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Collective Action to Reduce Climate Disaster Risks and Enhancing Resilience of the Vulnerable Coastal Communities around the Sundarbans in Bangladesh and India

Contact No : DCI-ENV/2010/221-426

Reconnaissance Report

The Project is funded by
The European Union

A Project Implemented by
Bangladesh Centre for Advanced Studies

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(DCI-ENV/2010/221-426)

RECONNAISSANCE REPORT

Prepared for

Delegation of the European Union to Bangladesh
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Acronyms

BB	Bangladesh Bank
BCAS	Bangladesh Centre for Advanced Studies
BPL	Below Poverty Line
CCAC	Climate Change Action Committee
CC	Climate Change
CBO	Community Based Organization
CCDRER	Climate Change Diaster Risk and Enhancing Resiliance
CDM	Climate Disaster Management
CFL	Compact Fluorescent Lamp
DAE	Department of Agriculture Extension
DRR	Disaster Risk Reduction
DRCSC	Development Research Communication and Service Centre
EC	Executive Committee
EU	European Union
EWS	Early Warning System
FGD	Focus Group Discussion
GO	Government Organization
Gp	Gram Panchayet
KII	Key Informant Interview
LBO	Local Business Organization
LGI	Local Government Institute
NGO	Local Government Organization
NRM	Natural Resource Management
MoEF	Ministry of Environment and Forest
PC	Panchayet Samity
PRI	Panchayet Raj Institution
PVA	Participatory Vulnerability Assessment
PRA	Participatory Rural Appraisal
SIZ	Sundarban Impact Zone
ToR	Terms of Reference
TL	Team Leader
UAO	Upazilla Agriculture Officer
UC	Union Council
UP	Union Parishor

Executive Summary

BCAS is implementing an EU funded project titled "Collective Action to Reduce Climate Disaster Risks and enhancing Resilience of Vulnerable Coastal Communities around the Sundarbans in Bangladesh and India", in short CCDRER project, in selected clusters of Khulna, Bagerhat and Satkhira districts. DRCSC (India) and Orbicon (Denmark) are two partners of BCAS in this project.

For the implementation of the CCDRER project different methods and tools (Reconnaissance, Census and Baseline Survey and Participatory Vulnerability Assessment) are being used to identify the project areas and program participants for operating proposed activities of the project. Reconnaissance is a basic important work to pin point target group who are the likely beneficiary of the project work. More importantly, reconnaissance reduces risk of mistake in wrong selection of areas and beneficiary. Reconnaissance, in the project, refers to the observation, and information collection, about a specified location and the area around to select a area with target beneficiary for effective implementation of project work.

For reconnaissance, multi level information (4-tier) collection was done. First upazillas/Blocks were selected from Khulna, Bagerhat, Satkhira districts in Bangladesh and North and South 24 Parganas districts of India. While selecting upazillas/Blocks, several issues were considered. (i) proximity to Sundarban [can be described in distance from Sundarban termed as Sundarban Impact Zone (SIZ)](ii) salinity level (iii) natural disaster proneness (iv) presence of target beneficiary (v) communication situation (vi) presence of community (vii) suitable cluster within high/medium SIZ (viii) avoidance of duplication with other EU funded project (Concern Worldwide) where possible.

Information were also collected from secondary sources like Upazilla/Block level service providers/stakeholders (GO, NGO, others). Meetings and interviews were arranged with upazilla level officials. Based on all the information UPs/GPs in each upazilla were selected. Village profiling was done by using structured questionnaire in all selected UPs/mouzas/GPs to select suitable villages for conducting census. All the information collected from villages were put in to a matrix to rate those according to selected criteria (social vulnerability, physical vulnerability, presence of target beneficiary, dependency on Sundarban resources for livelihood, impact of climate change related disaster, communication situation etc). The villages that scores high and can be part of a cluster were selected for census.

In Bangladesh part, the project is being implemented in Khulna, Bagerhat and Satkhira Districts. Paikgacha upazilla of Khulan, Morrelganj upazilla of Bagerhat and Shyamnagar Upazilla of Satkhira districts were selected. After analyzing information and careful analysis of primary and secondary data, dependency and closeness from SIZ, and percentage of dependent people on Sundarban unions (UPs) were selected from those previously selected 3 Upazillas for village profiling.

Thus in Morelganj Upazilla- villages under Nishanbaria, Khuolia and Baraikhali UPs are selected for conducting census after completion of reconnaissance procedures. 5 villages in Nishanbaria, 5 villages in Khuolia and 5 villages in Baraikhali were selected for Households Census. Thus a cluster will be chosen consisting villages those Ups that will provide opportunity to work in a cluster which is within 0-10 km of SIZ.

Similarly from Paikgacha Upazilla, 5 villages in Garuikhali, 5 villages in Soladana and 5 villages in Laskar were selected for Census that provides the opportunity to work in a cluster which is within 5-10 km of SIZ. Again, in Shyamnagar Upazilla, 5 villages in Munshiganj, 5 villages in Ramjannagar and 5 villages in Koikhali were selected for Census which falls within within 0-5 km of SIZ. Detail is given in Annexure -1 A.

In Indian part, the project is being implemented in South and North 24 Parganas districts. From the selected districts, 5 blocks were selected for project implementation work, Patharprotma and Basanti Blocks from South 24 Parganas and Sandeshkhali I &II and Hingleganj Blocks from North Parganas district. In Patharprotima Block, 5 villages in Ramganga GP, 6 villages in G Plot and 3 villages in Brajaballabpur were selected for households Census after collecting information from village profiling and careful analysis of disaster risk maps. In the same way, at Basanti Block, 1 village from Basanti, 3 villages from Uttar Mokamberia, 4 villages from Bharatgarh, 1 village from Masjidbati and 2 villages from Jotishpur were selected for households Census. Similarly, from Sondeshkhali I block, 1 village from hatgachi was selected for households Census and from Sandeshkhali II, 6 villages from Bermajur-I and 4 villages from Bermajur-II were selected for households Census. At last, 2 villages from Hingalganj, 5 villages from Sandelerbill and 4 from Dulduli were selected from Hingleganj Blocks. Detail is given in Annexure 1B.

I. INTRODUCTION

1.1 Background

BCAS is a leading research and policy institute in the non-governmental sector in Bangladesh and South Asia. BCAS is working as an independent, non-profit, non-government institute and specializes in policy, research and implementation of development projects and programs at local, national, regional and global levels since 1986.

BCAS is implementing an EU funded project titled "Collective Action to Reduce Climate Disaster Risks and enhancing Resilience of Vulnerable Coastal Communities around the Sundarbans in Bangladesh and India", in short CCDRER project, in selected clusters of Khulna, Bagerhat and Satkhira districts. DRCSC (India) and Orbicon (Denmark) are two partners of BCAS in this project.

BCAS is the lead implementer of the project in Bangladesh and in India. DRCSC will be the implementing partner of BCAS in Paschim Bongo state of India. Orbicon AS, Denmark will provide technical support in developing methodologies and Monitoring & Evaluation tools and capacity building of staff.

The overall goal of the project is to reduce climatic disaster risks and enhance resilience of the coastal communities around the Sundarbans by building capacity of the vulnerable communities, local actors and stakeholders through sustainable natural resource management and disaster risk reduction for promotion of livelihoods as well as by advancing community adaptation to climate change.

1.2 Reconnaissance

For the implementation of the CCDRER project different methods and tools (Reconnaissance, Census and Baseline Survey and Participatory Vulnerability Assessment) are being used to identify the project areas and program participants for operating proposed activities of the project. Participatory community approach with different stakeholders is being exercised for reconnaissance, baseline survey and PVA for identifying needs and developing the needs based pragmatic action plan.

Reconnaissance is a basic important work to pin point target areas and groups who are the likely beneficiary of the project. More importantly, reconnaissance reduces risk of mistake in wrong selection of areas and beneficiary as well.

Reconnaissance, in the project, refers to the observation, and information collection, about a specified location and the area around it. A reconnaissance team was engaged to use surveillance around the Unions in selected Upazillas to target villages inside the union to observe natural environment, living standard, occupation, income sources and climate change risks and vulnerability and other relevant issues of the household. While doing this, the team kept in mind the project objectives.

II. SCOPE OF WORK FOR RECONNAISSANCE TEAM

The reconnaissance team submitted a proposal following a ToR developed by project officials. A contract was signed with the Team Leader of the reconnaissance team. Thus the reconnaissance team took all necessary preparation for conducting the reconnaissance for CCDRER project to select villages where target beneficiaries are available.

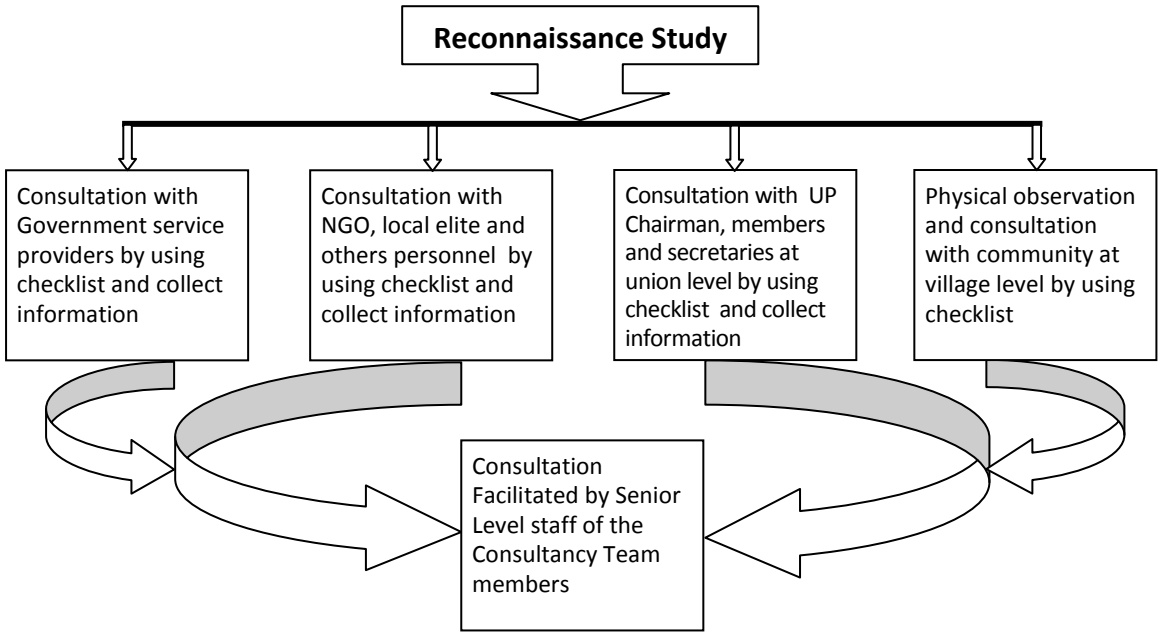
The consultant (and his team) had determined target villages where potential beneficiaries can be identifies. In doing so, they had identified suitable upazillas in targeted districts. Then subsequently they selected unions/villages/moujas for implementation work. They also developed all necessary tools, collected information (from secondary/primary sources), conduct interviews/FGDs/surveys to pin point exact location (UP and villages) of target beneficiaries. So, the consultants work can be listed as (but not limited to):

- Information collection (both from secondary and primary sources)
- Developing necessary tools and train manpower
- Selecting at least one upazilla in Khulna, Bagerhat and Satkhira districts for implementation work based on project objectives.
- Selecting UPs (clusters) in each selected upazillas based on presence of target beneficiary who are disaster prone and dependent on Sundarban at some extent for livelihood.
- Selecting villages/moujas (clusters) in each selected UPs where the project implementation work can take place.
- Conducting village profile for targeted villages/mouja with a view to identity location of target beneficiary groups.
- Prepare ground for conducting census in selected villages/mouzas
- Prepare ground for baseline survey and PVA in the area.
- Prepare and submit reconnaissance and census reports.

