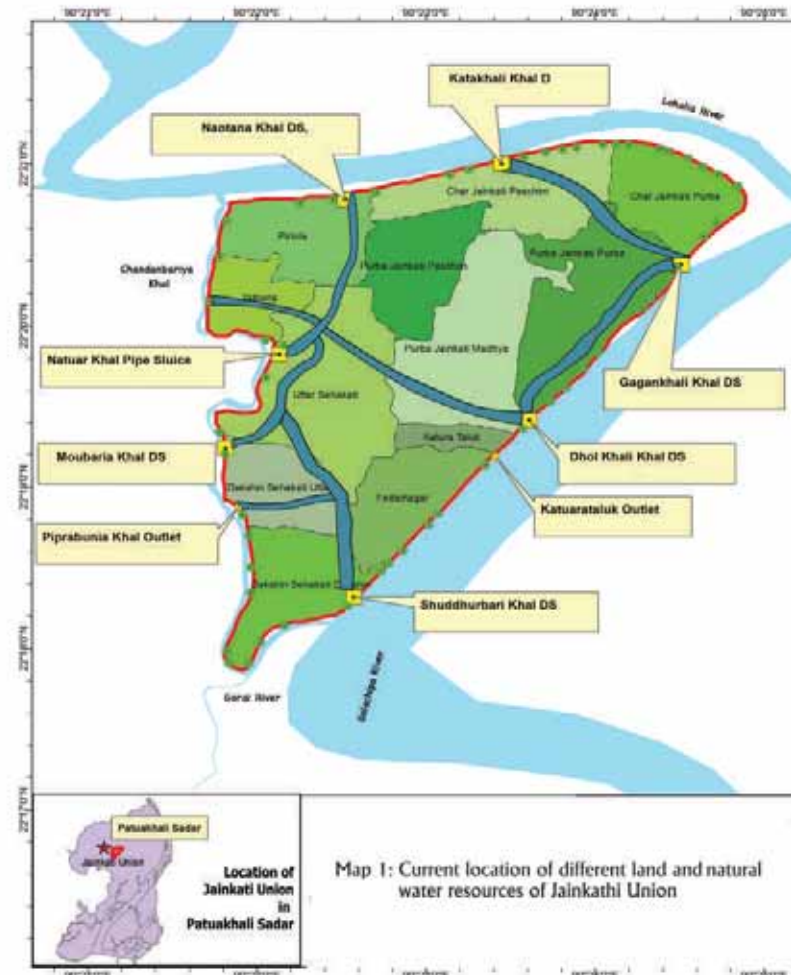
c. The team observed an escaping tendency among a few government agencies and officials to provide the information or sometimes exacerbating it while it comes into the question of justification and the lens of responsibility or accountability. In such cases, the assessment team repeatedly communicate with government officials for accurate information and tried to cross-check on the available information through a direct field visit on the related spots and taking opinions from the community, UP officials & representatives.

d. Despite using many scientific references in the assessment report especially in it's preamble and justification note, we couldn't use these and were unable to relate or exercise any scientific model while the vulnerabilities assessment is done at the local level. The team just has used the primary information available at the local level and tried to relate to national-level assumptions, forecasting & predictions, etc. Apart the team has tried to synthesize these assumptions on local climate vulnerabilities through sharing with communities and their empirical learning on fighting against climate change and adaptation practices. That's why we called this vulnerability assessment and climate adaptation plan as "Social Perception on Climate Vulnerabilities and Local Level Adaptation Plan".

#### 4. Geographical and Socio-economic status of Jainkathi union

##### a. Geographical location, land structure and boundaries

The total area of Jainkathi Union is 20.72 sq. km. which located about 3.5 km from the district town. The union is bounded on the north by the Lohalia river, on the east by Dharandi river, on the south by Sehakathi Bharani canal, on the west by Kalikapur and Patuakhali municipality.



Map 1: Current location of different land and natural water resources of Jainkathi Union

It has five mouzas<sup>4</sup> [Keshabpur, East Jainkathi, Char Jainkathi, Fedainagar, and Sehakathi] and eleven number of villages [Chamta, Keshabpur, Thengai, Bhagirabad, Talbaria, Pirtala, East Jainkathi, Charjainkathi, Fedai

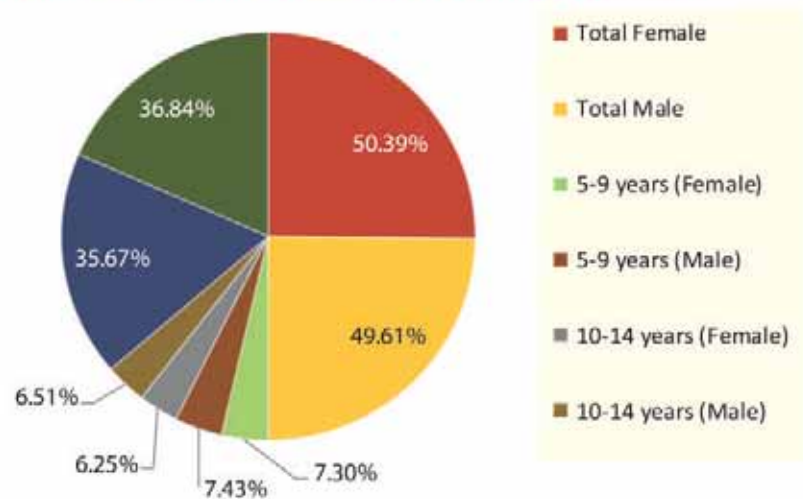
4. The word "Mouza" is official terminology which is being used as geographical landmark by the local land management office.

Nagar, and North Seahakathij]. Nine main rivers and canals are flowing as crisscrossed over Jainkathi Union. These are named as; Chandanbaria canal, Lohalia river, Bhuria/Gorai river, Bharani canal Keshabpur river, Thengai river, Kamalapur river, Chorabali river, and Katakhal river. From all these rivers and canals many small canals have flowed inwards like the Fultala canal, Nautana canal, Charabunia canal, Gagankhali canal, Sudurbaria canal, Piprabunia canal, Moubaria canal, Nala canal, etc.

### b. Population of Jainkathi Union and its structural distribution:

According to the household census 2011, there are 3,786 households are identified in five mouzas of Jainkathi union and the total population is 17514. Among these population there are 8825 are female and 8689 are male.

Graph-2 : Compative Scenario of Age-based Population



The analysis of age structure is shows that the total population aged between 5-9 years is 2579 where 1778 are female and 1301 are male. The total population aged between 10-14 years is 2236 where 1141 are female and 1095 are male, the total population above 18 years is

12799 where 6452 female and 6247 males. The population per household is about 4.6 number. The population density per square kilometer is about 846 people. About 98% of the total population are followers of Islam and the remaining 2% are followers of Hinduism. There are no followers of any other religion in the Jainkathi Union. According to the information provided by the local people and the Union Parishad, the population has increased during last 10 years. At present, the total number of households in the Union is about 4578 and the total population is about 29276 where 14980 are female and 14296 are male. Following this calculation, among the total population, 51.17% are female and 48.83% are male. Percentage of the population per household is more than 6 people whereas the current population density is about 1010 people per square kilometer.

### c. Economic Scenario: Major economic activities, and sources of income of the UP Communities

According to the Union Parishad and the Department of Agricultural Extension, the Union's economy is largely dependent on agriculture, with about 80% of the people's livelihoods, directly and indirectly, involved in the agriculture. The main agriculture crops are rice cultivation where Aush, Aman, Ropa Aman, and Boro rice are cultivated here regularly. Apart watermelon, potato, cucumber, onion, garlic, sesame, etc. are produce as seasonal basis. There are no commercial fish culture found in Jainkathi Union, but some small-scale fish farmers who culture fishes in private ponds. There are fishing communities living in the UP and they are mainly fishing in the rivers and seas. About 10% are associated with this fishing profession. Study observe that around 4% are direct day laborers, 2% are rickshaw, van, and auto drivers, 2% are engaged in small businesses such as small grocers, tea stall, betel nut, vegetable sellers, peddlers, etc. Apart, more than 2% of the total population are involved in other professions that include laundry, barber, masonry, carpentry, etc. According to the sources of the local agriculture department, the total number of farming families in Jainkathi Union is about 3200. The total land area is 2030 hectares where the total cultivable lands are 1780 hectares, and the total barren lands are 250 hectares. The table shows that there are around 259.7 hectares land is single cropping, 1258.45 hectares as double cropping and only 261.85 hectares are found as multicropping in the selected Union Parishad.

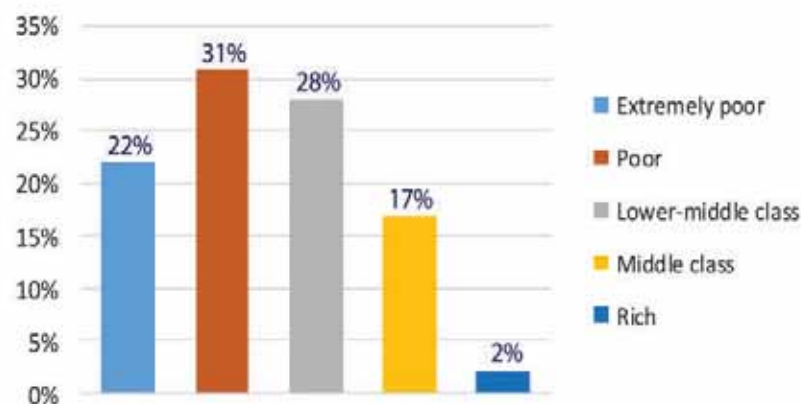
**Table-1: Statistics of total cropland land and production:**

Total of cropland [hectare]				Rice cultivation land and production		Seasonal Cropland and production	
Single Cropland	Double croplands	Multi croplands	Total of cropland	Total land area (Hectares)	Total production (Metric tons)	Total land area (Hectares)	Total production (Metric tons)
259.7	1258.45	261.85	1780	2045	9072.5	1509.5	10199

Source: According to the information of Upazila Agricultural Office

In Jainkathi Union, rice is cultivated in a total of 2045 hectares of land on a seasonal basis, out of which Aush rice is cultivated in 228 hectares of land, Aman rice in 1720 hectares of land, and Boro rice in 32 hectares of land. The yield of this Ufshi variety is about 4.5 MT per hectare. In addition, local varieties of rice are cultivated in about 65 hectares of land and the production per hectare is about 2.5 MT. Apart from rice production, seasonal crops are widely cultivated here. Notable seasonal crops include Mugdal, khesari pulses, almonds, chillies, sunflower, mustard, watermelon, maize, and others. In 3 blocks of this union, about 10199 MT of seasonal crops is being produced in a total of 1509.5 hectares of land every year.

**Graph 3: Statistics of socio-economic condition of the population**



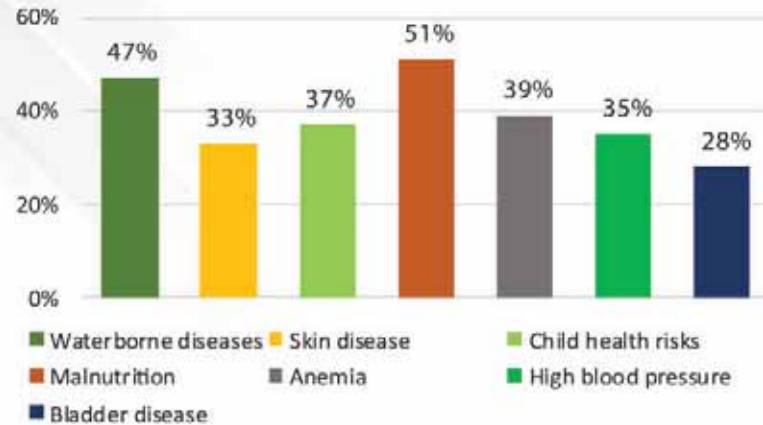
#### d. Education, Health and Sanitation:

According to government sources, the literacy rate in Jainkathi Union is about 45.98%. This scenario indicating below the national standard due to inadequate educational institutions, limited facilities, and weak economic conditions. The rate and diversification of education here has not been much impressive. There are 12 primary schools in Jainkathi union out of which 07 are government, 02 are private and 03 are community-based. The study found two government and four non-govt. lower secondary schools. Only one college is running in Jainkathi union which also non-government. Due to a lack of adequate facilities, students forced to move to the municipalities or district towns for higher education, which is difficult and costly. According to the information provide by the Union Parishad, the drop out rate in this area is about 45% that happen mostly in secondary and higher level education.