III. METHODOLOGY

For Reconnaissance the following methods were followed:

- Reviewed literatures and maps from Khulna, Bagerhat and Satkhira to identify the 3 clusters where the project will be implemented;
- Prepared a checklist for conducting reconnaissance study;
- Imparted training to the enumerators on the checklist;
- Sent six enumerators to the field for collecting data and information as per checklist from three clusters;
- Synthesis the report
- Submitted the report to CCDRER Team Leader



Reconnaissance Methods

A reconnaissance team discussed the objectives of such work with project implementation people. The team members were briefed adequately about project goals and objectives and the criteria required to select right location for implementing project activities. The team decided to talk to GO, NGO and other relevant stakeholders/organizations for collecting information in each of the three upazilla head quarters. The team arranged meetings with different public service providers (UAO, DAE, DoF, DoE, UPIO etcs) regarding present scenario in different unions within the Upazilla. They also collected information from secondary sources. The team then arranged meetings with UP chairmans, secretaries, members and others knowledgeable people. Some FGDs, KIIs were also arranged at different levels of each UPs. The members of the team also visited UPs which are closer to Sundarban, where people are more dependent on natural resources and Sundarban for their livelihood. They also talked to people in villages that are more risky in terms of natural disasters due to climate change. The team decided to take 'transect walk' through target villages and stop at crucial places and talked to/initiate discussion with villagers about predetermined issues relevant to project objective. They sought information about past-present changes, history, changes in cultivation practice, water bodies, past present cropping pattern, water level, salinity intrusion, intensity of natural hazards and ways and means of mitigation and adaptation as well etc. Once UPs are selected, village profiling was initiated. Training was arranged for enumerators who conducted village profiles with checklist/questionnaire. Thus an exhaustive climate change related natural disaster mapping was done for villages within targeted UPs. These maps were used for pin pointing locations for target beneficiaries within the village. Thus villages were selected which are more disaster prone, that has more people dependent on resources from Sundarban, where more of the target beneficiaries live and suitably located to form a cluster to serve under the project. Based on these information collected in reconnaissance process, a census for villagers will be commissioned.

Similar methods were followed in India.

IV. TECHNICCAL DIRECTION

CCDRER project personnel (Team Leader and Coordinator) provided technical assistance during the implementation of the consultancy. The consultant regularly informed Team Leader and Coordinator about the progress of the work. CCDRER project officials provided the relevant documents for the review and also took part in the activities of the reconnaissance process.

V. TEAM COMPOSITION

The Reconnaissance team consisted of the following :

1. Mr. Khandaker Mainuddin, Team Leader
2. Dr. Dwijen Mallick, Sociologist
3. Mr. Belayet Hossain, Study Coordinator
4. Mr. Tofayel Ahmed, Enumerator
5. Mr. Mizanur Rahman, Enumerator
6. Mr. Bidhan Chandra Tikkader, Enumerator
7. Mr. Billal Hossain, Enumerator
8. Ms. Shamima Ishrat Rita, Enumerator
9. Ms. Shamsun Naher, Enumerator

The reconnaissance work facilitation team from CCDRER project consisted of the following :

1. Mr. ASM Shahidul Haque, Team Leader
2. Mr. Md. Aminur Rahman, Coordinator
3. Mr. Abul Kalam Shahhajada, Supervisor
4. Mr. Tarit Kumar Roy, Supervisor
5. Mr. Syed Mehedi Hasan, Field Facilitator

VI. WORK SCHEDULE

Sl No.	Activities	January 1, 2012 to February 25, 2012					
		Wk1	Wk2	Wk3	Wk4	Wk5	Wk6
A.	**Reconnaissance Study**						
	Review literatures and maps from Khulna, Bagerhat and Satkhira to identify the 3 clusters where the project will be implemented;						
	Prepare a checklist for conducting reconnaissance study;						
	Impart training to the enumerators on the checklist;						
	Send enumerators to the field for collecting data and information as per checklist from three clusters;						
	Synthesis the report						
	Submit the report to CCDRER						
B.	**Census Survey**						
	Review literatures, reconnaissance study of the three clusters selected through reconnaissance;						
	Prepare a checklist for the village survey						
	Impart training to the enumerators on the checklist on how to record the information;						
	Send enumerators to each cluster to conduct the census study						
	Synthesis the report						
	Submit the report to CCDRER						

VII. FINDINGS

7.1 Morrelganj Upazilla (in Bagerhat district)

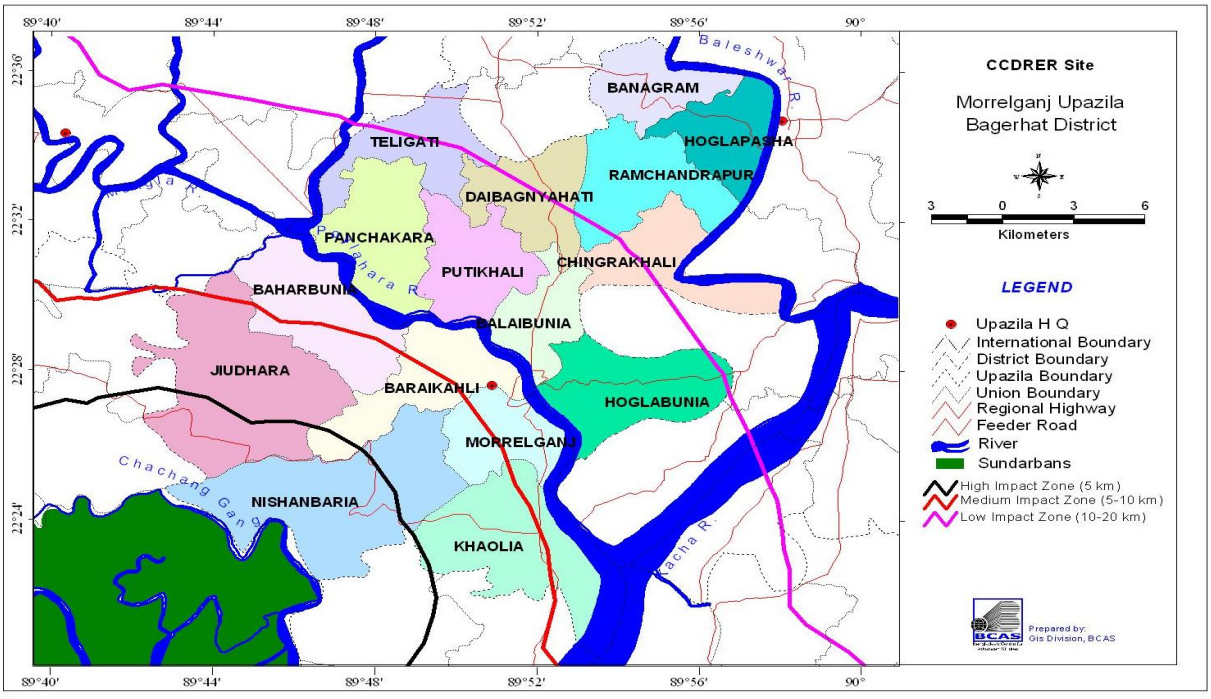
The reconnaissance team along with the project implementation peoples went to Morrelganj Upazilla head quarter to conduct reconnaissance as part of project implementation work. The reconnaissance team and project staff were adequately briefed about the objective of the project and importance of reconnaissance as the most important stepping stone for project implementation.

Morrelganj is an Upazila of Bagerhat district in Khulna division. It is bounded by Bagerhat sadar and Kachua upazila's on the north, Sarankhola and Mathbaria upazila's on the south, Pirojpur sadar and Bhandaria upazila's on the east, Rampal and Mongla

upazila's on the west. The upazila occupies a total area of 445.80 sq. km including 235.24 sq. km forest area having 1 municipality, 16 unions, 9 wards, 120 mauzas, 12 mahalla and 183 villages. The upazila in one hand is rich in both aquatic and terrestrial resources and on the other hand is vulnerable to natural and manmade hazards like cyclone, storm surges, salinity intrusion, river erosion, drainage congestion, deforestation and unplanned land uses for housing and shrimp farming etc. which are the main causes of land degradation, loss of biodiversity human lives and properties.

Out of 16, four UPs (Nishanbaria, Jiudhara, Baraikhali and Khaolia) of this Upazilla falls within 0-5 km from Sundarban economic impact zone (SIZ). Of these, southern part of Nishanbaria UP has a common boundary with Sundarban. Another 3 UPs (Baraikhali, Juidhara and Khaolia) of this upazilla is within 5-10 km of SIZ. So, a cluster of 15 villages can be easily selected from Nishanbaria, Khaolia and Baraikhali unions to search program participants.

This upazilla faces climate change related disasters like river erosion, salinity intrusion, cyclone, tidal wave, flood and water logging. The impact of climate change is recognized by people on agriculture and natural habitat. It was found that the people who live nearby the Sundarban depend upon resources from Sundarban to some extent. They engage in fishing, wood collecting, catching fish, collecting fish fry, catching crabs as well as collecting honey. Livelihoods of these peoples are more vulnerable to climate change.



Map-1: Morrelganj Upazilla of Bagerhat District

The team paid visit to upazilla head quarter to exchange views and share ideas as well as disseminate information about EU funded project aimed at reducing disaster risks and enhancing resilience of the people living around Sundarban, with Upazilla level government service providers (UAO, DAE, DoE, DoF,UPIO etc), NGOs and other stakeholders. Information also collected from secondary sources. Meetings, FGDs, KIIs were arranged with UP chairmen, secretaries, members and other knowledgeable persons at UP levels (Annesure-1a). Idea sharing meeting also arranged with NGOs and other stakeholders. The aim is to assess climate change related disaster risks of the people living

in the villages, their dependencies on natural resources of Sundarban and ways and means to enhance their capacity so that they can be more resilient to such problems. During reconnaissance in the field, climatic disasters and the associated physical and social vulnerabilities were assessed. Further, institutional linkage of partners in the community with regard to access and working experiences were explored. Besides, communication was also taken into consideration for primary village selection from primary selected unions (a checklist, having physical and social vulnerability indicators, was used for field reconnaissance).

The reconnaissance team covered the following UPs in Morrelganj Upaziila to collect information for ultimate UP selection for initiate village profiling.

Nishanbaria UP

This UP is located at the southern part of the Upazilla that has common boundary with Sundarban. Three villages of this UP (Amorbunia, Gulishakhali and PC Boraikhali) are on the skirt of Sundarban. About 20% of the people, somehow, depend on natural resources from Sundarban. The UP is located in climate change related disaster risk area. It is also within 0-5 km of SIZ.

Nishanbaria union is comprised of five mouzas a total area of 4859 ha (BBS, 2001), of which net cultivable area is 2975 ha (61% of total area of the union) and permanent fallow 930 ha, temporary fallow land covers 75 ha. The number of farm family is 3324 where about 3% are share croppers and different farmer's categories were marginal 1357 (about 41% of union's total), small 828(25%), medium 372 (11%), large 198 (6%) and landless 569 (17%) respectively. The soil possess low to high salinity condition in the dry season and soil salinity level and soil pH ranges from 4.3-15.0dS/m and 5.6 - 8.2 respectively (Field Survey 2009-2010).

The major land type of this union is medium high land (1010 ha) followed by high land (892 ha), medium low land (743 ha) and low land (330 ha) respectively, which indicates that most of the land area is free from monsoon flooding hazards and is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (70% area); Rabi crops-fallow-T. Aman (HYV/LIV) (7% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (6% area); Shrimp (Bagda with white fish) (10% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage, system drought and arsenic problem. Considering the above mentioned climatic disasters the community of Nishanbaria union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Nishanbaria union, 12.5km road pacca, 10.5km brick solling and 60km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here seven cyclone shelters have existed where only 5-10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90 -95 % peoples of Nishanbaria union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (65%) are poor to very poor, medium class 30% and the rest 5% are rich. Considering food security issue, only 21% peoples are food secured

and the lion part (79%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 30% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

Most of the peoples (70%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (25%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (Prodipon, BRAC, Grameen Bank, ASA, BRDB, Caritas and IPAC etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster and climate change issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Khuolia UP

This UP is located at the south-eastern part of the Upazilla. Boleshor river is passing through the eastern part of this UP. About 10% of the people, somehow, depend on natural resources from Sundarban. The UP is located in climate change related disaster risk area. It is also within 5-10 km of SIZ.

Khuolia union is comprised of three mouza a total area of 4200 ha (BBS, 2001), of which net cultivable area is 2925 ha (70% of total area of the union) and permanent fallow 200 ha, temporary fallow land covers 345 ha. The number of farm family is 3941 where about 35% are share croppers and different farmer's categories were marginal 1460 (about 37% of union's total), small 1400(36%), medium 641 (16%), large 50 (1%) and landless 390 (10%) respectively.

The soil possess non-saline to high salinity condition in the dry season and soil salinity level and soil pH ranges from 1.2-15.0dS/m and 5.6 -8.2 respectively (Field Survey 2009-2010).

The major land type of this union is medium high land (2655 ha, about 90% of net cultivable area) followed by medium low land (140 ha, 5%) and high land (130 ha, 5%), respectively, which indicates that most of the land area is free from monsoon flooding hazards and is very highly suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–T. Aus (HYV/Hybrid/LIV)– T. Aman (HYV/LIV) (40% area); Shrimp- Shrimp- T. Aman (HYV/LIV) (40% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (9% area); Rabi crops-fallow-T. Aman (HYV/LIV) (7% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage, system drought and arsenic problem. Considering the above mentioned climatic disasters the community of Khuolia union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Khuolia union, 16km road pacca, 21.8km, brick soling and 90km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here eight cyclone shelters have existed where only 5-10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90 -95 % peoples of Nishanbaria union are vulnerable to ensure safe place during disaster.

In this union majority of the peoples (62%) are poor to very poor, medium class 31% and the rest 7% are rich. Considering food security issue, only 30% peoples are food secured and the rest 70% are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 30% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

Most of the peoples (75%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (15%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (Prodipon, BRAC, Grameen Bank, ASA, BRDB and Caritas etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Baraikhali UP

This UP is also located in the south-western part of the Upazilla head quarter and it is linked with Nishanbaria union in south site. Communication is possible by river and road. The union is located within 0-5 and 5-10 km from SIZ. About 15% peoples are directly depending on natural resources of Sundarban. It is located in climate change related disaster risk area.

Baraikhali union is comprised of three mouzas having a total area of 2926 ha (BBS, 2001), of which net cultivable area is 2085 ha (71% of total area of the union) and permanent fallow 726ha, temporary fallow land covers 85ha. The number of farm family is 3475 where about 11% are share croppers, and different farmer's categories were marginal 985 (about 28% of union's total), small 800(23%), medium 505 (15%), large 175 (5%) and landless 1010 (29%) respectively. The soil possess low to high salinity condition in the dry season and soil salinity level and soil pH ranges from 4.3-15.0dS/m and 5.6 -8.2 respectively (Field Survey 2009-2010).

The major land type of this union is medium high land (1980 ha, 95 % of net cultivable area) followed by medium low land (105 ha, 5%), which indicates that most of the land area is free from monsoon flooding hazards and is very highly suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (68% area); Shrimp (Bagda with white fish) (12% area) Rabi vegetables-Kharif vegetables-T. Aman (HYV/LIV) (7% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (3% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage, system drought and arsenic problem. Considering the above mentioned climatic disasters the community of Baraikhali union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Baraikhali union, 4.6km road pacca, 13.9km brick soling and 65km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here seven cyclone shelters have existed where only 5-10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90 -95 % peoples of this union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (63%) are poor to very poor, medium class 32% and the rest 5% are rich. Considering food security issue, only 34% peoples are food secured and the lion part (66%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 15% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

Most of the peoples (60%) are directly involved in agriculture as farmers, share cropper and fish farmer to maintain their livelihood followed by fisheries (20%), agriculture labor (15%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (CODEC, World Vision, Sushilon, ASA, BRAC, Grameen Bank, Proshika etc.) are working in this union focusing on micro-finance, education and development activities but a few numbers of these are working on disaster and climate change issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Baharbunia UP

This UP is also located in the mid western side of Upazilla and the river Bishkali is passing through north side of this union. Communication is difficult from Upazila parishad than others UPs. About 15% of the people, somehow, depend on natural resources from Sundarban. The UP is located in climate change related disaster risk area. It is also within 5-10 km of SIZ.

Baharbunia union is comprised of four mouza and nine wards having a total area of 3121 ha (BBS, 2001), of which net cultivable area is 2065 ha (66% of total area of the union) and permanent fallow covered 08 ha of land. The number of farm family is 3580 where about 30% are share croppers and different farmer's categories were marginal 720 (about 20% of union's total), small 675 (19%), medium 1675 (47%), large 60 (2%) and landless 450 (12%) respectively. The soil possess non-saline to high salinity condition in the dry season and soil salinity level and soil pH ranges from 1.2-15.0dS/m and 5.0 -8.1 respectively (Field Survey 2009-2010).

The major land type of this union is medium high land (2020 ha, about 98% of net cultivable area) followed by high land (45 ha, 2%), which indicates that most of the land area is free from monsoon flooding hazards and is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (60% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (10% area); Fallow-Fallow-Kharif vegetables (5% area); Shrimp (Bagda with white fish) (25% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage, system drought and arsenic problem. Considering the above mentioned climatic disasters the community of Baharbunia union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Baharbunia union, 0km road pacca, 12.5km brick soling and 60km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here five cyclone shelters have existed where only 10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90% peoples of this union are vulnerable to ensure safe place during disaster.

In this union half of the peoples (50%) are poor to very poor, medium class 35% and the rest 15% are rich. Considering food security issue, only 50% peoples are food secured and the lion part (50%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 10% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

Most of the peoples (75%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (20%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (Uddipon, BRAC, Grameen Bank, ASA, Dak Dia Jai etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Jiudhara UP

This UP is located in the south western part of the Upazilla and within 0-5 km from SIZ. But the communication is very poor. In rainy season there is no road communication possible. Most part of the UP has 'Gher' and limited scope for other livelihood.

Jiudhara union is comprised of five mouzas and nine wrds having a total area of 5028 ha (BBS, 2001), of which net cultivable area is 3125 ha (62% of total area of the union) and permanent fallow 102 ha, temporary fallow land covers 430 ha. The number of farm family is 5605 where about 97% are share croppers, and different farmer's categories were marginal 1732 (about 30% of union's total), small 2145(38%), medium 503

(10%), large 115 (2%) and landless 1110 (20%) respectively. The soil possess low to high salinity condition in the dry season and soil salinity level and soil pH ranges from 1.2-15.0dS/m and 5.0 -8.1 respectively (Field Survey 2009-2010).

The major land type of this union is medium low land (2845 ha, about 91% of net cultivable area) followed by medium high land (230 ha, 7%) and low land (50 ha, 2%), respectively. Major cropping pattern is Shrimp (Bagad with white fish) (55% NCA); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (LIV/HYV) (35% area). The rest 10% area followed different patterns to cultivate crops and fishes.

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage, system drought and arsenic problem. Considering the above mentioned climatic disasters the community of Jiudhara union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Nishanbaria union, 0km road pacca, 9km brick soling and 65km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here six cyclone shelters have existed where only 5-10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90 -95 % peoples of Nishanbaria union are vulnerable to ensure safe place during disaster.

In this union, most of the peoples (65%) are poor to very poor, medium class 25% and the rest 10% are rich. Considering food security issue, only 35% peoples are food secured and the lion part (65%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 15% peoples are migrated to neighbor country (India) illegally each and every year during November-March.

Most of the peoples (60%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (35%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (Prodipon, BRAC, Grameen Bank, ASA and BRDB etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Daibagnyahati UP

This UP is located in the north central part of the Upazilla and it is within 10-20 km from SIZ. Very few people are dependent on resources from Sundarban only 2%.

Daibagnyahati union is comprised of fourteen mouzas having a total area of 2089 ha (BBS, 2001), of which net cultivable area is 1650 ha (79% of total area of the union) and permanent fallow 45 ha, temporary fallow land covers 30 ha. The number of farm family is

3531 where about 2% are share croppers and different farmer's categories were marginal 1560 (about 44% of union's total), small 1131(32%), medium 340 (10%), large 105 (3%) and landless 395 (11%) respectively. The soil possess low to high salinity condition in the dry season (salinity area about 650 ha) and soil salinity level and soil pH ranges from 4.3-15.0dS/m and 5.6 -8.2 respectively (Field Survey 2009-2010).

The major land type of this union is medium high land (1238 ha, about 75% of NCA) followed by high land (248 ha, 15%) and medium low land (164 ha, 10%) respectively, which indicates that most of the land area is free from monsoon flooding hazards and is very highly suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (HYV/LIV) (72% area); Rabi crops-Fallow-T. Aman (HYV/LIV) (7% area); Boro (HYV/Hybrid/LIV)-T. Aus-T. Aman (5% area); Shrimp (Bagda with white fish) (8% area).

The major climatic disasters in this union are cyclone, tidal surge, salinity intrusion, erratic behavior of rainfall, water logging, inadequate drainage, system and drought. Considering the above mentioned climatic disasters the community of this union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Daibagnyahati union, 23km road pacca, 30km brick soling and 40km is katcha. During dry season these roads become good and well but in monsoon few part of katcha road become bad in condition for communication. Here three cyclone shelters have existed where only 40-50% peoples of the community took shelter during disaster. Besides, the connecting road to the cyclone shelter is brick soling to pacca which are not problem to move there during disaster.

In this union half of the peoples (50%) are rich to very rich, medium class 25% and the rest 25% are poor to very poor. Considering food security issue, only 30% peoples are food insecure and the majority percentage (70%) of them are food secure.

Most of the peoples (80%) are directly involved in agriculture as primary occupation, out of them 30, 25% and 5% are also involved with small business, agriculture labor, fish farming and van pulling as secondary occupation, respectively. 10% peoples are service man, 5% fishers, 3% involved as van puller and only 2% are mawali and bawali.

Many NGOs (BRAC, Grameen Bank, ASA, BRDB, CODEC, Uddipon, RRF, Muslim Aid, Islamic relief and SMKS (Seba Manobik Kallyan Songtha) etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster and climate change issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Panchakaran UP

This UP is located mid western side of the Upazilla. The communication is very difficult from Upazilla. This UP is located 10-20 km from SIZ.