Health risks are gradually increasing in Jainkathi Union. According to the experiences of local communities, drought, temperature and salinity problem are increasing. Malnutrition has already emerged as a chronic health problem, with participants noting that vegetable production is declining due to increased salinity in the soil, that becoming hardly possible to meet family needs. In addition, salinity levels in tube wells, rivers, canals, and ponds are increasing due to cyclonic tidal surges, coastal floods, and regular tides. The main victims of this problem are women, children, adolescents, and the elderly.

Jainkathi Union has one Union Health and Family Welfare Centre and three Community Clinics to ensure healthcare to the local people. These clinics are short of medicine and sometime irregular attendance of the health care staff. That's why in most cases, the locals have to go to the district town for medical treatment, which is quite costly and time-consuming for them. Therefore, many community people seek medical care from local rural doctors which are quite risky.

**Graph-4 : Health hazards to the Local Communities and Effects**



According to the Jainkathi Union Parishad official, more than 18% of the households in the Union still use open toilets those causing dirt, germs, and odors to spread around. Around 47% of households have toilet and their sewerage system directly connected to rivers and canals, and about 65% of households do not have a water-sealed toilet. As a result, the surrounding environment is being polluted and the transmission of various diseases is increasing. In addition, 60-65% of toilets are submerged in tidal water every day, at which time waterborne diseases become epidemic. According to the information provided by the Union Parishad, the number of open toilet users in Jainkathi Union is about 18%, the number of Kacha toilet users is about 39%, the number of Semi Paka toilets is 31% and the number of Paka toilet users is about 12%.

#### e. Transportation and connectivity

Jainkathi Union is only 3.5 km away from Patuakhali Sadar Upazila. Although close to the district and Upazila Parishad, the internal transportation system has not been improved much. About 88% of the total roads in the union are still Kacha [unpaved] and semi-paved. And most of the paved roads are found damaged in different places. Every year, various natural calamities cause extensive damage to the roads, said the local people and the Union Parishad officials. About 45-50% of the

Union's roads are regularly submerged by tidal surges, causing extensive damage and loss of stability, especially in brackish water. Although the Union Parishad repaired some of the damaged roads within its limited capacity, most of the roads could not be repaired due to lack of adequate fund that leads the locals to sufferings especially patients, pregnant women, children, and elderly people suffer the most and takes 5 to 6 times more to reach the destination which wastes their labor and working hours. The analysis of the last 5 years shows that about 30-32 km of paved, semi-paved, and unpaved roads of the Union have been severely damaged due to natural calamities.

The Union Parishad has connectivity with other Upazilas like Galachipa, Rangabali, Bauphal, and Dashmina can be reached to the district [Sadar Upazila] by waterways. Among the means of transportation by waterways, many launches leave from the district [Sadar Upazila] to Rangabali via Galachipa, there are also trawlers, small and big boats, etc. Apart from that there have connectivity with other Union and there is also way to go to the divisional city [Barishal] and to the Capital.



Several Culverts in various important places of Jainkathi Union have been completely or partially damaged due to frequent natural disasters  
Photo Credit: Jainkathi Union

## f. Social Infrastructure and Communication

**Table-2: Social Infrastructure and climate vulnerabilities of Jainkathi Union**

Sl.	Infrastructures	Quantity	Details of Climate Vulnerability
1	Housing project	1	A Housing project has been constructed in East Jainkathi of the Union, but it has not yet been handed over to the landless and rehabilitated. According to the Union Parishad, there may be 50 climate-vulnerable families rehabilitated, but this is far less than the need. The housing project is constructed in government khas land [government owned land]. This land is formed through siltation of river sand and risk of regular inundate by the river tide. Apart connecting road didn't developed that's why it's a question whether people will live there.
2	Educational Institutions	17	There are 12 primary schools in Jainkathi Union out of them 07 government, 2 private and 3 community based, 2 lower-secondary schools, 4 private secondary schools, and 1 college. Among these, only 7 school are two-storeyed, the rest are single-storeyed. The assessment team has observed that many educational institutions are very old and their access facilities have damaged due to water surge. That's why educational activities are disrupted sometime it collapse due to natural disaster like high tide, heavy rainfall and cyclone.
3	Health care center	4	There are 1 union health and family health care center and 3 community clinics in Jainkathi Union. Health risks are increasing day by day because of salinity with tidal water and outbreaks of various water-borne and other diseases, but the quality of health care is very fragile.
4	Cyclone Shelter	7	The cyclone shelters are located at West Jainkathi, Thengai, Keshabpur, Sehakathi, South Sehakathi, East Jainkathi, and Charjainkathi of the Union. But it is very inadequate in terms of population and risk. Only 11% of the total population can take shelter during disasters. The rest of the population is at high risk. Wards 1, 7, 8, and 9 are close to Lohalia and Goral rivers but there are no cyclone shelters and almost all the communities are at risk.
5	Total Embankment	26 km.	There is a total of 26 km of embankment under 2 polders in Jainkathi Union, 21 km under the Polder 43/E, and 5 km under the Polder 43/D. In the last 5 years, about 10 km of Embankment have been severely damaged due to the tidal wave caused by the cyclone. As a result, saline water enters the normal tide, causing extensive damage to the Agricultural and Fisheries sectors and increasing human suffering.
6	Sluice Gates	7	There are 7 sluice gates on Charabunia, Katakhal, Kaurakhali, Char Jainkathi, Bhuria, Thengai and Bhagirabad canals. The 5-sluice gate has been damaged due to the disaster of the last 5 years, which is currently completely unusable. As a result, there is waterlogging due to a lack of a drainage system which is severely hampering crop production.
<b>Communication structures of Jainkathi Union and their climate vulnerabilities</b>			
1	Total Road	85 K.M	About 38% [Around 33 km] of Bituminus Carpeting [BC] Roads, Herring Bone Bond [H-BB] Roads, and Earthen Roads in Jainkathi Union have been severely and partially damaged due to various natural calamities in the last 5 years. Sick patients, especially pregnant mothers, children, and the elderly are suffering the most.
2	Bituminus Carpeted Road	10 K.M	About 45% of BC Roads in Jainkathi Union have been severely damaged due to frequent natural calamities during last 5 years.
3	Earthen Road	70 K.M	In the last 5 years, about 39.29% of Earthen Roads in Jainkathi Union have been severely damaged due to various natural calamities, especially cyclones, tidal surges, and heavy rains.
4	H-BB Road	5 K.M	This year, more than 1 km of H-BB Roads has been damaged in Thengai village of Jainkathi Union due to cyclone Yaas. The people of the area are suffering as no repair initiative has been taken yet.

Source: Information provide by Jainkathi UP, field visit observation.

#### g. Natural resource ecosystem [natural wetlands, forests, etc.

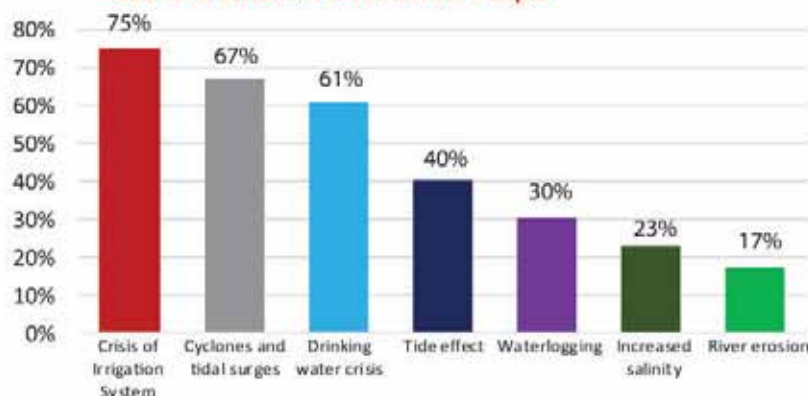
No such natural resource information was found in Jainkathi Union. Although there is no natural forest or afforestation in the union currently, there was social afforestation on both sides of the embankment at the previous time. Following the findings from the discussion with the local people of the Union and the UP members, there was social forestry in an area of about 26 km in the union. During the last 10 years, about 40% of the forest has been disappeared. However, with the help of government initiatives, afforestation can be done beside the riverbanks of the union which can save the union from major natural calamities in the future.

### 5. Risks of climate change and its impact on livelihoods

#### a. Natural Disasters [Analysis on the History and Damages during Last 10 Years]

The short and long-term effects of climate change are already becoming apparent in the Jainkathi Union, and its severity is increasing day by day at an alarming rate. Rivers, canals, lowlands, and inadequate protective infrastructure surrounding coastal areas and the Union are contributing to the increase in the level of disaster damage. More than 90% of the people in the union are directly dependent on natural resources, the only source of income is livestock, poultry, ponds or river fish, and land crops. While these negative effects of climate change are directly and indirectly putting these natural resource-dependent people at greater risk, with frequent floods, tidal surges, cyclones, droughts, and salinity manifestations, declining productivity, and increasing resource loss.

**Graph-5: Diversified Impact of Climate Change and its' Scenario on Union's Vulnerable People**



Marginal farmers are cultivating land with high-interest rate loans but are losing crops, freshwater fishermen, marine fishermen and their families are losing their livelihood due to declining fish production, many species of fish in the river are on the verge of extinction, many are losing their livelihoods and becoming unemployed. The problem is that there is a lot of suffering coming down. Losing resources, many have been forced to migrate to the capital city. According to the sources provided by the Union Parishad and the local people, every year 250-300 families are displaced due to various natural calamities and are moving to the city in search of livelihood. Consequently, many have begun to change their ancestor's professions, some are driving rickshaws, some have become day laborers.

**Table-4: Statistics of cyclone in Jainkathi Union in last 5 years with loss & damages**

Sl	Name of Cyclone	Duration	Adverse Impacts on Jainkathi Union as a result of natural disasters						
			Agriculture Damage [%]	Fisheries Damage [%]	Livestock Damage [%]	Submerged land in saline water	Damaged embankment	Waterlogged land	Damaged House
1	Roanu	May 2016	20%	30%	5%	2%	1.5 Km.	10%	1125
2	Mora	May 2017	15%	40%	10%	5%	1 Km.	16%	1365
3	Fani	May 2019	19%	45%	7%	8%	0.5 Km.	20%	1050
4	Bulbul	Nov-2019	21%	42%	8%	10%	1.5 Km.	23%	2334
5	Amphan	May 2020	30%	44%	9%	13%	2.5 Km.	25%	2420
6	Yaas	May 2021	34%	50%	10%	17%	3 Km.	30%	2527

Source: Jainkathi Union Parishad, Patuakhali Sadar, Patuakhali

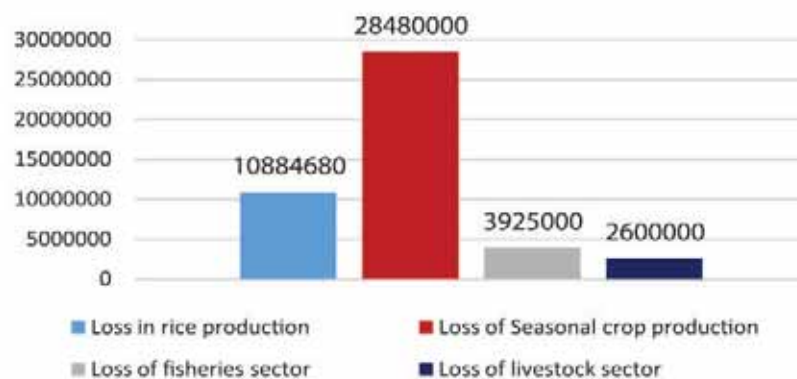
The main effects of climate change in the region are based on the views of local affected communities, Union Parishads, public and private stakeholders, and analysis of various data from the past:

- A. Cyclones and tidal waves
- B. Tides and salinity [Drinking water and pond water, salinity in canals due to reduced river flow]
- C. River erosion
- D. Waterlogging
- E. Water Crisis [Drinking water, the water crisis in agriculture, impact, and loss in fisheries management, etc.]
- F. Deforestation

### A. Cyclones and tidal surge

Cyclones and tidal surges are one of the major natural disasters here. The Union is prone to cyclones almost every year due to its closer to the Bay of Bengal. According to locals, the level and intensity of the cyclone have increased over the past few decades. Starting from Sidr in 2007, Aila, Mahasen, Komen, Nargis, Mora, Fani, Bulbul, and the last cyclone Amphan and Yaas were hit in this union. It directly or indirectly impacted the people living here. Cyclones and tidal surges are more common from mid-May to mid-July and from October to mid-November. Analyzing the data in the last 5 years, it is seen that a total of 6 cyclones have caused extensive damages in this region.

**Graph- 6: Annual average figures of economic loss in cyclone (in BDT.)**



These disasters cause severe damages to the crop, fisheries, forestry, livestock, poultry, houses, social institutions, and infrastructural resources such as embankments, sluice gates, roads, culverts, etc., including loss of life. As the local economy is dependent on natural resources, cyclones and tidal surges have had the most negative impact on people's livelihoods. Most of the area was inundated by the 8-10 feet high tidal wave created during the cyclone. The extent of damage in the Union, especially in Keshabpur, Charjainkathi, Fedai Nagar, North Sehakathi, and South Sehakathi villages is very high.

According to the local community and the Union Parishad, about 67% of the population of the Union is being directly and indirectly affected by cyclones and tidal surges every year. There are 7 total cyclone shelters in the Union, only 11% of people can take shelter during cyclones and tidal surges, and about 89% of the population is at risk. In addition to the extensive loss of cropland, the loss of fish and animal resources is also a matter of concern. As there is no Killa in the union, the loss of cattle and poultry of the farmers during the disaster is increasing day by day.

According to the data provided by the Department of Agricultural Extension, analyzing the damage caused by cyclones and tidal surges in the last 5 years, it is seen that an average of 232 hectares of land in Jainkathi Union is wasted with 1044.234 MT of rice every year which market value is about One crore Eighty-Eight lakhs Four thousand Six hundred Eighty takas. 1991.8 MT of Seasonal crops were also lost in 147.95 hectares of land with a market value of Two crores Eighty-four lakhs Eighty thousand taka. Furthermore, in the fisheries sector, the total loss is counted which is about Thirty-nine lakhs Twenty-five thousand taka and in the livestock sector, the total amount is Twenty-six lakhs taka.

### B. Salinity intrusion affects in both surface and ground water system

Jainkathi Union is a tidal zone. During the tides of the new moon and full moon, water flows raise at a height of about 5-6 feet and 1 / 5th of the Union, i.e., about 4.14 sq. km area is inundated with tidal water. Saline water enters with tidal water which threatens the natural state of local nature and biodiversity. According to locals, even 10 years ago, the maximum tidal water level was 2-3 feet, and the water would drainaged from the land very fast, but now the tidal water level has increased, and it takes at least 5-7 days to drain up the water from the land. As a conse-

quence, the loss of fishery resources is increasing. According to the information was given by the Union Parishad, about 40% of the people of this Union are being affected by this tidal wave.

The salinity level in Jainkathi Union is increasing at an alarming rate day by day due to coastal areas, declining rainfall, rising sea level, and lack of necessary protection infrastructure. Lohalia river on both sides of Jainkathi Union and Gorai river on one side. Numerous small tributaries flowing from these rivers are scattered like a net inside the canal union. According to local sources, the effects of salinity have been observed here for the last 15 years, but the level has increased alarmingly in the last five years, usually from October to March. In addition to tidal surges due to inadequate and damaged embankments and sluice gates, during the new moon, full moon and even in normal tides, saline water is entering more inner side of the Union and thus increasing salinity levels.

Observations from the Soil Resources Development Institute, the Department of Environment, and the Water Development Board (WDB) show that salinity levels in the Lohalia River have increased almost sevenfold in the last year. In April 2020, the highest salinity level in the Lohalia River was 602 mg per liter and the minimum was 538 mg per liter. However, in May 2021, the salinity in this river was 3,071 micro-Siemens per centimeter. The tolerable level of salinity in water is 750 micro-Siemens per centimeter.

According to the Department of Agricultural Extension, the salinity in the soil has also increased due to the increase in salinity in the river water. Irrigation of agricultural land with saline water of the river is disrupting crop production. Farmers have not been able to produce Aman seedbeds this year due to saltwater. Seasonal crop production has declined by about 50%. Increased salinity in pond water is hampering agricultural production as well as fish production. Excessive salinity in rivers, canals, ponds, and tube wells is increasing the incidence of health diseases such as skin diseases, high blood pressure, gynecological problems, typhoid, etc. Women, children, adolescents, and the elderly are most at risk. According to sources close to the Union Parishad, about 23% of the population has already been affected by the salinity.

### C. River erosion made people displaced

Wards no. 01, 07, 08, and 09 are the most affected by river erosion in Jainkathi union. In the last 20 years, about 170-180 acres of arable land

and 300-350 houses of Fedai Nagar, Dakshin Sheyakathi, and Char Jainkathi mouzas have been eroded and lost in the Lohalia and Gorai rivers. This erosion is directly responsible for the displacement of around 1700 households. 30% of them are currently living temporarily on khas land on the banks of the river or on the nearby embankments, 15% have migrated to other wards of the union and 10% to other places in the district and 45% of the displaced people have migrated to Dhaka and Chittagong in search of shelter and livelihood. Local public and elected representatives fear that the intensity of river erosion could be increased in the future if adequate and sustainable coastal protection systems (Embankments and sluice gates) are not ensured.

### D. Waterlogging: a cause of agriculture failure

The problem of waterlogging is one of the major problems of the Jainkathi Union. Tidal surges are caused by cyclones and during the new moons and full moons, additionally, excessive rainfall is causing waterlogging. Due to the lack of a drainage system, the lands are getting waterlogged, and the amount of cultivable land is decreasing day by day.



Around 6% of total hectares of land and the crops have been damaged due to the prolonged waterlogged.

Following the source of DAE and UP, presently 145 hectares of cultivable lands have been transformed to barren lands due to the waterlogged situation and another 259.7 hectares of land have been inundated under water that is turns converted the lands from 3 crops to 2 crops and 1



crop. Gradually, this rate of waterlogging is adversely affecting the agricultural production system and as a result, the income of the farmers is declining. Lack of drainage system in the croplands and due to lack of excavation, the canals have become almost ineffective and filled out due to siltation that prolonged the miserable situation.

### E. Water crisis affects in agriculture and other agri sub-sectoral activities

The crisis of drinkable water is increasing in Jainkathi Union. The crisis is being exacerbated by declining freshwater levels in various parts of the Union, with freshwater reservoirs shrinking as salinity levels rise unusually. According to the Union Parishad and locals, the water level has dropped by about 70-80 feet in the last 15 years, as they point out that about 30-35% of the 800-900-foot-deep tube wells are currently inoperable at one time, and some tube wells are still salty. That water is not going to be used, but the severity of the problem is evident in the dry season, especially in October-March. As per the residents' information, it needs to install a 1050 ft deep tube well for safe drinking water now. But most of the tube wells were installed between 2010-12. However, according to the Upazila Public Health Department, the groundwater level has dropped by about 25-30 feet in the last 10 years.



Gradual salinity intrusion into the canals is becoming a threat for agricultural production system, biodiversity, and human health of Jainkathi Union

Apart from the clean water crisis, the intensity of agricultural work and water crisis has reached a critical level in Jainkathi Union. According to

the local DAE, canal water is the only source of irrigation water on agricultural land in the Union due to the lack of shallow tube well irrigation facilities. Irrigation systems are being severely disrupted and crop production is declining at an alarming rate.

Due to the lack of water flow in the canal during the extremely high temperature in the month of April-May of the year, the farmers could not irrigate the land, resulting in less production of about 50% of the seasonal crops, especially Mugdal and chilly. In addition, although saltwater enters the canals from October to March, farmers are forced to use salt water as irrigation in the land as there is no alternative, which is threatening the crop production system day by day.

According to the information given by the UP, 9 main canals and rivers are flowing inside Jainkathi Union and innumerable tributary canals, the area of which is about 45-47 km, of which about 70% canals have already been filled due to lack of excavation. Besides, there are 15 channels in the union out of which about 10 channels are damaged so water flow in the canals is being obstructed. Due to the lack of regular rainfall, the ponds are almost dry, and the fishing system is declining day by day due to water pollution, while the income is declining, and the poor families are drifting towards more poverty.

### F. Deforestation

According to sources provided by the Union Parishad, Jainkathi Union has a forest cover of about 26 km, which is entirely on both sides of the Lohalia river. But because of the misdeeds of some unscrupulous people, 40% of the total forest land has been declined during the last 10 years. Furthermore, another 15% has been declined by river erosion. According to the community people, because of deforestation, the severity of the disaster has been increased also drastically. Which is pushing the residents near the embankments to migrate to other places towards increasing disaster risk.

#### b. Artificial or man-made crises

According to the information given by the farmers, fish is being farmed in some of the influential canals locally, because of which the normal flow of the canals has been completely stopped. The farmers are the worst affected, as the canal is the only source of irrigation system here. The length of the Charabunia canal with branches is about 5-6 km and the length of the Bahesh canal is about 4-5 km with branches, but the canals

are now almost dead due to occupation. According to the information provided by the Union Parishad, about 2,000 farmers in the area are being affected due to these two canals, and crop production is being disrupted due to failure to irrigate at the right time.

### c. Embankment Management and its Problems

Jainkathi Union has an border area where near around 39 km is as embankment of Lohalia and Gorai rivers, of which 26 km is on the banks of the Lohalia river and 13 km is on the banks of the Gorai river. The catastrophic cyclones and tidal surges during last 5 years have severely damaged about 10 km embankment along the Lohalia River, causing major damage in different places. The average height of the embankment is currently 5-6 feet but at the time of the disaster, the tidal surge is flooded at a height of 8-10 feet.



The damaged embankments have not been repaired yet as a result saline water is entering the locality with the tide and increasing the economic loss to the local community. 7 no- ward Fedai Nagar, Jain Kathi Union, Patuakhali.

So that the water enters the locality surpassing the embankment. The land is becoming flooded. As there is no embankment in the 13 km area of Gorai riverbank, apart from any natural calamity, vast areas are being inundated by normal tidal waters and innumerable croplands and fishponds are being inundated. Damaged embankments are still not repaired and there are not many embankments. Moreover, the height of the embankments is not able to protect the tidal disaster, putting the socio-economic condition of the local people at risk. Lack of sustainable coastal embankments is causing severe damage to the region's agriculture, fisheries, livestock as well as freshwater infrastructure in brackish water, and local nature and biodiversity are under serious threat.

### 6. Climate Adaptive plan: A development determinative for this UP

The magnitude and extent of natural disasters in the region are increasing due to the impact of climate change. This change has a direct or indirect effect on the socio-economic activities of most of the total population of Jainkathi Union i.e., about 90% of the people. Which is reducing the economic potential of the inhabitants here and gradually reducing their chances of acquiring the adaptive capacity to further improve their livelihoods and address the local effects of global climate change. According to economists, more investment is needed in the physical, mental, or economic spheres to overcome any negative impact and return to normalcy. As such, additional costs are rising, and the government's planned sustainable development program is being severely hampered.