Panchakaran union is comprised of five mouzas and nine wards having a total area of 2813ha (BBS, 2001), of which net cultivable area is 1750ha (62% of total area of the union) and permanent fallow 25ha, temporary fallow land covers 150ha. The number of farm family is 3900 where about 50% are share croppers and different farmer's

categories were marginal 900 (about 23% of union's total), small 1250(32%), medium 1000(26%), large 100 (3%) and landless 650(17%) respectively. The soil possess low to high salinity condition in the dry season and soil salinity level and soil pH ranges from 4.3-15.0dS/m and 7.2 -8.2 respectively (Field Survey 2009-2010).

The major land type of this union is medium low land (1550 ha, about 88% of net cultivable area) followed by medium high land (200 ha, 12%), which indicates that most of the land area is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (75% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (3% area); Rabi vegetables-Kharif vegetables - Fallow (2% area); Shrimp (Bagda with white fish)-T. Aman (HYV/LIV) (20% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall and drought problem. Considering the above mentioned climatic disasters the community of this union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In this union, 0 km road pacca, 12.5km brick soling and 75km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here six cyclone shelters have existed where only 5-10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster.

In this union, 45% peoples are poor to very poor, medium class 35% and the rest 20% are rich to very rich. Considering food security issue, only 20% peoples are food insecure and the lion part (80%) of them are food secured.

Most of the peoples (70%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (25%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (Prodipon, BRAC, Grameen Bank, ASA, BRDB, Caritas and IPAC etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster and climate change issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

7.11 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from SIZ, and percentage of dependent people on Sundarban- Nishanbaria, Khuolia and Baraikhali UPs are selected for village profiling. A team was engaged with checklist and questionnaire to 8-12 villages (list is provided in the annexures) of 3 or 4 UPs in this Upazilla. The team collected information and prepared disaster risk mapping for each village by interviewing and FGDs, depending on the finding, villages are selected as part of a cluster to be served the target beneficiaries by project implementation work.

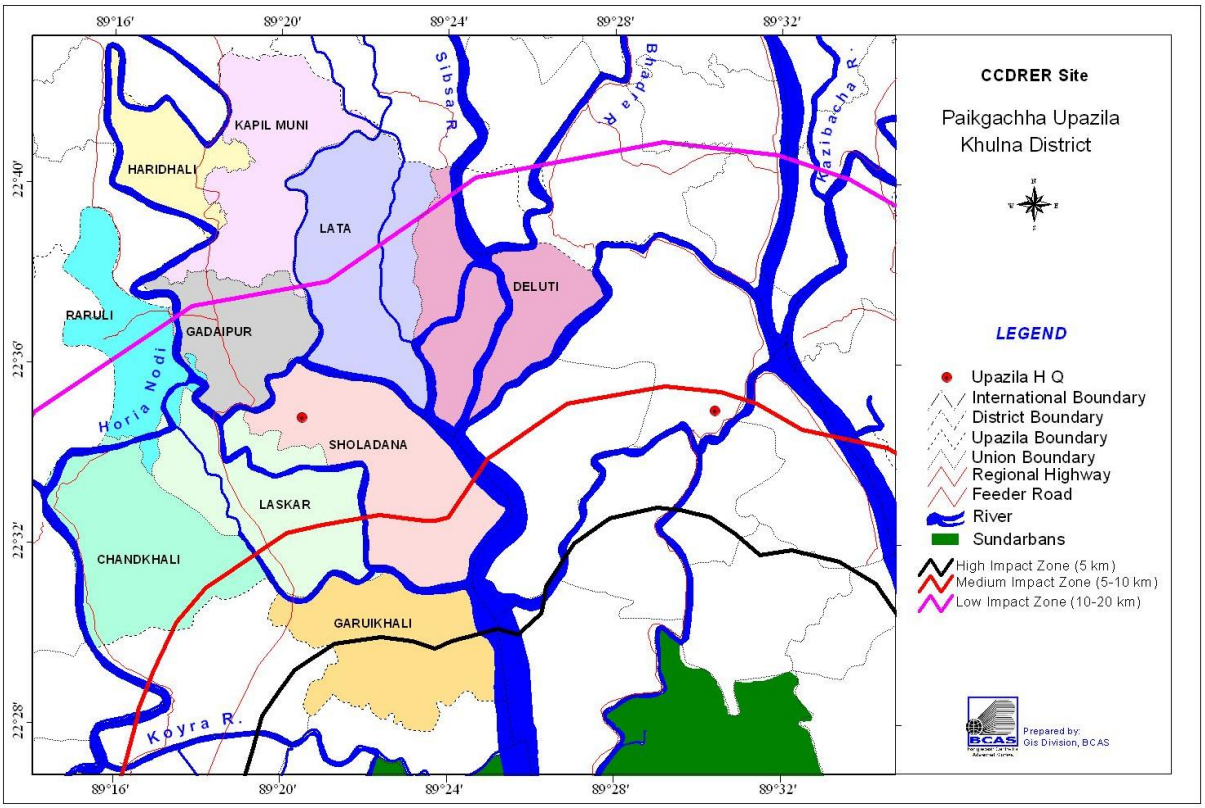
7.12 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 5 villages in Nishanbaria, 5 villages in Khuolia and 5 villages in Baraikhali were selected for Households Census. Thus a cluster will be chosen consisting villages from Nishanbaria, Khuolia and Baraikahali. This will provide opportunity to work in a cluster which is within 0-10 km of SIZ.

7.2 Paikgacha Upazilla (in Khulna district)

The reconnaissance team along with the project implementation people went to Paikgacha Upazilla head quarter to conduct reconnaissance as part of project implementation work. The reconnaissance team and project staffs were adequately briefed about the objective of the project and importance of reconnaissance as the most important stepping stone for project implementation.

Paikgacha upazills is situated to the south of Khulna district and its southern part is very close to Sundarban only separated by a river and strip of land. The upazilla has 10 UPs and 1 municipality. 1 UP (Garuikhali) of this Upazilla falls within 0-5 km from Sundarban while 4 Ups are located (Garuikhali, Laskar, Chandkhali and Solada) within 5-10 km from Sundarban economic impact zone (SIZ). People of Garuikhali and Soladana can reach Sundarban by boat within half an hour. So, a cluster can be easily selected to serve target beneficiaries.



Map-2: Paikgacha Upazilla of Khulna District

This upazilla faces climate change related disasters like river erosion, high salinity, cyclone, tidal wave, excess rain and water logging. The impact of climate change is recognized by people on agriculture and natural habitat. It was found that the people

who live nearby the Sundarban depend upon resources from Sundarban to some extent. They engage in fishing, catching fish fry, catching crabs as well as collecting honey. These people are disaster prone.

The team paid visit to upazilla head quarter to exchange views and share ideas as well as disseminate information about EU funded project aimed at reducing disaster risks and enhancing resilience of the people living around Sundarban, with Upazilla level government service providers (UAO, DAE, DoE, DoF,UPIO etc), NGOs and other stakeholders. Information also collected from secondary sources. Meetings, FGDS, KIIS were arranged with UP chairmans, secretaries, members and other knowledgeable persons at UP levels (Annesure-1b). Idea sharing meeting were also arranged with NGOs and other stakeholders. The aim was to assess climate change related disaster risks of the people living in the UPs, their dependencies on natural resources of Sundarban and ways and means of enhancing their capacity so that they can be more resilient to such problems. During reconnaissance in the field, climatic disasters and the associated physical and social vulnerabilities were assessed. Further, institutional linkage of partners in the community with regard to access and working experiences were explored. Besides, communication was also taken into consideration for primary village selection of villages (a checklist, having physical and social vulnerability indicators, was used for field reconnaissance).

The reconnaissance team covered the following UPs in Paikgacha Upaziila to collect information for ultimate UP selection for initiate village profiling.

Garuikhali UP

This UP is located at the southern part of the Upazilla and the southern villages are only 1.5 km away from Sundarban and people can travel to Sundarban by boat easily with a very short period of time. Four villages of this UP (Santa, Pashakhali, Boroikhali and Fakirabad) are only 1.5-3.0 km away from Sundarban. About 30% of the people living in nearby villages dependent on natural resources from Sundarban. The UP is located in climate change related disaster risk area. It is also within 0-5 km of SIZ.

Garuikhali union is comprised of six mouzas and fourteen villages having a total area of 4241ha, of which net cultivable area is 2527 ha (60% of total area of the union) and permanent fallow 5 ha, temporary fallow land covers 823 ha. The number of farm family is 4136 where about 25% are share croppers and different farmer's categories were marginal 859, small 1624, medium 615, large 218 and landless 820 respectively. The soil possess very low to medium (on 30% of low, 50% of medium and 20% of high land area) saline condition in the dry season and soil salinity, soil pH level ranges from 3-8dS/m and 6.0 -7.5 respectively.

The major land type of this union is medium high land (66%), followed by low land (19%), medium low land (10%) and high land (5%) which indicates that most of the land area is free from monsoon flooding hazards and is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Boro(HYV/LIV)-Fallow_T. Aman (HYV/LIV) (35% area); Rabi vegetables–Kharif vegetables/Fallow -T. Aman (HYV/LIV); Rabi crops-Kharif vegetables-T. Aman (HYV/LIV); Fisheries-Fisheries-T. Aman (HYV/LIV).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, water logging and drought problem.

Considering the above mentioned climatic disasters the community of the union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In this union, 37.43 km road pacca & brick soling and 20.9 km is katcha. During dry season the road become good and well but in monsoon most of these katcha roads become bad in condition for communication. Here four cyclone shelters have existed where only 5% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster.

In this union, 74% peoples are poor to very poor, medium class 23% and the rest 2% are rich to very rich. Considering food security issue, 46% peoples are food insecure and the rest 54% of them are food secured.

Most of the peoples (80%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (15%) and the rest (5%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (BRAC, ASA, Prodipon, Grameen Bank, Gonomuki Karjocrom and IPAC etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster and climate change issue. The community peoples are very much interested to involve with the CCREDER Project activities and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of the project.

Chandkhali UP

This UP is located in the South Eastern part of the Upazilla. Horia river flows on the western side of this UP. This UP is very much affected by river erosion, salinity, water logging and tidal waves. This UP is within 5-10 km from Sundarban but through waterways, people visit Sundarban for livelihood.

Chandkhali union is comprised of twenty nine mouzas and twenty seven villages having a total area of 4174 ha, of which net cultivable area is 3130 ha (75%) and permanent fallow 5 ha, temporary fallow land covers 463 ha. The number of farm family is 5771 where about 13% are share croppers and different farmer's categories were marginal 1768, small 1957, medium 630, large 240 and landless 1176 respectively. The soil possess very low to very high (on 30% of low, 50% of medium and 20% of high land area) salinity condition in the dry season and soil salinity, soil pH level ranges from 3-18dS/m and 6 -8 respectively.

The major land type of this union is medium high land (70%) followed by low land (15%), high land (13%) and medium low land (2%), which indicates that most of the land area is free from monsoon flooding hazards and is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fisheries-Fallow-Fisheries; Fallow–Fallow–T. Aman (HYV/LIV); Rabi vegetables–Kharif vegetables- Fallow; Boro (HYV/Hybrid/LIV)-Fallow-T. Aman.

The major climatic disasters in this union are cyclone, tidal surge, salinity intrusion, water logging, erratic behavior of rainfall, inadequate drainage, system and drought. Considering the above mentioned climatic disasters the community of Chandkhali union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Chandkhali union, 32.84 km road pacca & brick soling and 59.15 km is katcha. During dry season the katcha roads become good and well but in monsoon most of the katcha roads become bad in condition for communication. Here five cyclone shelters have existed where only 5% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest peoples of this union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (75%) are poor to very poor, medium class 15% and the rest 10% are rich. Considering food security issue, only 40% peoples are food secured and the lion part (60%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 25% peoples are migrated to neighbor country (India) illegally each and every year during November - April.

Most of the peoples (75%) are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (15%) and the rest (10%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (BRAC, ASA, SUS, Prodipon, Grameen Bank and Rupantor etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster risk reduction issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Laskar UP

This UP is located mid southern part of the Upazilla. The communication is possible by both road and river from Upazilla HQ. River erosion and tidal waves are prominent natural disaster of this UP along with salinity. This UP is located 10-20 km from SIZ.

Laskar union is comprised of eleven mouzas a total area of 4276 ha (BBS, 2001), of which net cultivable area is 2960 ha (70%) and permanent fallow 5 ha, temporary fallow land covers 483 ha. The number of farm family is 4685 where about 12% are share croppers and different farmer's categories were marginal 1355, small 1100, medium 1025, large 155 and landless 1050 respectively. The soil possess low to very high (on 30% of low, 50% of medium and 20% of high land area) salinity condition in the dry season and soil salinity, soil pH level ranges from 3-18 dS/m and 7 -9 respectively.

The major land type of this union is medium low land (40%) followed by low land (30%), medium high land (26%) and high land (4%). Major cropping pattern is Fisheries-

Fisheries-T. Aman (HYV/LIV); Boro(HYV)-Fallow- T. Aman (HYV/LIV); Rabi vegetables–Khrif vegetables-T. Aman (HYV/LIV); Rabi crops-Fallow-T. Aman (HYV/LIV).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, water logging, inadequate drainage system and drought. Considering the above mentioned climatic disasters the community of Laskar union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Laskar union, 26 km road pacca & brick soling and 26.5 km is katcha. During dry season the katcha roads become good and well but in monsoon most of these roads become bad in condition for communication. Here three cyclone shelters have existed where only 8-9% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 92-91% peoples of this union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (70%) are poor to very poor, medium class 25% and the rest 5% are rich. Considering food security issue, 42% peoples are food secured and the rest 58% of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope about 25% (15% migrated to India illegally) peoples are migrated to others place each and every year during November - April.

Most of the peoples (70%) are directly involved in fisheries as fish farmers, fisheries labor, production partners, fish trade etc. to maintain their livelihood followed by agriculture (20%) and the rest (10%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali, crab collection, spawn collection and service man.

Many NGOs (BRDR, Prodipon, BRAC, Grameen Bank, ASA and Mukti etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster risk reduction issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Soladana UP

This UP is also located in the center of the Upazilla on the river banks. This UP is well connected by river. Communication is very not difficult. It has high salinity problem along with tidal wave and water logging. People can reach Sundarban by waterways easily. This UP is located 5-10 km from SIZ.

Soladana union is comprised of twenty mouzas and thirty two villages having a total area of 4893 ha, of which net cultivable area is 2180 ha (45%) and permanent fallow 4 ha, temporary fallow land covers 2043 ha. The number of farm family is 3283 where about 20% are share croppers and different farmer's categories were marginal 720, small 949, medium 850, large 400 and landless 364 respectively. The soil possess very low to very high (on 20% of low, 70% of medium and 10% of high land area) saline condition in the dry season and soil salinity, soil pH ranges from 3-18dS/m and 6 -9 respectively.

The major land type of this union is low land (872 ha, 40% of net cultivable area) followed by medium low land (654 ha, 30%), medium high land (436 ha, 20%) and high land (218 ha, 10%). The high land is not inundated by monsoon flooding but medium high land are inundated for 5-7 months at various depths not exceeding 90 am. Major cropping pattern is Shrimp-Shrimp-Fallow (88% area); Shrimp-Fallaw- T. Aman (10% area); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (1% area); Rabi vegetables-Fallow-Fallow (1% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, water logging and drought. Considering the above mentioned climatic disasters the community of Soladana union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Soladana union, 32.73 km road pacca & brick soling, 42.34 km is katcha. During dry season the katcha roads become good and well but in monsoon most of these roads become bad in condition for communication. Here five cyclone shelters have existed where only 10% peoples of the community took shelter during disaster. Besides, in most cases the connecting road to the cyclone shelter is katcha/brick soling which are not favorable to easy move there during disaster. So, that the rest 90% peoples of Soladana union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (60%) are poor to very poor, medium class 30% and the rest 10% are rich. Considering food security issue, only 34% peoples are food secured but the majority part (66%) of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 15% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

Most of the peoples (60%) are directly involved in fisheries as fish farmers, fisheries labor, fishers and share fish farming to maintain their livelihood followed by agriculture (30%) as farmers, share croppers and agriculture labour and the rest (10%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (BRAC, Grameen Bank, ASA, CSS etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster risk reduction issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Deluti UP

This UP is located in the north eastern part of the Upazilla and divided by three rivers. It faces river erosion, salinity, tidal waves and water logging. It is within 10-20 km from SIZ. Very few people are dependent on resources from Sundarban.

Deluti union is comprised of nineteen mouzas and twenty three villages having a total area of 5297 ha, of which net cultivable area is 3772 ha (71% of total area of the union) and permanent fallow 4 ha, temporary fallow land covers 730 ha. The number of farm family is 3567 where about 25% are share croppers and different farmer's categories were marginal 600, small 1100, medium 900, large 444 and landless 523 respectively.

The soil possess low to high (on 30% of low, 50% of medium and 20% of high land area) saline condition in the dry season soil salinity, and soil pH ranges from 4-13dS/m and 6.5 -8.0 respectively.

The major land type of this union is medium high land (75%), followed by low land (15%), medium low land (8%) and high land (2%) respectively, which indicates that most of the land area is free from monsoon flooding hazards and is suitable for T. Aman (LIV/HYV) paddy cultivation. Major cropping pattern is Fallow–Fallow– T. Aman (35% area); Fallow-Fisheries (shrimp)-T. Aman (LIV/HYV) (30%); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (10% area); Boro (HYV/Hybrid/LIV)-B. Aus (LIV/HYV)-T. Aman (5% area); Rabi vegetables- Khrif vegetables-Fallow (5% area); Fallow-Sesame/Fallow-T. Aman (10% area); Shrimp (Bagda with white fish) (5% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, water logging and drought. Considering the above mentioned climatic disasters the community of Deluti union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Deluti union, 19.5 km road pacca & brick soling and 49.90 km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here five cyclone shelters have existed where only 5% peoples of the community took shelter during disaster. Besides, connecting road of two cyclone shelters are katcha and bad in condition which are unfavorable to easy movement there during disaster. So, that the rest 95 % peoples of Deluti union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (50%) are poor to very poor, medium class 42% and the rest 8% are rich. Considering food security issue, 40% peoples are food secured and the rest 60% of them are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 20% peoples are migrated to neighbor country (India) illegally each and every year during December - April.

About 55% peoples are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (35%) and the rest (10%) are maintained their livelihoods as skill labor, small businessman, van puller, service man and others.

Many NGOs (ASA, BRAC, Grameen Bank, CSS, Adams and Uttaran etc.) are working in this union focusing on micro-finance and development activities but a few numbers of the mentioned organizations worked on disaster risks reduction issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

Gadaipur UP

This UP is located in the mid western part of the Upazilla and within 10-20 km from SIZ. But the communication is relatively good. Agriculture production in comparatively better

with less number of 'Gher', thus limited scope for other livelihood. This UP is also facing problem of cyclone, water logging, tidal wave.

Gadaipur union is comprised of twenty three mouzas and twelve villages having a total area of 2580 ha (BBS, 2001), of which net cultivable area is 1900 ha (74%) and permanent fallow 4 ha. The number of farm family is 4586 where about 40% are share croppers and different farmer's categories were marginal 1595, small 1203, medium 580, large 105 and landless 1103 respectively. The soil possess very low to very high (on 30% of low, 50% of medium and 20% of high land area) saline condition in the dry season and soil salinity, soil pH ranges from 3-16dS/m and 6-8 respectively (Field Survey 2009-2010).

The major land type of this union is medium low land (67%) followed by high land (18%) and medium high land (15%). Major cropping pattern is Shrimp-Shrimp-T. Aman (72%); Boro (HYV/Hybrid/LIV)-Fallow-T. Aman (20% area); Rabi vegetables-Khrif vegetables –T. Aman(HYV/LIV) (5%); Mustard-Jute-T. Aman (3% area).

The major climatic disasters in this union are cyclone, tidal surge, river erosion, salinity intrusion, flood, erratic behavior of rainfall, siltation, water logging, inadequate drainage system and drought problem. Considering the above mentioned climatic disasters the community of Gadiapur union become vulnerable in different angels i.e. physical aspects, social aspects and livelihoods aspects.

In Gadaipur union, 32.07km road pacca & brick soling and 20.90 km is katcha. During dry season these roads become good and well but in monsoon most of these roads become bad in condition for communication. Here only one cyclone shelter has existed where only 5% peoples of the community took shelter during disaster. So, the rest 95 % peoples of this union are vulnerable to ensure safe place during disaster.

In this union most of the peoples (48%) are poor to very poor, medium class 40% and the rest 12% are rich. Considering food security issue, less than 50% peoples are food secured but more than 50% are food insecure due to various causes like less access of natural resources, less scope of employment generation and rigorous impact of climatic disasters. In most cases, due to lack of employment generation scope more than 25% peoples are migrated to others place for employment generation each and every year during November- March.

More than 50% peoples are directly involved in agriculture as farmers, agriculture labor, share cropper to maintain their livelihood followed by fisheries (40%) as fish farmers, fishers, fish labour and the rest (10%) are maintained their livelihoods as skill labor, small businessman, van puller, bawalli, mawali and service man.

Many NGOs (CSS, BRAC, Grameen Bank, ASA and RRF etc.) are working in this union focusing on micro-finance and development activities but a few numbers of these working on disaster riskd reduction issue. The community peoples are very much interested to involve as a direct or indirect beneficiary under the CCREDER Project and some of them (local government personnel, elite peoples) committed to provide continues support for successfully implementation of project activities.

7.21 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from SIZ, and percentage of dependent people on Sundarban- Garukhali, Laskar and Solada UPs are selected for village profiling. A team was engaged with checklist and questionnaire to 8-12 villages (list is provided in the annexures) of 3 or 4 UPs in this upazilla. The team collected information and prepared disaster risk mapping for each village by interviewing and FGDs, depending on the finding, villages are selected as part of a cluster to be served the target beneficiaries by project implementation work.

7.22 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 5 villages in Garuikhali, 5 villages in Soladana and 5 villages in Laskar were selected for Census. Thus a cluster will be chosen consisting villages from Garuikhali, Laskar and Soladana. This will provide opportunity to work in a cluster which is within 5-10 km of SIZ.

7.3 Shyamnagar Upazilla (in Satkhira district)

The reconnaissance team along with the project implementation people went to Shyamnagar Upazilla head quarter to conduct reconnaissance as part of project implementation work. The reconnaissance team and project staffs were adequately briefed about the objective of the project and importance of reconnaissance as the most important stepping stone for project implementation.