We need to build the capacity of local governments to deal with the effects of climate change

and take the initiative to play a more effective role. Traditionally, the Union Parishad adopts a general development plan, which creates some inconsistencies. Climate change programs that are integrated with the general development plan cannot be directly identified and effective measures cannot be taken at the right time and need. Adequate funding is essential for the formulation and implementation of adaptation plans to mitigate the negative and detrimental effects of climate change on social, economic, and environmental conditions. That could be the most effective initiative to ensure sustainable development of the Union in future.

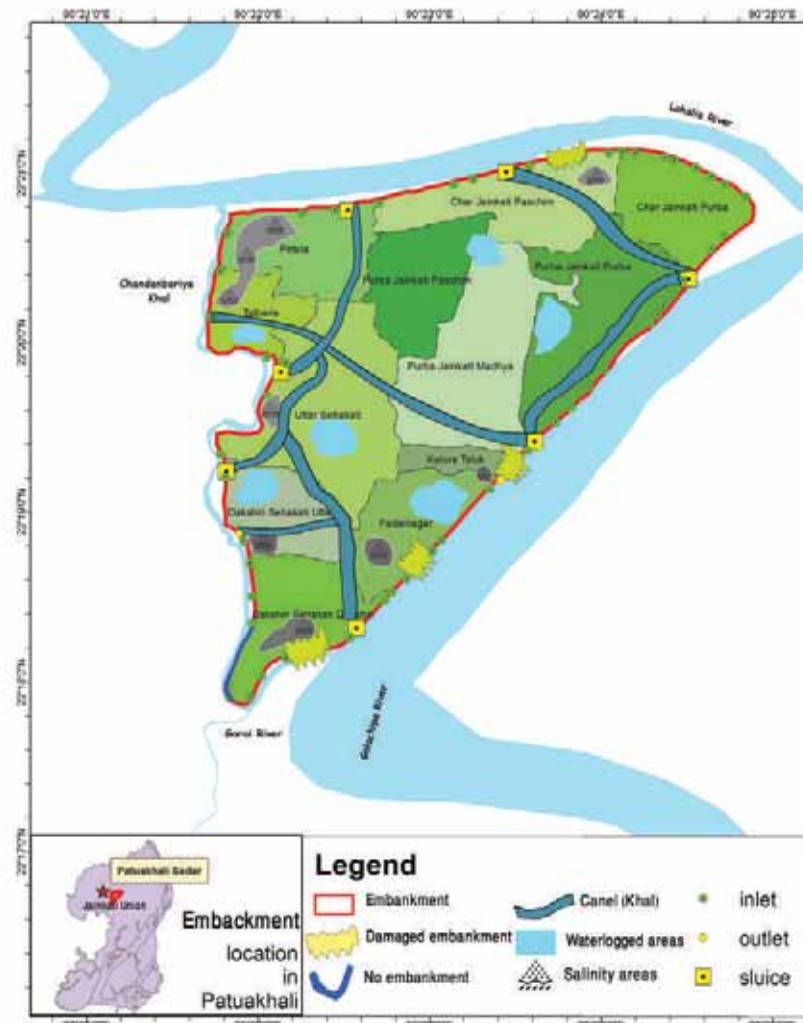
**a. Adaptation planning for Jainkhati Union:  
what changes may create**

**i. Construction of sustainable embankments will protect the  
life and livelihood of communities:**

The economy of Jainkhati Union is mainly dependent on agriculture, about 90% of the people are directly or indirectly involved in this sector. However, every year due to natural disasters, huge economic losses are incurred in this sector. Analyzing the data provided by the Union Parishad, Local Agriculture Extension Department, and the affected local people in the last 5 years, it is seen that 1044.234 metric tons of rice on an average of 232 hectares of land is damaged every year due to cyclones and tidal wave alone which market value is One crore Eighty-Eight lakhs Four thousand Six hundred Eighty taka. 1991.8 MT of Seasonal crops were also lost in 147.95 hectares of land with a market value of Two crores Eighty-Four lakhs Eighty thousand taka. Furthermore, in the fisheries sector, the total loss is counted which is about Thirty-nine lakhs Twenty-five thousand taka and in the livestock sector, the total amount is Twenty-six lakhs taka.

Because of the increasing health risks, the physical and mental performance of the local people is declining, and they are drifting towards poverty. As the magnitude and extent of natural disasters increase and the lives and livelihoods of the people at risk from these disasters need to be invested in long-term coastal protection infrastructures as a priority; Such sustainable embankments must be considered.

So that they become resilient to the effects of climate change in the future. Also, analyzing the average tidal height before increasing the height of the embankments, repair the damaged embankments on a priority basis and build new embankments based on local needs. To do so, crop loss will be reduced, production will increase, and it will be possible to protect the local population from health risks.



Map 2: Existing Exposure of Climate vulnerabilities which are found out by the assessment in Jainkhati Union  
River erosion will be prevented, as a result, coastal lands and settlements will be protected, and the rate of climate displacement will be reduced. Which will play a leading role in positively changing the socio-economic condition of the affected people of Jainkhati Union as a whole.

## ii. Canal re-excavation program to ensure adequate irrigation facilities

There are 9 main canals and rivers in Jainkathi Union and from these canals and rivers, there are numerous small canals scattered like nets with a total length of about 45-47 km. The canal water has been the only source of irrigation for agriculture in the district since time long-established. However, due to lack of excavation, 70% of the canals are now almost dead. There is no water in the canals for 6 months of the year. Due to filling up, the water holding capacity of the canals is becoming limited. For this reason, 1780 hectares of cultivable lands used for rice and seasonal crops productions are hampered.

Five of the seven sluice gates are now almost useless, causing saline water to enter with tides and tidal surges, posing a serious threat to crop and aquaculture production, increasing salinity levels in the land, damaging the entire ecosystem. So, the canals need to be dug on a priority basis, if the canals are dug then their normal navigability will return, there will be a flow of water. In addition, if the wastegates are made operational, it will be possible to retain sufficient water during the monsoon season so that irrigation work will not be disrupted during the dry season, tidal surges, and tidal saline water will not enter during the disaster. Will be reduced and the naturalness of nature will be maintained. Shallow tube wells can also be installed to make the irrigation system smooth, even if there is a flow of saltwater in the canal, the farmers will be able to provide adequate irrigation at that time.

## iii. Improving drainage system by constructing drains and culverts to reduce waterlogging of the land

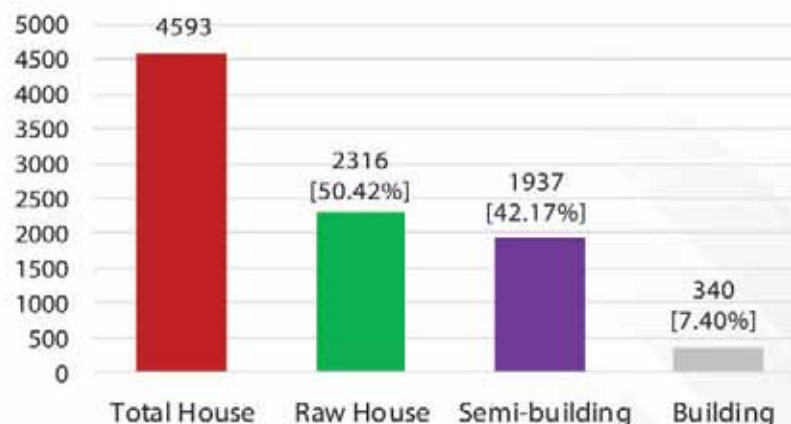
The problem of waterlogging is one of the major problems of the Jainkathi Union. About 145 hectares of land in the Union is currently inundated due to waterlogging and another 259.7 hectares of land is inundated for 6 months of the year, resulting in an alarming decline in cultivable land for crop production and conversion of most land into monochrome and two croplands. Drainage and culverts can be constructed considering the required space with the opinion of local people's representatives and farmers to solve the problem of waterlogging. It will help the uncultivated and single cropland to turn into multi-croplands.

## iv. Construction of shelters and Killa considering disaster risk and protect communities

Due to its proximity to the Bay of Bengal, the entire Jainkathi Union is a disaster-prone area, where various natural calamities strike every year. Jainkathi Union has a total of 7 shelters where only 11% of the population can take shelter during disasters, but according to locals, most of the shelters are not designed with disaster and risk areas in mind, such as Fedai Nagar, Char Sheyakathi, Dakshin Sheyakathi. And despite being risky, there are no shelters. According to the information provided by the Union Parishad, the structural picture of the houses shows that there are 4593 houses in Jainkathi Union out of which 2316 are mud huts, 1937 are semi-finished houses and 340 are previously constructed buildings.

As such, about half of the total population i.e., 50.42% of the population is at high risk during the disaster and 42.17% of the population is at risk. In addition, as there is no Killa in the area, the loss of cattle during disasters is increasing at an alarming rate. Building shelters and Killas based on the views and needs of the locals, giving priority to high-risk areas, will enable people and cattle to take safe shelter during disasters, thus reducing the risk of disasters and saving the lives and resources of the local people.

Graph- 7: Figures of Jainkathi Union Homestead





The Upazila Public Health Engineer is sharing his opinions during his interview on the issues of key climate vulnerabilities facing in health sector particularly in Jainkathi Union, Patuakhali Sadar, Patuakhali

#### **v. Extension of rainwater harvesting system will minimize the shortage of water**

The crisis of drinking water in Jainkathi Union is intensifying day by day, the analysis of the last 10 years shows that the groundwater level has decreased by about 70-80 feet. About 30% of the 800-900-foot-deep tube wells are now unusable and cannot be used due to saline water rising from many tube wells, increasing health risks, especially to women, children, adolescents, and the elderly. Rainwater harvesting systems or rainwater harvesting systems are more effective in alleviating the crisis of drinking water. Implementing such projects will reduce the problem of drinking water, reduce the pressure on groundwater and reduce the health risks to local people, keep them healthy and strong and increase their efficiency. Also, if the platform of the tube wells is raised, the tube wells will not be submerged in tidal or tidal water and the incidence of salinity will be reduced.

#### **vi. Extension social forestry to reduce land erosion and global warming**

The role of forestry in dealing with natural disasters is very important but in the last 10 years, about 40% of the social forestry in the 26 km area

of Jainkathi Union has already been reduced. Road durability is declining. If the social forestry program is implemented in the open space on both sides of embankments and roads, the disaster risk of the people living in the 39 km coastal area of Jainkathi Union will be reduced due to the impact of natural calamities, land erosion will be prevented. In addition, it will increase economic benefits, and, above all, social forestry will play a role in mitigating the effects of global warming.

#### **vii. Expansion of climate-adaptive technology to reduce losses in agriculture and fisheries production, increase efficiency as well as provide loans on easy terms**

Agriculture and fisheries are the most affected sectors in Jainkathi Union due to the impact of climate change. Cultivation of resilient varieties of crops, use of climate-adaptive techniques like; surgeon, sack/bed in low lying areas prone to waterlogging and floods, cultivation of vegetables in sack or bed method, preparation of ponds for integrated cultivation of fish, vegetables, and fruits, rapid growing fish, Such as tilapia, squid farming, species of fish that can survive in hostile environments / shallow water; For example, farmers need to be encouraged to increase the cultivation of fish such as varieties of catfish, climbing perch, etc. As skills increase, farmers need to be able to borrow on easy terms so that they can leverage their skills and acquire adaptive skills. They will have the opportunity to live better life and they will be able to protect themselves from future climate vulnerabilities.