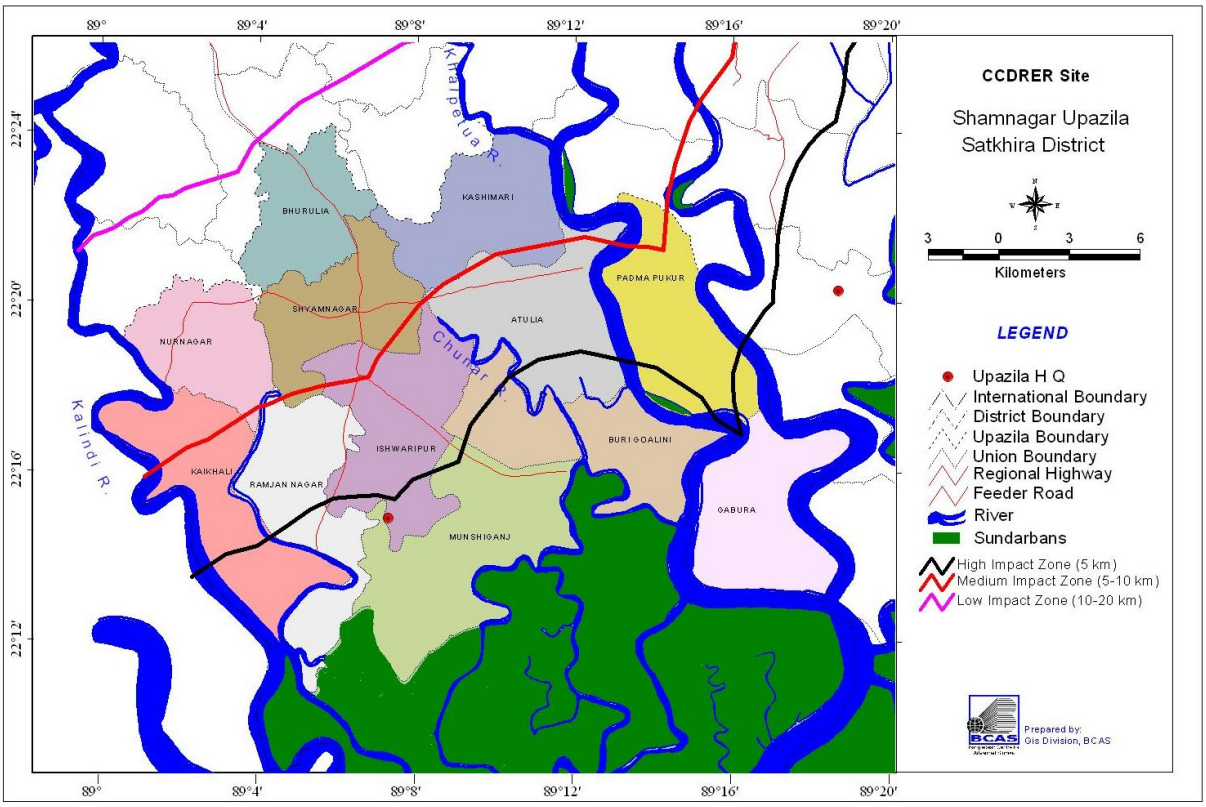
Shyamnagar upazill is situated to the south of Satkhira district and it has common boundary with Sundarban in the southern side. The upazilla has 12 UPs. 5 UPs (Munshiganj, Ramjannagar, Kaikhali, Burigoalini and Gabura) of this Upazilla has common boundary with Sundarban. 8 UPs of this Upazilla are located within 0-5 km from Sundarban. Of the 5 UPs that have common boundary with Sundarban, 3 UPs (Burigoalini, Gabura and Atulia) are covered by EU funded project implementation work done by Concern Worldwide. So, in order to avoid overlapping, the team decided to skip those three Ups. The team found that a cluster within Munshiganj, Koikhali and Ramjannagar can be served which falls within 0-5 km from SIZ.

This upazilla faces climate change related disasters like river erosion, high salinity, cyclone, tidal wave, excess rain and water logging. The impact of climate change is recognized by people on agriculture and natural habitat. It was found that the people who live nearby the Sundarban depend upon resources from Sundarban to some extent. They engage in fishing, catching fish fry, catching crabs as well as collecting honey, golpata, fuel wood. These people are disaster prone.

The team paid visit to upazilla head quarter to exchange views and share ideas as well as disseminate information about EU funded project aimed at reducing disaster risks and enhancing resilience of the people living around Sundarban, with Upazilla level government service providers (UAO, DAE, DoE, DoF,UPIO etc), NGOs and other stakeholders. Information also collected from secondary sources. Meetings, FGDS, KIIS were arranged with UP chairmans, secretaries, members and other knowledgeable persons at UP levels (Annesure-1c). Idea sharing meeting were also arranged with NGOs

and other stakeholders. The aim was to assess climate change related disaster risks of the people living in the UPs, their dependencies on natural resources of Sundarban and ways and means of enhancing their capacity so that they can be more resilient to such problems. During reconnaissance in the field, climatic disasters and the associated physical and social vulnerabilities were assessed. Further, institutional linkage of partners in the community with regard to access and working experiences were explored. Besides, communication was also taken into consideration for primary village selection of villages (a checklist, having physical and social vulnerability indicators, was used for field reconnaissance).

The reconnaissance team covered the following UPs in Shyamnagar Upaziila to collect information for ultimate UP selection for initiate village profiling.



Map-3: Shyamnagar Upazilla of Satkhira District

Munshiganj UP

This UP is located at the southern part of the Upazilla and the southern villages (like Munshiganj, S. Kadamtala, Horogaon, Sinhatala, Chunkari, Vetkhali etc) have common boundary with Sundarban or in some places only separated by river or water bodies. People can travel to Sundarban by boat easily with a very short period of time. About 20% of the people living in nearby villages are dependent on natural resources from Sundarban. The UP is located in climate change related disaster risk area.

Issaripur UP

This UP is located in the mid Southern part of the Upazilla. Its southern tip is very close to Sundarban (few km away) and only separated by a land, but can be connected by river. Southern part of this UP falls within 0-5 km from SIZ. Villages like Ghumghat

Kewratali, chararchalk etc is very close to Sundarban. People living in nearby villages are dependent on resources from Sundarban to some extent. This UP is very much affected by river erosion, salinity, water logging and tidal waves.

Ramjannagar UP

This UP is located in the mid southern part of the Upazilla. Southern part of this UP has common boundary with Sundarban. Golakhali, Kalinchi villages are on the skirt of Sundarban. The communication is possible by road from Upazilla HQ. River erosion and tidal waves are prominent natural disaster of this UP along with salinity. About 5% people living close to Sundarban depend on the natural resources from Sundarban. Most part of this UP is located within 0-5 km from SIZ.

Koikhali UP

This UP is also located in the south western end of the Upazilla. Sundarban is in the south part and in the west it has boarder with India. East and west Koikhali, Joyakhali villages are nearby to Sundarban. This UP had 6 chars that are populated with very poor people, who are also very vulnerable to natural disaster. The UP has mane rivers. People can reach Sundarban through rivers. It has high river erosion problem along with tidal wave and water logging. Most part of this UP is located within 0-5 km from SIZ.

7.31 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from SIZ, and percentage of dependent people on Sundarban- Munshiganj, Koikhali and Ramjannagar UPs are selected for village profiling. A team was engaged with checklist and questionnaire to 8-12 villages (list is provided in the annexures) of these 3 UPs in this upazilla. The team collected information and prepared disaster risk mapping for each village by interviewing and FGDs. Depending on the finding, villages are selected as part of a cluster to be served the target beneficiaries by project implementation work.

7.32 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 5 villages in Munshiganj, 5 villages in Ramjannagar and 5 villages in Koikhali were selected for Census. Thus a cluster will be chosen consisting villages from Garuikhali, Laskar and Soladana. This will provide opportunity to work in a cluster which is within 0-5 km of SIZ.

Summary information on Reconnaissance is given in the Annexure -2 A.

Reconnaissance Study in Indian Part of Sunderbans, CCDRER project.

I. INTRODUCTION

1.1 Background

DRCSC is working to attain food and livelihood security of the rural poor through sustainable management of natural resources on the basis of principles and actions that are environment friendly, economically appropriate, socially just and developed by mutual cooperation. DRCSC is working as an non-profit, non-Govt. developmental organization since 1982. We work mostly in West Bengal and in eastern India.

DRCSC is implementing an EU funded project titled "Collective Action to Reduce Climate Disaster Risk and enhancing Resilience of vulnerable coastal communities around the Sunderbans in Bangladesh and India" (CCDRER) with the collaboration of BCAS in Bangladesh. DRCSC is implementing in the selected cluster of Patharpratima, Sandeshkhali 1&2, Basanti and Hingalganj districts.

The overall goal of the project is to reduce climate disaster risks and resilience of the coastal communities around the Sunderbans by building capacity of the vulnerable communities, local actors and stakeholders through sustainable natural resource management and disaster risk reduction for promotion of livelihoods as well as by advancing community adaptation to climate change.

1.2 Reconnaissance

Now it is well known that the Sunderbans is one of the most vulnerable areas in terms of climatic disaster and the natural environment is degrading day by day and the people are somehow manage to live over there. Numbers of methods, tools, (reconnaissance, census, baseline survey, PVA) are being used to identify the most vulnerable area as well as beneficiaries in order to implement the CCDRER project. Participatory community approaches with different stakeholders are being exercised for the reconnaissance study. Reconnaissance is a basic important work to pin point target areas and groups who are the likely beneficiary of the project. More importantly, reconnaissance reduces risk of mistake in wrong selection of areas and beneficiary as well. Reconnaissance, in the project, refers to the observation and information collection, about a specified location and the area around it. A reconnaissance team was engaged to use surveillance around the Gram Panchayet (GPs) in selected Blocks to target village inside the Union to observe natural environment, living standard, occupation, income sources and climate change risks and vulnerability and other relevant issues of the household. While doing this the team kept in mind the project objective.

II. SCOPE OF WORK FOR RECONNAISSANCE TEAM

To conduct reconnaissance in the CCDRER project area a team of 9 members have been formed those who are supposed to take all necessary preparation for conducting reconnaissance study in selected village where target beneficiary are available.

The team had determined target village where the potential beneficiaries can be identify, in doing so they have identified suitable Blocks, in targeted districts. Subsequently, they selected Gram Panchayet and villages for the implementation of the work. They also

develop necessary tools, collected information from primary and secondary sources, conducted interviews, FDGs, to identify exact location of the targeted village and beneficiaries. The work of reconnaissance team can be listed as follows:

- Collecting information from both primary and secondary sources.
- Developing necessary tools and methodology to conduct reconnaissance.
- Selecting Gram Panchayet and villages under the specific Blocks for the implementation of CCDRER.
- Selecting CLUSTERs in each selected Blocks base on the presence of target beneficiary who are disaster prone and dependent on Sunderbans to some extent for livelihoods.
- Selecting villages in each selected Gram Panchayet, where the project can be implemented.
- Conducting village profile for targeted villages with a view to identify location of the target beneficiary group.
- Conduct village survey on the basis of village profile format to verify with the secondary information.
- Prepare ground for conducting census in the selected villages.
- Prepare ground for baseline survey and PVA in that area.
- Formation of PVA team at the GP level in each cluster, the team will facilitate the PVA exercise in the village.

III. METHODOLOGY

- For the reconnaissance, the following methods were followed:
- Reviewed of literatures and maps North 24 Parganas and South 24 Parganas to identify the Clusters and GPs.
- Prepared a plan for conducting reconnaissance study
- Enumerator along with the field worker have visited the field area to collect information as per plan.
- we are able to held a meeting centrally, where all enumerators and selected field worker have discuss on the collected information to analyze the situation.
- Submitted the compilation report to the Team Leader.

Reconnaissance Methods

A reconnaissance team discussed the objectives of such work with project implementation people. The team members were briefed adequately about project goals and objectives and the criteria required to select right location for implementing project activities. The team decided to talk with the relevant stakeholder like Panchayet Pradhan of the village, Block (agricultural, Disaster, Forest) dept. and other local NGOs. There was no central meeting held in the field level. However, we are able to conduct number of GP level meeting with the member from specific village to brief the goal of the project, plan for the particular village. We also collected information from the secondary sources. The team also talked to the people in villages that are more risky in terms of natural disasters due to climate change. We also have conducted number of FDGs at village level separately with the village women and men. Mainly, we have collected information on the following pointes.

Soil salinity in that area, river bank erosion, frequency and intensity of cyclone, dependency on Sunderbans, fishermen, schedule cast, schedule tribe, village wise number of households with electricity, cyclone shelter, financial institution, NGO and

other organization, drinking water, hospital and other health facilities, road condition, sanitation, distance from nearest market; town; river; forest.

IV. Technical Direction:

CCDRER project personal (Team leader and Coordinator) provided technical assistance during the implementation of the consultancy. The consultant regularly informed Team leader and Coordinator about the progress of the work. CCDRER project officials provided the relevant documents for the review and also took part in the activities in the reconnaissance process.

V. TEAM COMPOSITION

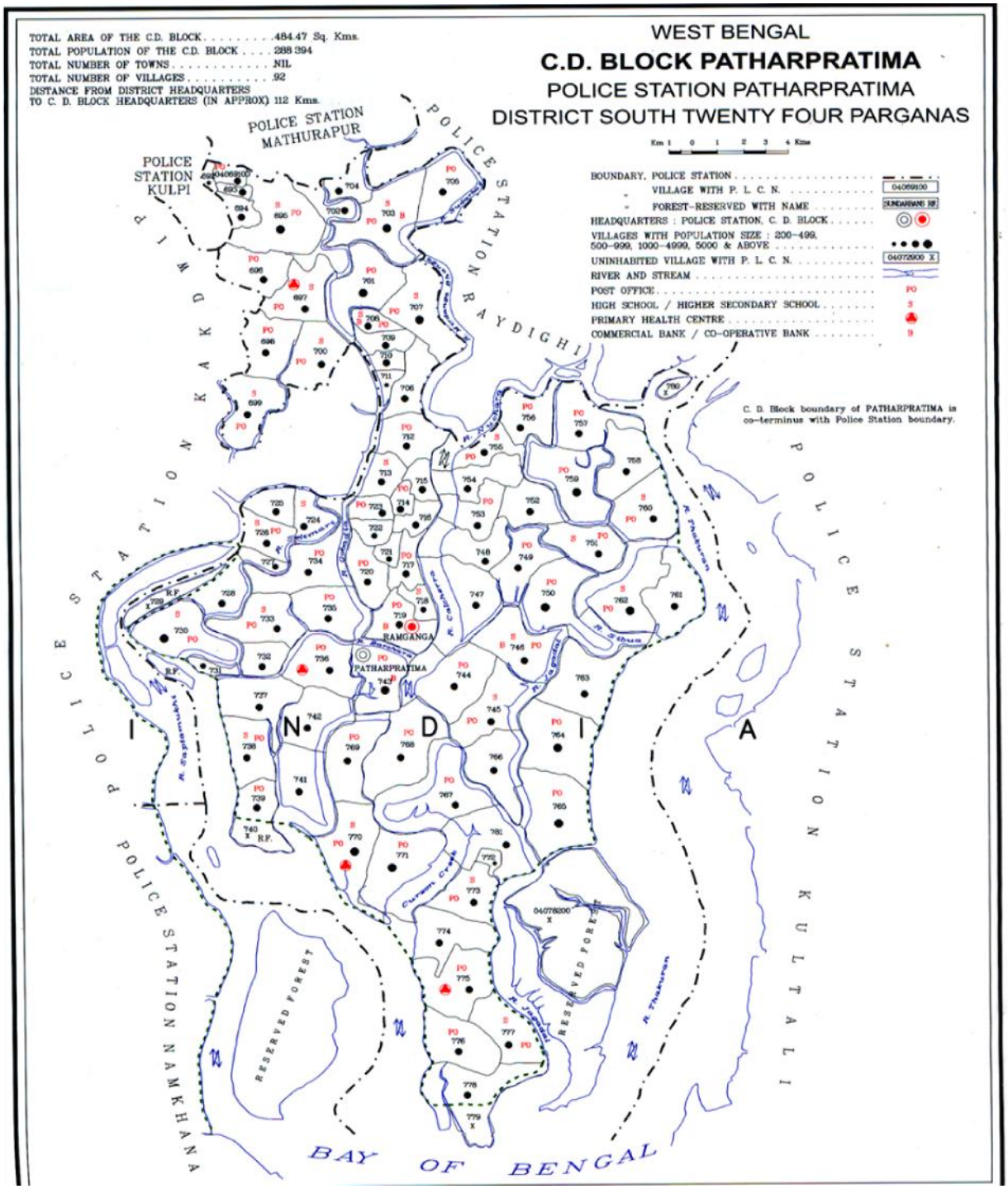
The Reconnaissance team consisted of the following :

1. Mr. Anshuman Das, Team Leader
2. Ms. Chandrani Das, Study Coordinator
3. Mr. Kaustuv Roy, Project's staff
4. Mr. Anirban Roy, Project's staff
5. Mr. Partha Dey, Project's staff
6. Mr. Animesh Bera, Field Supervisor
7. Mr. Gopla majumder, Field Supervisor
8. Ms. Sandhya Mandal, Field Supervisor
9. Ms. Harasit Mahata, Field Supervisor

VI. FINDINGS:

6.1 Pathar Prtaima Block (in South 24- Parganas District)

Pathar Prtaima Block is situated in the southern part of South 24-Parganas District with river Thakuran on its east, Kakdwip & Namkhana Blocks on the west, Mathurapur-I &II Blocks on its north and Bay of Bengal in the south. This is one of the largest blocks in West Bengal consists of 15 Gram Panchayats and 87 mouzas. It is entirely rural area.



Map-4: Patharprotima Block

Physical Features

Pathar Pratima Block is located across the coast line while 5 of its GPs are alongside the mainland of the district. The remaining 10 GPs are isolated and separated by rivers & creeks. The major rivers are Thakuran, Mridangabhanga, Gobadia, Saptamukhi, Karjon Creek, Wals Creek, Chaltadunia, Jagaddal, Bakchara, etc. The island villages are protected mostly by earthen dykes but in some of the vulnerable portions and sea facing embankments are strengthened with brick-block pitching.

- Geographical Area – 484.47 sq.km
- Agricultural area (Aman)– 32,679 ha
- Forest Area – 15174 ha
- No. of Mouzas – 87
- No. of Gram Panchayats – 15
- No. of Households (2001) – 50,764

Climate

The climate of this region is sub-tropical. The Bay of Bengal and network of creeks and rivers control the extreme climate. The tropical monsoon climate with excess humidity is prevalent for about six months in a year. High humidity prevails throughout the year but humidity goes up to 96% during rainy season. Average temperature varies from 13.7 Celsius to 38 Celsius. Average annual rainfall is 1700 mm.

Cyclones & storm events tend to occur in between May & December with the incidence being highest in May and the post – monsoon months of October & November. It is observed that there are 4 cyclonic events per year on an average. These cyclones normally bring high winds, heavy rainfall and strong tidal surge. In some cases when the cyclonic events having wind force more than 100 km per hr synchronized with the high tide became disastrous as the strong wave dash influenced by storm surge hit the river embankments causing breaches and flash flood with sea water.

In addition to cyclones, summer thunderstorms sometimes in the form of hailstorms named as Norwester (locally *'Kalbaisakhi')* ruins the harvest – ready crops as well as the thatched & semi-pucca houses.

Some of the villages in the mainland area are low lying and lack of proper drainage systems. Heavy rain during monsoon months causes heavy water logging and subsequent crop failure.

Land Use

The land use pattern of Patahr Pratima Block is given below:

Distribution of Land	**Area in Ha**
Net Area under Cultivation	30506
Area under Pasture & Orchard	224
Cultivable Waste Land	961
Homestead Land	40
Forest Land	15174
Area in which more than crop grown	7935

Administrative Units

The Block Development Office is at the top of the administrative unit of the block in which the Block Development Officer is the executive head. Out of three tier Panchayat Raj Institution (PRI) two tiers viz Panchayat Samity (PS) at block level and Gram Panchayat (GP) at garam panchayat level exist. The members of these PRIs are elected ones. Savapati is the head of the Panchayat Samity where as the Pradhans are the heads of GPs. Other block level administrative units are Land & Land Reforms Office,

Registry Office, Agricultural Development Office, Animal Resource Development Office, Block Veterinary Office, Forest Range Office, Sanitary Office, PHE Office, Electric Supply Office , Office of Inspector of Schools, Field offices of Irrigation & Waterways and Sundarban Development Board, etc.

The Panchayat Samity is assisted by the Gram Panchayats in the development activities. The Block Office is administered by the Sub-Divisional Office located at Kakdwip, which in turn under the administration of the District Magistrate who is the executive head of the district. Under the PRI system, the Savadhipati of Zilla Parishad of the district is the administrative head of the three-tier module.

Demographic Features [2011 census]:

i) Total persons – 328769, Male- 168324, Female – 160445
ii) Total Scheduled Caste Persons - 77874,
iii) Total Scheduled Tribe persons - 1926
iv) Sex Ratio [M:F] – 1000:953
v) Density of population / sq. km – 678
vi) Decadal growth rate wrt 2001- 14%,
vii) Literacy [%] : a) total – 72.8, b) male – 84.3, c) female – 60.6

Following table presents the occupation wise distribution of workforce of Pathar Prtaima Block [2005-06]:

Total workers	140045	42.6 (pc to total population)
Cultivators	48596	34.7 (pc to total workers)
Agril. Laborers	43615	31.1 (Do)
House Hold Workers	2636	1.9 (Do)
Other Workers	45197	32.27 (Do)
Main Workers	87607	26.65 (pc to total population)
Marginal Workers	52438	15.95 (pc to total population)
Non Workers	188724	57.40 (pc to total population)

Due to mono – cropping nature of cultivation, the absorbing capacity of effective workforce in agriculture is low. It is evident from the above information that a major portion of the workforce remain unemployed and / or under- employed. A major portion of the workforce migrates to nearby districts even to outside states for a gainful employment. However Mahatma Gandhi National Rural Employment Programme has created some scope for creating additional employment to the job – seekers at GP level.

Livelihoods Features:

Agriculture [2005-06]

Pathar Pratima Block has a net cultivable area of 30506 ha and according to 2011 census per capita land holding size is 0.092 ha. This holding size is decreasing gradually with the increase of population. The land type is mainly low lying having 61% and the per cents of medium & upland are 26% & 11% respectively. Agriculture in this region depends on monsoon rains & basically monocrop. However micro irrigation potentials created through rain water harvesting and trapping of under ground water in some

villages, the area under a second crop stands around 26%. The agricultural system of the region is centered on two main cultivating seasons:

-The *khariff* or monsoon season – the true monsoon period is between June – September. During this time *aman* paddy is the dominant crop and it is harvested during the period of post monsoon months in between November – December.

-The *rabi & rabi* – summer season - this falls between November to June. During this period some *boro* paddy cultivation with stored water takes place. However the agricultural activities focus more on dry farming and less water consuming crops like winter vegetables, chilies, watermelon, summer vegetables, pulses like *khesari & moong* and oil seeds like til, mustard and sunflower.