#### **viii. Creating alternative employment opportunities through skill development in the socio-economic development of the disadvantaged and backward communities**

According to the Union Parishad, about 53% of the population is poor and extremely poor, and this number is increasing day by day due to the continuous catastrophe of climate change. It is never possible to achieve the goal of sustainable development by leaving this huge population behind, so union-based skills development training is crucial for rural women and adolescents most affected by climate change. Skill development training includes 3 months sewing training course, training on handicraft and cottage industries, training on boutique batik, etc. Providing them with the necessary materials at the end of such skill development training will encourage them with alternative income opportunities which will lead to the socio-economic development of them and their

families, accelerate economic empowerment of women, alleviate poverty from family, drop out of school, abuse of women and childhood Marriage rates will decrease, and they will gain adaptability to deal with future climate change.

#### ix. Extensive use of vermicompost and organic manure instead of chemical fertilizers to reduce economic and environmental disasters

The use of chemical fertilizers on agricultural land in Jainkathi Union is excessive, farmers are suffering economically due to high prices of chemical fertilizers, their production costs are increasing and on the other hand, there are health risks as well as severe damage to the environment. So, if farmers can be trained on vermicompost and organic manure production instead of chemical fertilizers and if initiatives are taken to motivate and expand their use, the cost of production will be reduced, they will be economically profitable, and the rate of environmental catastrophe will be reduced.

### 7. Adaptation planning; Issues may get the priority

A review of the perceptions of local affected communities, elected UP bodes, and various government and private stakeholders, as well as data analysis of the past years, shows that sector-based adaptation planning is required in tackling the effects of climate change and risk mitigation. The lack of adaptability of the population is exacerbating the effects of this change day by day and threatening the lives and livelihoods of the local population. Crop production is declining due to various effects of disasters. Crisis in irrigation and drinkable water is intensifying. The embankments are being damaged every year and become unable to cope with maximum cyclones and their water surge. Therefore, it is even more important at present to take effective steps to protect the livelihoods of the poor and vulnerable people from the impact of climate change by emphasizing sector-based adaptation planning. The respective UP and their communities have identified the following priority areas for adaptation planning:

#### A. Develop disaster risk reduction physical infrastructure

The respective UP and their communities have made recommendation to construct and repair of embankments as early as possible. Apart the existing switch gates, water closer, cyclone shelters, and Killa,



communication infrastructure like road and access facilities etc. also need to repair and construction as priority base.

#### B. Drinking water management and health

Taking initiatives to raise the quality of health services, raising awareness, installing tube wells or other potable water sources such as rainwater harvesting systems and installing sanitary latrines, and distributing equipment [Ring slab], etc.

#### C. Agriculture and Irrigation

Canal reexcavation, drain construction, set up irrigation system, use of climate tolerant varieties of seeds, training in adapting to the changing environment, provision of interest-free loans to the affected farmers, encouragement and training in the expansion of climate adaptation techniques for cultivation like sack gardening in water logged areas,

allivated goat rearing techniques, production vermicompost, distribution of input/ materials to fish farmers/fishermen, distribution of livestock & poultry vaccine, social forestry activities, etc.

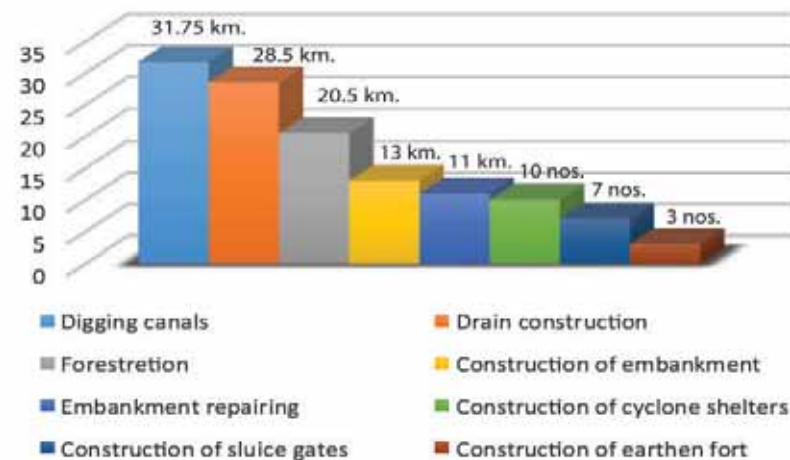
#### D. Human Resource Development [Skills Development]

Training of poor women and adolescents on sewing, training, and distribution of boutiques, handicrafts, and cottage industries, raising of cattle, poultry, and vegetable cultivation in the backyard.

#### 8. Adaptation plan and financial projection-at a glance of Jainkhati UP

To protect the affected population from the effects of climate change, Jainkathi Union Parishad has prepared a five-year sector-based climate adaptation plan and financial projection by analyzing the local climate vulnerabilities. The plan and financial outlook highlight sector-based priorities that will play a leading role in developing coastal protection infrastructure as well as enhancing the climate adaptability of local communities.

Graph- 8: At a glance UP based five years adaptation plans



According to the Union Parishad and locals, the groundwater level has dropped by almost 60-70 feet in the last 15 years, around 30-35% of the 800-900 feet deep tube wells are completely unusable. Credit: 6 no-Ward, Central Jainkathi, Patuakhali.

In addition to the general development plan, the climate adaptation plan includes annual allocations for long-term coastal protection infrastructures based on priority needs, such as embankment construction and renovation, cyclone shelters, switch gates and Killa construction, health, and water, etc. The development of sanitation systems, transportation systems, and human resource development has also been given due importance.

So that the affected population will be able to fight against the negative effects of climate change in the future. In addition to adapting to the adverse effects of climate change, the plan also emphasizes mitigation programs such as coastal social forestry programs, discouraging the use of chemical fertilizers in the land and instead encouraging, expanding the use of organic manure, vermicompost distribution, multi-dimensional skill development training on advanced agricultural technologies, and climate-resilient seeds distribution among the most climate vulnerable farmers.

Year-based briefly of adaptation plan and financial Projection of the Jainkathi Union Parishad is given in the following table:

Sl.	Name of the Sectors	Year-based Financial Projection					Sector-based 5 years total allocation
		2021-22	2022-23	2023-24	2024-25	2025-26	
A	Agriculture and irrigation	14,30,000	65,50,000	73,40,000	78,75,000	83,85,000	3,15,80,000
B	Health [Drinking Water Management & Health]	14,20,000	74,12,000	76,92,000	77,72,000	80,72,000	3,23,68,000
C	Communication/Primary Infrastructure Disaster Risk Reduction [ Road, Bridge, Culvert, Drain]	15,90,000	22,80,000	22,50,000	23,50,000	18,80,000	10,3,50,000
D	Communication/Primary Infrastructure Disaster Risk Reduction [construction of embankment, Sluice gate, cyclone shelters / Killa]	19,00,000	3,24,00,000	6,57,00,000	9,24,00,000	12,10,00,000	31,34,00,000
E	Human Resource Development [Skill Development Training]	8,25,000	10,55,000	11,05,000	10,55,000	8,25,000	48,65,000
Year based total allocation		7165000	49697000	84087000	111452000	140162000	392563000

Detailed Sector and Ward Based Adaptation Planning and Financial Projection:

**A. Sector: Agriculture and Irrigation**

Sl	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26
<b>Ward no-1</b>							
1.	Construction of culverts	4 nos.	70,000	70,000	70,000	70,000	
2.	Distribution climate resilience rice seeds and provide capacity-building training among climate vulnerable farmers.	300 per:			1,00,000	1,00,000	
3.	Installation of shallow tube wells	2 nos.			20,000	20,000	
4.	Installation inland pipes	1.5 Km.				1,00,000	
5.	Excavation of canal in Keshabpur village of East Jain Kathi	2Km.					2,00,000
6.	Provide training on advanced technology to vulnerable farmers	10 <sup>th</sup> Batches	20,000	20,000	20,000	20,000	20,000
7.	Training of farmers on making and use of vermin compost and organic manure	5 <sup>th</sup> Batches	15,000	15,000	15,000	15,000	15,000
8.	Social afforestation program	3 Km.					1,00,000
9.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
10.	Providing loans to the affected poor farmers	100 per:		15,00,000			



SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-2

1.	Installation of shallow tube wells	14 nos.	20,000	60,000	80,000	80,000	40,000
2.	Drain construction	4.5 Km.	3,00,000		5,00,000	3,00,000	3,00,000
3.	Excavation of canal	4 Km.			5,00,000	10,00,000	
4.	Social afforestation program	5.5 Km.	1,00,000	2,00,000	2,00,000	3,00,000	
5.	Providing loans to the affected poor farmers	100 per:		15,00,000			
6.	Distribution of fish carp to the affected Fisherman	200 per:	1,00,000	1,00,000	1,00,000		1,00,000
7.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
8.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000
9.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
10.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batch	15,000	15,000	15,000	15,000	15,000

#### Ward no-3

1.	Excavation of canal	4 Km.	2,00,000	2,00,000	3,00,000		2,00,000
2.	Drain construction	5 Km.			2,00,000	2,00,000	1,00,000
3.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
4.	Distribution climate resilience crop seeds among climate vulnerable farmers.	500 sacks		1,00,000	1,00,000		
5.	Training and distribution equipment's on fish farming	150 Per:		1,50,000			
6.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
7.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
8.	Social afforestation program	3 Km.		2,00,000			
9.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000

Sl	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

Ward no-4

1.	Installation of shallow tube wells	7 nos.	20,000	40,000	20,000	20,000	40,000
2.	Excavation of canal	3 Km.				2,00,000	1,00,000
3.	Drain construction	8 Km.	2,00,000		2,00,000	2,00,000	2,00,000
4.	Distribution of agricultural inputs	40 per:		1,00,000			
5.	Providing loans to the affected poor farmers	100 per:					15,00,000
6.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
7.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
8.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
9.	Social afforestation program	2 Km.			2,00,000		
10.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000

Ward no-5

1.	Installation of shallow tube wells	9 nos.		60,000	60,000	40,000	20,000
2.	Excavation of canal	2 Km.			2,00,000		2,00,000
3.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
4.	Social afforestation program	1.5 Km.				1,00,000	
5.	Providing free fertilizer to vulnerable farmers	200 per:		1,00,000			
6.	Providing loans to the affected poor farmers	100 per:				15,00,000	
7.	Distribution of tractor-based association to marginal farmers	3 nos.					4,50,000
8.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
9.	Distribution climate resilience crop seeds among climate vulnerable farmers.	300 per.	1,50,000		1,50,000		
10.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
11.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000

Sl	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

**Ward no-6**

1.	Installation of shallow tube wells	6 nos.	20,000	40,000	20,000	20,000	20,000
2.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
3.	Drain construction	2.5 Km.				2,00,000	3,00,000
4.	Excavation of canal	6 Km.		3,00,000	3,00,000		
5.	Providing loans to the affected poor farmers	100 per:					15,00,000
6.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
7.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
8.	Distribution climate resilience crop seeds among climate vulnerable farmers.	300 per.		1,50,000	1,50,000		
9.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000

**Ward no-7**

1.	Installation of shallow tube wells	6 nos.		40,000	20,000	60,000	
2.	Excavation of canal	3.25 Km.				3,50,000	3,00,000
3.	Drain construction	3 Km.				1,50,000	3,00,000
4.	Training and distribution equipment's on fish farming	150 Per:					1,50,000
5.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
6.	Distribution of safety equipment to fishermen, safe buoys, life jackets, etc.	150 Per:		3,00,000			
7.	Social afforestation program	3.5 Km.				2,10,000	1,50,000
8.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
9.	Providing loans to the affected poor farmers	100 per:				15,00,000	
10.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26
<b>Ward no-8</b>							
1.	Distribution climate resilience crop seeds among climate vulnerable farmers.	200 per.	20,000	50,000	50,000		
2.	Installation of shallow tube wells	9 nos.		60,000	40,000	40,000	40,000
3.	Excavation of canal	4 Km.		2,00,000	6,00,000		
4.	Organizing vaccination camps for livestock	8 nos.		15,000	15,000	15,000	15,000
5.	Loans for vulnerable Farmers to purchase seeds and fertilizer	200 per.			2,00,000		
6.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
7.	Training and distribution equipment's on fish farming	150 Per:			1,50,000		
8.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
9.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000
<b>Ward no-9</b>							
1.	Installation of shallow tube wells	15 nos.	-	80,000	1,00,000	60,000	40,000
2.	Excavation of canal	3 Km.	-	1,00,000	2,00,000	-	-
3.	Drain construction	3 Km.	-	1,50,000	1,50,000	1,50,000	-
4.	Providing loans to the affected farmers	100 per:	-	-	-	-	15,00,000
5.	Training on Climate Adaptation Techniques [Integrated Methods, Sacks, Goat Scaffolding, and Bed Methods]	5 Batches	15,000	15,000	15,000	15,000	15,000
6.	Distribution of safety equipment to fishermen, safe buoys, life jackets, etc.	150 Per:	-	-	3,00,000	-	-
7.	Social afforestation program	2.5 Km.	-	-	-	2,00,000	-
8.	Training and distribution equipment's on fish farming	150 Per.	-	-	-	1,50,000	-
9.	Distribution climate resilience crop seeds among climate vulnerable farmers.	200 per.	-	-	50,000	50,000	-
10.	Training of farmers on making and use of vermin compost and organic manure	5 Batches	15,000	15,000	15,000	15,000	15,000
11.	Provide training on advanced technology to vulnerable farmers	10 Batches	20,000	20,000	20,000	20,000	20,000

## B. Sector: Health [Drinking Water Management and Health]

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

### Ward no-1

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Rainwater harvesting system	5 nos.	40,000	40,000	40,000	40,000	40,000
3.	Installation of tube wells	4 nos.	-	80,000	80,000	80,000	80,000
4.	Nutrition distribution activities among pregnant mothers	100 per.	-	3,60,000	3,60,000	3,60,000	3,60,000
5.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.	-	1,08,000	1,08,000	1,08,000	1,08,000

### Ward no-2

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Rainwater harvesting system	5 nos.	40,000	40,000	40,000	40,000	40,000
3.	Construction of community clinics	1 nos.				5,00,000	
4.	Installation of tube wells	9 nos.	80,000	1,60,000	1,60,000	80,000	2,40,000
5.	Nutrition distribution activities among pregnant mothers	100 per.		3,60,000	3,60,000	3,60,000	3,60,000
6.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.		1,08,000	1,08,000	1,08,000	1,08,000

### Ward no-3

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Rainwater harvesting system	3 nos.	-	40,000	40,000	40,000	-
3.	Installation of tube wells	14 nos.	80000	2,40,000	3,20,000	1,60,000	3,20,000
4.	Nutrition distribution activities among pregnant mothers	100 per.	-	3,60,000	3,60,000	3,60,000	3,60,000
5.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.	-	1,08,000	1,08,000	1,08,000	1,08,000

Sl	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-4

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Rainwater harvesting system	3 nos.	40,000	40,000	40,000		
3.	Construction of community clinics	1 nos.					5,00,000
4.	Installation of tube wells	7 nos.		1,20,000	1,20,000	1,20,000	80,000
5.	Nutrition distribution activities among pregnant mothers	100 per.		3,60,000	3,60,000	3,60,000	3,60,000
6.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.		1,08,000	1,08,000	1,08,000	1,08,000

#### Ward no-5

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Construction of community clinics	1 nos.		5,00,000			
3.	Rainwater harvesting system	2 nos.			40,000		40,000
4.	Installation of tube wells	7 nos.		80,000	1,20,000	1,20,000	1,20,000
5.	Nutrition distribution activities among pregnant mothers	100 per.		3,60,000	3,60,000	3,60,000	3,60,000
6.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.		1,08,000	1,08,000	1,08,000	1,08,000

#### Ward no-6

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Installation of tube wells	19 nos.		4,00,000	4,00,000	4,00,000	3,20,000
3.	Nutrition distribution activities among pregnant mothers	100 per.		3,60,000	3,60,000	3,60,000	3,60,000
4.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.		1,08,000	1,08,000	1,08,000	1,08,000

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-7

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Installation of tube wells	8 nos.	-	1,60,000	80,000	2,40,000	1,60,000
3.	Nutrition distribution activities among pregnant mothers	100 per.	-	3,60,000	3,60,000	3,60,000	3,60,000
4.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.	-	1,08,000	1,08,000	1,08,000	1,08,000
5.	Rainwater harvesting system	2 nos.	-	-	40,000	-	40,000
6.	Construction of community clinics	1 nos.	-	-	-	5,00,000	-

#### Ward no-8

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Installation of tube wells	20 nos.	1,60,000	2,40,000	3,20,000	4,80,000	4,00,000
3.	Nutrition distribution activities among pregnant mothers	100 per.	-	3,60,000	3,60,000	3,60,000	3,60,000
4.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.	-	1,08,000	1,08,000	1,08,000	1,08,000
5.	Construction of community clinics	1 nos.	-	-	5,00,000	-	-

#### Ward no-9

1.	Distribution of sanitary toilet equipment (rings and slabs)	100 per.	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
2.	Installation of tube wells	21 nos.	80,000	1,60,000	4,00,000	4,80,000	5,60,000
3.	Distribution of hygiene kits among poor Adolescents [sanitary pads, iron tablets]	100 per.		1,08,000	1,08,000	1,08,000	1,08,000
4.	Nutrition distribution activities among pregnant mothers	100 per.		3,60,000	3,60,000	3,60,000	3,60,000

### C. Communication / Primary Infrastructure Disaster Risk Reduction [ Road, Bridge, Culvert, Drain]

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-1

1.	Construction of culverts	8 nos.	80,000	1,60,000	1,60,000	1,60,000	80,000
2.	Road repairs	7 Km.	1,50,000	2,00,000	4,50,000	1,50,000	2,00,000

#### Ward no-2

1.	Construction of culverts	1 no.			80,000		
2.	Road repairs	7 Km.		1,50,000		2,00,000	4,00,000

#### Ward no-3

1.	Construction of culverts	6 nos.	1,60,000	1,60,000		1,60,000	
2.	Road repairs	8 Km.	4,00,000	2,00,000	2,00,000	5,00,000	2,00,000

#### Ward no-4

1.	Construction of culverts	7 nos.	80,000	1,60,000	1,60,000	80,000	80,000
2.	Road repairs	6 Km.	2,00,000	2,00,000	4,00,000	4,00,000	

#### Ward no-5

1.	Construction of culverts	3 nos.		80,000		80,000	80,000
2.	Road repairs	4 Km.		2,00,000	2,00,000	2,00,000	2,00,000

#### Ward no-6

1.	Construction of culverts	3 nos.	80,000	80,000	80,000		
2.	Road repairs	3.75 Km.	1,00,000	1,50,000		1,00,000	

#### Ward no-7

1.	Construction of culverts	3 nos.			80,000	80,000	80,000
2.	Road repairs	3 Km.		3,00,000			

#### Ward no-8

1.	Construction of culverts	10 nos.	1,60,000	1,60,000	1,60,000	1,60,000	1,60,000
2.	Road repairs	4 Km.	1,00,000		2,00,000		1,00,000

#### Ward no-9

1.	Construction of culverts	4 nos.	80,000	80,000	80,000	80,000	
2.	Road repairs	3 Km.					3,00,000



**D. Communication / Primary Infrastructure Disaster Risk Reduction [construction of Embankment, Sluice gate, Cyclone Shelters and Killa [A high place filled by the earth]**

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26
<b>Ward no-1</b>							
1.	Construction of cyclone shelters	1 no.					3,00,00,000
2.	Embankment repairing	1 Km.		2,00,000			
3.	Construction of the Killa [ A high place filled by the earth]	1 no.			10,00,000		
4.	Construction of Sluice gate	1 no.				2,00,000	
5.	Construction of new embankment	1.5 Km.			6,00,000		
<b>Ward no-2</b>							
1.	Construction of cyclone shelters	1 no.				3,00,00,000	
2.	Construction of Sluice gate	1 no.	2,00,000				
3.	Embankment repairing	2 Km.	4,00,000				
4.	Construction of new embankment	3.5 Km.	7,00,000		7,00,000		
<b>Ward no-3</b>							
1.	Construction of cyclone shelters	1 no.				3,00,00,000	
2.	Construction of Sluice gate	1 no.			2,00,000		
3.	Construction of the Killa [ A high place filled by the earth]	1 no.					10,00,000
4.	Embankment repairing	1 Km.	2,00,000				
5.	Construction of new embankment	1.5 Km.		4,00,000	4,00,000		
<b>Ward no-4</b>							
1.	Construction of cyclone shelters	2 nos.				3,00,00,000	3,00,00,000
<b>Ward no-5</b>							
1.	Construction of cyclone shelters	1 no.			3,00,00,000		
2.	Embankment repairing	1 Km.		2,00,000			
3.	Construction of the Killa [ A high place filled by the earth]	1 no.				10,00,000	
<b>Ward no-6</b>							
1.	Construction of cyclone shelters	1 no.		3,00,00,000			
2.	Construction of Sluice gate	1 no.			2,00,000		
<b>Ward no-7</b>							
1.	Construction of cyclone shelters	1 no.			3,00,00,000		
2.	Construction of Sluice gate	1 no.				2,00,000	
<b>Ward no-8</b>							
1.	Construction of cyclone shelters	1 no.					3,00,00,000
2.	Construction of Sluice gate	1 no.				10,00,000	
3.	Embankment repairing	3 Km.	2,00,000	2,00,000	2,00,000		
4.	Construction of new embankment	2 Km.			8,00,000		
<b>Ward no-9</b>							
1.	Embankment repairing	3 Km.	2,00,000	4,00,000			
2.	Construction of new embankment	4 Km.		10,00,000	6,00,000		
3.	Construction of cyclone shelters	1 no.					3,00,00,000
4.	Construction of Sluice gate	1 no.			10,00,000		

### E. Human Resource Development [Skill Development Training]

Sl	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-1

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-2

1.	Provide training on cottage industries for women and adolescents [Union based]	5 Batches	50,000	50,000	50,000	50,000	50,000
2.	Provide training on handicrafts to poor women and adolescents [Union based]	5 Batches	50,000	50,000	50,000	50,000	50,000
3.	Provide sewing training to poor women and adolescents [Union based]	3 Batches		2,30,000	2,30,000	2,30,000	
4.	Blok-batik training for poor women and adolescents [union based]	3 Batches	50,000	50,000	50,000		
5.	Training on TV and mobile servicing for unemployed youth	3 Batches			50,000	50,000	50,000
6.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
7.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
8.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-3

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

SI	Name of the Project	Quantity / Number	Year-based financial projections				
			2021-22	2022-23	2023-24	2024-25	2025-26

#### Ward no-4

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-5

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-6

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-7

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-8

1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

#### Ward no-9

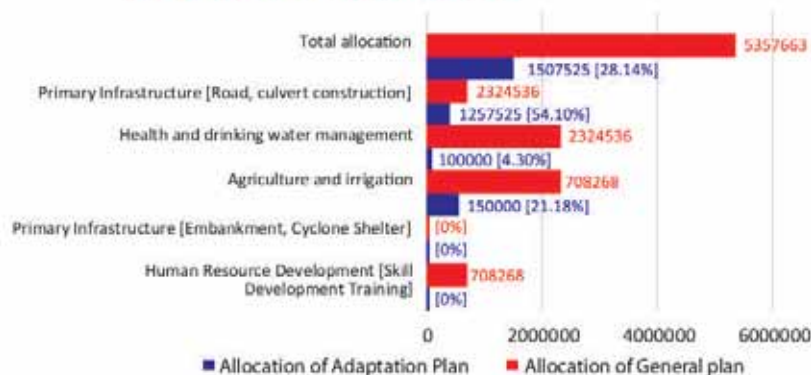
1.	Training on poultry rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
2.	Training on livestock rearing	5 Batches	25,000	25,000	25,000	25,000	25,000
3.	Training of poor women and adolescents on vegetable cultivation around their homes	5 Batches	25,000	25,000	25,000	25,000	25,000

## 9. Budget for the current fiscal year

The Jainkathi Union Parishad has been announced a separate allocation for the implementation of the Climate Adaptation Plan in juxtaposition with the General Development Plan in the budget plan for the current fiscal year [2021-22]. In total 15 Lakh, 7 thousand 5 hundred 25 taka has been allocated in three distinguished sectors which are 28.14% of the whole approved budget. These are- Agriculture and Irrigation, Health & Drinking Water Management and Communication/social Infrastructure, and Disaster Risk Reduction [Road Repair] The total allocation of the plan is 53 lakh 57 thousand 6 hundred, and 8 Taka.

A separate allocation of Tk. 1,50,000 has been made for the implementation of a climate adaptation plan in the agriculture and irrigation sector which is about 21.18% of the allocation of the general development plan. Apart, the total allocation for this sector in the general development plan is Tk. 1 lakh has been allocated in the management sector which is about 4.30% of the general development sector, 23 lakh 24 thousand 6 hundred, and 2 Taka has been allocated in this sector in the general development plan and 12 lakhs 56 thousand in the communication/-physical infrastructure disaster risk reduction [road repair] sector. 525 has been allocated which is about 54.10% of the general development sector, in the general development plan this sector has been allocated 23 lakh 24 thousand 5 hundred 36 Taka.

**Graph-9 : Sectorwise Allocation of Climate Adaptation in the Budget 2021-22 of Jainkathi Union**



The severity of the natural disaster has been increasing day by day which is pushing the people to become forcibly displaced, Sheyakathi, Jainkathi Union. Credit: Jainkathi Union

For the first time, the topic of climate finance has been included and considered seriously in the annual income and expenditure account of the Jainkathi Union. In the current financial year, Jainkathi Union Parishad has imposed a carbon tax of Tk. 2,50,000 as its revenue. Tk. 1,00,000 has been allocated accordingly from the government's climate financing budget and climate trust fund. Apart, another Tk. 50,000 from other donor agencies or private agencies as development receipts. According to the Union Parishad, adequate funding is required for the implementation of adaptation plans. Due to the financial constraints of the UP, the adequate allocation could not be made in the adaptation sector.



Government of the People's Republic of Bangladesh

# 6 No. Jainkathi Union Parishad


Post Office: Sehakath ,Upazila- PatuakhaliSadar, District- Patuakhali  
Website- <http://jainkathiup.patuakhali.gov.bd/>

## Development Plan and Annual Budget book

Fiscal year: 2021-2022

Village: Sehakathi, Post Office: Sehakathi,  
Upazila- Patuakhali Sadar, District - Patuakhali,  
Division- Barishal

  
30/5/20  
সহকারী চেয়ারম্যান  
জৈনকঠি ইউনিয়ন পরিষদ

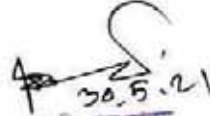
  
30.5.21  
সহকারী চেয়ারম্যান  
জৈনকঠি ইউনিয়ন পরিষদ



Jainkathi Union Parishad (LGD ID No-5789527) Upazila: PatuakhaliSadar, District: Patu akhali  
Fiscal year: 2021-2022  
Summary of the budget, 'Budget Form "KA" [Note Rule 3 (2)]

Sl.	Description	Actual Taka of the previous year [ 2019-2020]	The revised budget for the current financial year (2020-2021)	Budget for the next financial year (2021-2022)
Part-A	Receipt as Revenue:			
	Revenue:	2400488	3110748	3546288
	Grants		3110748	
	Total receipts	2400488	3097400	3546288
	Excluding revenue and installation expenses	2260930	13348	
	Revenue surplus (KA)	139558		
Part-B	Development cost			
	Development Grants	20433652	21495685	30002730
	Others grant % subscription			
	Total [ Kha]	20433652	20433652	30002730
	Total Assets received [ Ka + Kha]	20433652	21509033	29144013
	Exclude development expenditure	20433652	21495685	27975215
	Overall budget surplus/deficit	332688	13348	2027515
	Add [ Opening Balance] 1 <sup>st</sup> July	572901		
	Asset Balance:	332688	13348	2027515

  
৩০/৫/২০  
আবুল কালাম মুন্সী  
সিনিয়র  
উপায়ুক্তার কার্যালয়, পটুয়াখালী

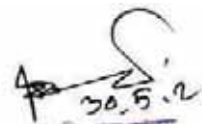
  
৩০.৫.২১  
আবুল কালাম মুন্সী  
সিনিয়র  
উপায়ুক্তার কার্যালয়, পটুয়াখালী



**Jainkathi Union Parishad (LGD ID No-5789527) Upazila: PatuakhaliSadar, District: Patuakhali**  
**Expected (Income) for the financial year 2021-2022**  
**Part-II Development cost (Receipt)**

Sl.	Name of the Sector	Actual Taka of the previous year [ 2019-2020]	The revised budget for the current financial year (2020-2021)	Budget for the next financial year (2021-2022)
1.	Grants (Development):			
A.	UpazillaParishad	45500		
	Government Part:			
A.	One-time/Bulk Allocation			
B.	Kabikha, TR, Extremely Poor (EGPP)	1147222	1000000	1000000
C.	EGPP (Wage Sector)	2400488	3110748	3546288
2.	1% tax on land transfer deed	389000	1000000	1200000
3.	VGD, VGF, Fisheries etc.	5385730	5385730	5385730
4.	Hat Bazar lease		250000	255000
5.	Receipt of development cost [Climate Finance]			
A.	Receipt from Climate Trust Fund			100000
B.	Government allocation from the Climate Finance Budget			100000
C.	Other receipts [donors / NGOs and others]			50000
6.	LGSP (BBG)	1439924	2000000	2000000
7.	LGSP (PBG)	715276	500000	500000
8.	Social Safety net (Elderly, Widowed, Disabled and Maternity)			
9.	Others	5385730	3000000	3000000
	Revenue surplus	2447282		
	<b>Total Receipts (Development):</b>	<b>23202152</b>	<b>28653730</b>	<b>30002730</b>

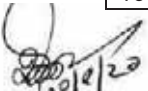
  
 ৩০/৫/২১  
 জৈনকথী ইউনিয়ন পরিষদ  
 পটুয়াখালী সদর।

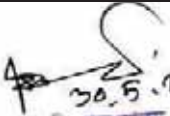
  
 ৩০.৫.২১  
 পটুয়াখালী জেলা বিকাশ অফিস  
 জেলা উন্নয়ন কর্মসূচী পরিচালনা  
 পটুয়াখালী সদর।



**Jankathi Union Parishad (LGD ID No-5789527) Upazila: PatuakhaliSadar, District: Patuakhali**  
**Probable (Expenditure) for the financial year 2021-2022**  
**Part-II Development cost (Expenditure)**

Sl.	Name of the Sector	Actual Taka of the previous year [ 2019-2020]	The revised budget for the current financial year (2020-2021)	Budget for the next financial year (2021-2022)
	Development Expenditure (General)			
1.	Agriculture & Irrigation (10-15%)	70000	708268	708268
2.	Industry and cottage industries		708268	708268
3.	Communication / Primary Infrastructure (12-20%)	1295000	708268	2324536
4.	Socio-Economic Infrastructure			1000000
5.	Sports and culture			2000000
6.	Bank charge deduction			8000
7.	Service	300000	409268	409268
8.	Education and information	20000	708268	708268
9.	Health, (water, sanitation, and hygiene, bathroom)	120000	2324802	2324802
10.	Poverty reduction: Institutional support for social security		10512000	10512000
11.	Rural Development and Cooperatives			
12.	Women, Youth and Child Development (Nutrition)			2400000
13.	Development Expenditure (Climate Change and Adaptation)			
A	Agriculture and irrigation			150000
B	Health (drinking water management, health)			100000
C	Communication / Primary Infrastructure Disaster Risk Reduction (Road Repair)			1257525
D	Communication / Primary Infrastructure (Disaster Risk Reduction such as Embankment, Shelter / Killa Repair)			
14.	Disaster Management and Relief			
15.	Others Expenditure			2300123
16.	Surplus	247282		2027515
	<b>Total Expenditure (Development Cost)</b>	<b>1535000</b>	<b>21094688</b>	<b>30002730</b>

  
 ৩০/৫/২১  
 সভাপতি  
 জাংকঠী ইউনিয়ন পরিষদ  
 পটুয়াখালী সদর।

  
 ৩০.৫.২১  
 সভাপতি  
 জাংকঠী ইউনিয়ন পরিষদ  
 পটুয়াখালী সদর।



## Focus Group Discussion [FGD] Report

### I. Introduction

We have completed a total of 19 FGDs in 9 wards of Jainkathi Union as part of the systematic process of climate risk analysis and adaptation planning. We sought to hear the real experiences of local citizens about the effects of climate change and tried to verify their local adaptation necessities and relevance.



FGD with citizens of affected area for local vulnerability analysis, Ward no-9, South Shakathi, Jainkathi Union Credit: COAST

For this analysis, we have developed structured questionnaires and attempted to collect and verify sector-based data such as Natural Disasters and Climate Risk analysis, Socio-Economic analysis, Agriculture and Irrigation, Health, Drinking Water Management, Health, Communication, Primary Infrastructure, and Disaster Risk Reduction analysis, such as Dam, Shelter / Construction of earthen forts, etc. Which subsequently contributed to climate vulnerability analysis at the local level and the review and validation of the Union's Climate Adaptation Plan.

In the Focus Group Discussion [FGD] process, the participation of different levels and professions of the society has been given more importance. Participation of the persons from the most vulnerable area due to climate change has been given priority such as women, adolescents, the elderly, farmers, fishermen, and day laborers, etc. Apart, emphasis has been given to the participation of local stakeholders, such as Public Representatives, Teachers, and Political Leaders, who can play an important role in strengthening the capacity of vulnerable communities to address the risks of climate change.

**Table -1: Numbers of participants in Jainkathi Union Focus Group discussion**

Total FGD	Total Participants	Numbers of participants of Focus Group Discussion								
		Public Representatives	Political Leader	Elderly	Women Leader	Farmer	Fisherman	Labor	Youth Representative	Others
19	341	3.52%	10.56%	10.26%	13.78%	11.73%	11.44%	10.56%	11.14%	7.33%

## 2. Objectives

A. To identify what types of climate vulnerabilities exist at ward/union level (Such as: river erosion, flood, excessive rainfall, thunderstorm drought, etc.) and get ideas about its extent.

B. To determine about what types of development plans (in case of adaptation or mitigation) need to be adopted for tackling with climate change based on the comments/feedbacks of different levels of people, public representatives, government officials and stakeholders at the ward level.

C. To assist in the formulation process of the five-year development plan of the Union Parishad by verifying the rationality and priority of the recommendations received based on public opinions.

D. To assist in the preparation of the annual climate-adaptive budget after analyzing and prioritizing the climate vulnerabilities and climate adaptation sector of Jaiakathi Union.

## 3. Results Analysis of FGD

### 3.1 Natural disasters and climate vulnerability analysis

#### A. Verifying participants' perceptions about climate change.

Participants have conceptual limitations on climate change such as what is climate, why is this change, the global-national and local effects of this change, etc. Among the participants around 8% have clear concepts about climate change, around 19 % of the participants have medium-level concepts, very few ideas have 34% of participants and 39% of participants have no idea about climate change.

Although the concepts of climate change are limited, all participants agree that the diversity of local nature is no longer what it used to be. Cyclones hit every year, the height of the tidal surge has increased, the salinity level rise, and there is a shortage of drinking water which is increasing their loss & damage.

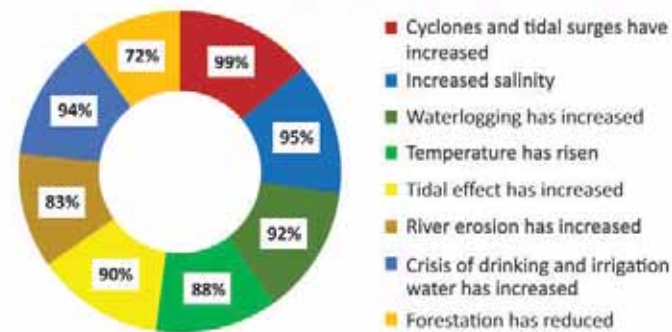
**Table 2: Participants' perceptions on climate change:**

Good concept	Mid-level concept	Very few concepts	No concept
8%	19%	34%	39%

## B. What are the levels and effects of disasters caused by climate change?

About 95% of the participants said that the number of natural disasters has increased in the last 10 years and the remaining 5% of participants did not comment.

**Graph-1: Diversified effects of natural disasters caused by climate change in last 10 years [% of participants views]**



In response to the question of what kind of disasters are most prevalent in the Jaiakathi Union due to climate change, the participants mentioned natural calamities such as cyclones and tidal surges, salinity, waterlogging, excess temperature, tides, river erosion, drinking, and irrigation water crisis.

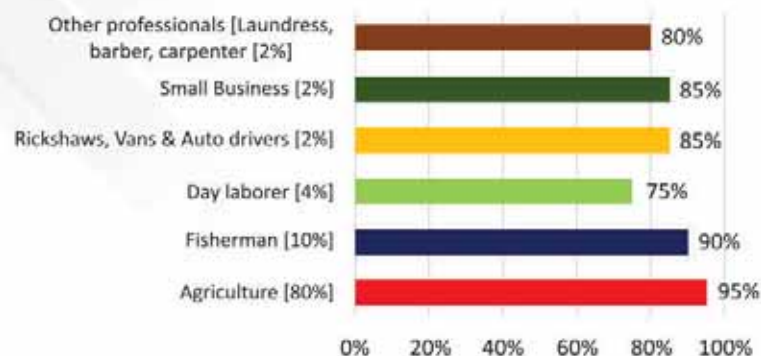
### 3.2 Socio-economic condition analysis of the Jaiakathi Union's population

#### A. What are the main sources of income for the Citizen of the Union?

About 98% of the participants think that about 80% of the people in Jain Kathi Union depend on agricultural activities and this is their main source of income, according to 93% of the participants, 10% of the people are involved in fisheries, According to 86% of participants, 4% of people are day laborers, according to 88% of the participants, 2% are involved in small business and 2% in rickshaw, van, and auto driver occupations and 82% of the participants said that 2% of people are

involved in other occupations such as laundry, barber, mason, carpenter, etc.

**Graph-2: Analysis of the main sources of income of the population**



### 3.3 Agriculture and Irrigation

#### A. What is the source of the irrigation system in agriculture?

According to the opinion of most participants, the main source of water for agriculture is canal water, which is the only source of irrigation in the area. Some of the participants commented that in some cases shallow tube wells and pond water are also used.

**Table 3: Participants' views on the main sources of irrigation in agriculture:**

Canal water	Pond water	Shallow tube wells	Rainwater	Other sources
93%	2%	5%	0%	0%

#### B. How useful are the canals for irrigation?

According to the participants, most of the canals flowing inside Jainkathi Union are not useful for irrigation as there is not sufficient water in the canals due to filling.

**Table 4: Participants' views on the usability of the canal for irrigation:**

Useful	Fairly useful	Less useful	Useless
7%	13%	33%	47%

#### C. Have any conceptual knowledge about climate-resilient crops and advanced technology?

Most of the participants have conceptual limitations about the use of climate-resilient crops and advanced technologies. This is because they are not aware of salinity, waterlogging, and drought-tolerant crops and they are also not aware of Climate Adaptive Income Generating Technology.

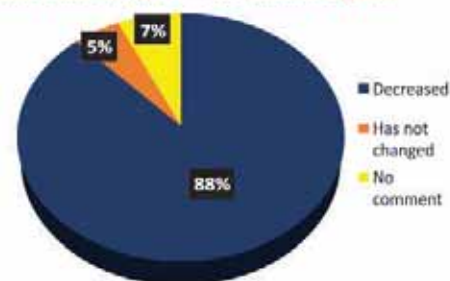
**Table 5: Participants' conceptual analysis on climate-resilient varieties and advanced technologies:**

Have mid-level concept	Have mid-level concept	Have very few ideas	Have no idea
5%	13%	23%	59%

#### D. In the last 5 years has Jainkathi Union's Agriculture and Fish Production decreased/increased?

About 88% of the participants said that their production has decreased due to various natural calamities, 5% think that the production system has not changed much, the remaining 7% of participants did not comment. According to the majority persons, production has declined due to salinity, high temperatures, tidal surges, and irrigation crisis.

**Graph-3: Opinions of the participants on increase/ decrease of agriculture and fish production in last 5 years**



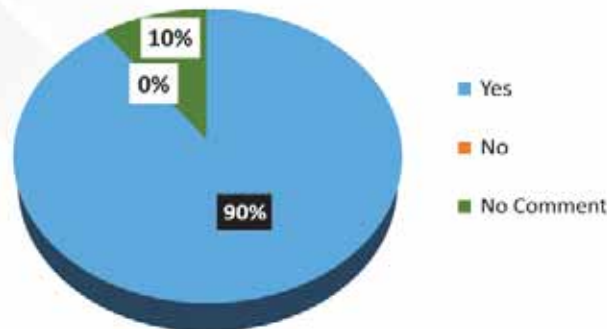
### 3.4 Health [Drinking Water Management & Health]

#### A. Has health risk increased in the last 10 years?

Around 90% of the participant's opinions of that the health risks have increased in the last 10 years in Jainkathi Union, such as malnutrition,

anemia, skin diseases, high blood pressure, children's health risks, urinary tract diseases, and various waterborne diseases. The remaining 10% of participants did not comment.

**Graph-4: Health risks have increased in Jainkathi Union in last 10 years**



### B. Where to go for general health services?

According to the majority of the participants, they receive general health services from the local village doctor [charlatan]. Some also go to Community Clinics and Union Health & Welfare Centers to receive health services.

**Table-6: Figures for receiving general health services:**

Village doctor [charlatan]	Community Clinics	Union Health & Welfare Centers	District General Hospital
52%	27%	16%	5%

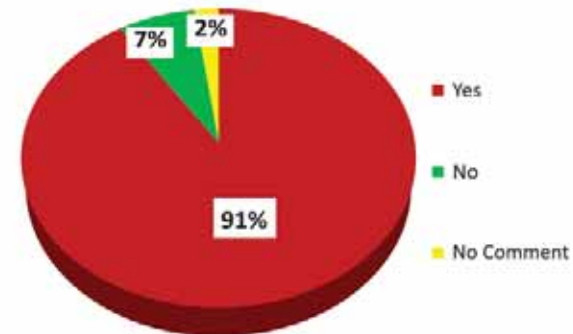
### C. Is the groundwater level depleted day by day?

According to most of the participants, the crisis of safe drinking water is gradually increasing in the Jainkathi Union. The crisis is being exacerbated by declining freshwater levels in various areas of the Jainkathi Union. Freshwater reservoirs are shrinking due to increasing salinity levels. According to their information, the water level has decreased by about 70-80 feet in the last 15 years.

Apart, the depletion in the water level due to some seasonal happenings such as rainfall, storms, and irrigation pumping are referred to as seasonal variations. Water-level fluctuation in summer and winter is also considered

as an important issue.

**Graph-5: Views of the participants on depleted ground water levels**



### D. The types of toilet and whether it is hygienic?

Analyzing the opinion provided by the participants, it was observed that most of them are use Kacha Toilet, there are also Semi-Paka toilets, open and Paka toilet users. The concern is that most of the toilets are not hygienic, toilet lines are directly connected to rivers and canals and many toilets are not water shields.

**Table 7: Types of toilets and comparative figures of hygienic toilets based on the participants' opinion:**

Types of the Toilet %				Figures of the Unhygienic Toilets %	
The user of open Toilet	The user of Kacha Toilet	The user of Semi-Paka Toilet	The user of Paka Toilet	% of Toilets, connected to rivers and canals	% of Toilet users without water sealed
20%	41%	31%	8%	51%	70%

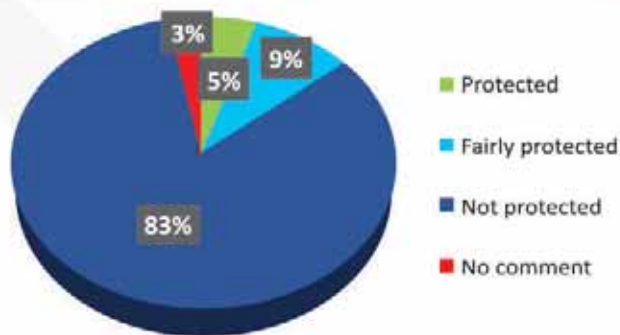
### 3.5 Primary Infrastructure Disaster Risk Reduction [Repair, Shelter/ Killa (A high place filled by earth)]:

#### A. Is the area fully protected by embankment and sluice gate?

Most of the participants think that their area was not at all protected by embankments and sluice gates. They say the reasons are that tidal surges caused by cyclones each year are causing erosion in various parts of the

embankment and causing extensive damage to other resources, including agriculture, fisheries, livestock, and homestead. According to them, the embankments are not disaster resilient.

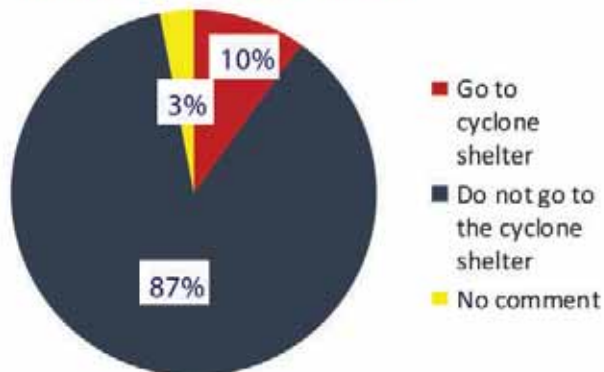
**Graph-6: Is this area protected by embankment and sluice gate?**



**B. Do they go to cyclone shelter during the disaster?**

Most of the participants expressed the view that they do not get the opportunity to take shelter in the cyclone shelter during the disaster as there are not enough cyclone shelters in their area.

**Graph 7: Comparative analysis of taking shelter in the cyclone shelter during disaster**



That's why they don't go there because there are no cyclone shelters in the disaster risk-prone area, the residents there live in a risky situation during the disaster.

**3.6 Communication / Primary Infrastructure Disaster Risk Reduction [Road Repairs]**

**A. Are the roads in this area submerged in Rain / Tidal water?**

Most of the participants in the FGD replied that every year about half of the Union's roads are regularly submerged in tidal waters caused by various natural disasters, causing extensive damage to the roads and making them unsustainable.

**Table-8: Comparative figures of submerged roads by rain/tidal water:**

Submerged [10-20%]	Submerged [20-30%]	Submerged [30-40%]	Submerged [40-50%]	Submerged [50-60%]	Submerged [60-70%]
3%	7%	15%	57%	18%	0%



Photo Credit: Jainkathi Union

**In Overall Cooperation :**



**COAST Foundation Principal Office:**

Metro Melody (1st Floor), House# 13, Road# 2,  
Shyamoli, Dhaka 1207, Bangladesh.

Email: [info@coastbd.net](mailto:info@coastbd.net) ; web: [www.coastbd.net](http://www.coastbd.net)

Tel: (+88 02) 58150082/ 58152821/ 8152790/ 48113744/ 58152555