Lack of irrigation facility is the main constraint in increasing cropping intensity in this block and as such nearly 75% of cultivable land remains fallow for 6-7 months after *aman* paddy harvest. Micro irrigation potentials created through reservoirs and storing the rainwater are the main source of irrigation in this block.

Classification of farming communities based on land – holding pattern of Pathar Pratima Block is as follows:

- Small farmers - 7107
- Marginal farmers – 30680
- Bargadars – 21394
- Patta Holders – 25031
- Agricultural Labourers - 43615

Major crops grown in the block are Paddy, chillies, sunflower, Til, Moong, Khesari, winter & summer vegetables, Betel leaves, coconut, etc.

Fisheries [2005-06]

Fishery operation and fish catching in rivers and sea are the second major occupation of the inhabitants of this block. Close proximity to the sea and tidal rivers bring this opportunity to the people lacking gainful income all the year round. Even the cultivators & agril. labourers are taking this occupation during lean season of agricultural operation for earning additional income in spite of natural & occupational hazards in this sector. Information relating to fisheries are given below:

- Net area available for pisciculture – 8810.4 ha
- Net area under effective pisciculture – 4060.55ha
- No. of persons engaged in this profession – 60475
- Approximate Annual Production - 142156 qntls.

Animal Husbandry

Animal husbandry operation in this block can be treated as the third livelihood option but presently operating in a very poor scale. Production per unit of local breed cow is not economical. However the Black Bengal Goat and indigenous breed of sheep – "*Garole*" have tremendous prospect for their sustainability in local condition, genetic specialty and survivality in stress condition. Households having water bodies duck and poultry bird

rearing in home units is also remunerative to the households belonging to sub-marginal farming communities. The women folk mainly belonging to the Below Poverty Line (BPL) category are engaged in these operations with their inherent skill.

The coverage of veterinary and animal husbandry support services in the block are given below:

- State Animal Health Centre – 1
- Block Animal Health Centre – 1
- Animal Development Aid Centre -3
- Artificial Insemination Centre- 5
- Veterinary Personnel - 8

Social Assets [2005-06]:

a. Academic institutions : Primary schools – 202, Middle schools – 11, High schools – 18, Higher Secondary School - 12 College – 1, Special & Non – Formal Education Centres - 427
b. Financial institution/Co-op Society : Commercial Bank- 5, Gramin Bank – 6, Co-op. Society- 52
c. Medical facilities : Hospitals – 1, Health Centrtes – 3, Sub – Centres - 45 - 40, Mobile Health Unit – 1, Family Welfare Centre – 66
d. Electrification: Mouzas Electrified – 54, Mouzas under Electricity Extension Programme – 11
e. Drinking Water Supply – All 87 mouzas are covered under hand – operated tube-wells for drinking water supply (sweet water aquifer – 300m(+) below ground level), Piped Water Supply Schemes – 3.

Transport & communication

Being the remote block of the district Pathar Pratima was marked as an area having poor communication facilities not only in the island blocks but also the blocks connected with main land. But the area is comparatively well of now in terms of connectivity with the intervention of Govt. Departments, Panchayats & NGOs. However it is a fact that the road networks in the islands are not properly surfaced with Bitumen but theses are used as all weather roads having surfaced with brick pavements & concrete. The inhabited islands are connected with water based transport through improvised diesel operated mechanized boats. Concrete jetties have been constructed at almost all the ferry *ghats*, market places for boarding the vessels. One major bridge over Sutarbhog River has connected the Block head quarter with the district HQ. Four bridges (2 – big & 2- small) are under construction which will establish connectivity of 6 isolated Gram Panchayats with the mainland of the district.

Existing transport networks of the block are given below:

- No. of Ferry Services – 34
- Bus Terminus originated from the block – 2
- Nearest Rly. Station from Block – 26 km
- Distance from District HQ – 110 km

- Bituminous Road – 55 km
- Brick Paved & Concrete Road – 115 km
- RCC Jetties – 41 No.

Local Organization:

Pathar Pratima Block has a good network of voluntary organizations and NGOs who are working in the fields of awareness building, implementation of rural projects, training and production units through SHGs, literacy and organizing general health awareness programmes, drinking water & sanitation programmes, disaster management programmes, etc.

Weaknesses

i) Pathar Pratima Block is very much prone to cyclonic storm originated from the low-pressure zone of Bay-of-Bengal. As this is surrounded by rivers and sea, the earthen embankments encircled the island areas are mostly vulnerable to the upsurge & flashflood especially during high tide synchronized with the high velocity wind. Breaches of river & sea embankments, land erosion, land mass losses are major events during pre-monsoon period (i.e. from May) to post monsoon month (i.e. November) in each year. The devastating cyclonic storm AILA occurred on 25th May, 2009 seriously damaged the livelihoods & assets of 10 Gram Panchayats of this block.

ii) Nearing 90% of the houses in the area are non-permanent kutcha type and thatched houses made of local materials. Norwester, hailstorm in summer months and cyclonic storm surges during pre-monsoon & post-monsoon months destroy thatched houses. Betel vineyards, the most important commercial crop of this block, are also vulnerable to these natural events to a large extent.

iii) The Villages located alongside the sea & estuarine waterways are mostly vulnerable to soil erosion, embankment failures, flash flood and tidal upsurge, etc. Gobardhanpur village situated along Bay of Bengal has already lost almost three fourth of its land area due to soil erosion and the remaining portion is under serious vulnerable condition.

iv) Out – migration of people is increasing, as there is lack of local employment opportunities, which also disturbs the socio-economic structures of the villages.

v) Development of allied sectors like fisheries, animal husbandry, tourism, etc is not up to the mark to generate additional employment opportunities and to absorb the increased work force.

vi) 80% of net cultivable area is under rain fed kharif paddy cultivation with low yield. Change in monsoonal pattern due to probable climate change may adversely affect the agrarian economy of the block.

vii) Population growth imposes pressure on the monocropped agrarian economy of the block which in turn mounts serious pressure for harnessing natural resources damaging the ecology as well as the rich biodiversity of the block as a whole.

viii) Impacts of climate change especially the extreme events and sea level rise will adversely affect the low lying areas and the coast line villages of the block. These are the most vulnerable area and under serious threat.

Banashyamnagar GP

Banashyamnagar Gram Panchayat is located in the south – eastern side of Pathar Pratima Block within a distance of one km. This GP is completely isolated from the main land and surrounded by the rivers Mridangabhanga in the west, Pakhinal in the north, Jagaddal in the east and Chaltaduni & Karjon Creek in the south. G-Plot Gram Panchayat is in the south actually protecting the GP from the wave action of the Bay of Bengal. The villages are protected by the earthen dykes which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 10 km of Sundarban Reserve Forest and around 25 km from Sundarban Tiger Reserve area.

Banashyamnagar GP is comprised of 4 mouzas viz Choto Banashyamnagar, Banshyamnagar, Shibnagar & Gangapur having a total geographical area of 2194.49 ha. The area is mainly monocropped. Total population of the GP is 16402 (2001) of which the male & female population is 8314 & 8088 respectively. Number of total workers in this GP was 7590 (46%). Total number of household is 2880 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 35% (not yet finalized) which is above the state average. Persons belong to Scheduled Castes is 3478 (21.2%). According to 2001 census literacy rate was 61%.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of *Aman* paddy. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (30%) and remaining 10% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping pattern is cent percent coverage of Aman paddy in the net cultivable area with 80% traditional tall variety and 20% HYV paddy during kharif followed by boro paddy,& other rabi crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of generating additional employment to the emerging work force is very limited. A portion of work force takes up high risk sea fishing in the lean season. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of a gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are high concentration of Bragadars and Patta – holders in this GP who are counted to more than 50%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries.

Banashyamnagar GP has one Gramin Bank and a large size co-operative society who provide financial support to the households.

In Banashyamnagar GP, there are 6 km concrete road, 8 km double soling brick paved road, and 21 km kutcha road. These are connected with five ferry ghats, schools, bank, local hats and GP Office. 5 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Motorized rickshaw vans are the basic transport plying within the GP while the motorized boats are used to reach the block HQ, Sub-Divison HQ at Kakdwip & other places from the villages. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearly 60% of the houses collapsed in these two villages.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, charland erosion, changing river meanders and subsequent breach of river embankments. The worst affected mouzas are Choto Banshyamnagar and Gangapur facing major rivers – Mridangabhanga, Chaltadunia and Jagaddal. Condition of river embankments is not well enough to protect these villages and the inhabitants from the fury of natural disasters.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Pathar Pratima GP

Pathar Pratima Gram Panchayat was the Block Head Quarter of Pathar Pratima Block some years back but the Block Development Office and another two –three block level offices had been shifted to Ramganaga GP mainly for availing road connection with the district head quarter. But the major block level offices are still located in this GP along with the Police Station. This GP is completely isolated from the main land and surrounded by the rivers Mridangabhanga in the east, Barchara in the north, Saptamukhi (Branch) in the west and Karjon Creek in the south. Brajabalavpur Gram Panchayat and Lothian Islands are in the south protecting the GP from the direct wave action of the Bay of Bengal. The villages are protected by the earthen dykes which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 10 km of Sundarban Reserve Forest and around 25 km from Sundarban Tiger Reserve area.

Pathar Pratima GP is comprised of 7 mouzas viz Madhabnagar, Paschim Dwarakapur, Baradapur, Bhagbatpur, Kishorinagar, Dakshin Lakshminarayanpur and Dakshin Shibganj having a total geographical area of 44.63 sq km. The area is mainly monocropped. Total population of the GP was 26604 in 2001 of which the male & female population were 13595 & 13003 respectively. Total number of household is 4652 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Number of total workers in this GP is 11355 (42.7%). Households belong to Below Poverty Line (BPL) are around 31% (not yet finalized). Persons belong to SC & ST categories are 5990 and 418 respectively.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through

natural leaching process and becomes favourable for cultivation of Aman paddy. The soil Ph is normal.

The major land type of this GP is low land (around 62% of net cultivable area) followed by medium high land (25%) and remaining 13% is high land. As the major portion of the land type is low, water stagnation in the fields is also high (ranging from 0.5 to 1. m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping pattern is cent percent coverage of Aman paddy in the net cultivable area with 70% traditional tall variety and 30% HYV paddy during kharif followed by boro paddy,& other rabi crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals. Betel vine is the main commercial crop of this GP.

As this is a monocropped area depending on rainfed kharif crop, the cope of generating additional employment to the effective work force is limited. However being the proper GP and holding a big market centre in Dk. Shibganj & Madhabnagar villages, there is some additional employment opportunity for the residents. But still a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of a gainful employment. Most of them are seasonal migrants. Livelihoods of the people are centred round agriculture and allied activities. 80% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are also high concentration of Bragadars and Patta – holders in this GP who are counted to more than 40%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries. Good number small traders and other service providers are also operating in Pathar Pratima Market which feeds a big hinterland of the block.

Pathar Pratima GP has one Commercial Bank, one State Co-operative Bank, two registered co-operative societies who provide financial support to the traders and general inhabitants. Some private micro finance organizations are also working in this GP. The Sub-Post Office is located in this GP.

Pathar Pratima GP has two Higher Secondary schools, one High School, one middle school, twelve Primary Schools and some private schools. There is one Degree College adjacent to this GP and located in Durgagobindapur village within 200m distance. The literacy rate of this GP is 76%.

In this GP, there are 5 km Bituminous Rd (further 6 km proposed to link Bhagabat Crocodile Project), 4 km concrete road, 24 km double soling brick paved road, and 35 km kutcha road. These are connected with nine ferry ghats, schools, hospital, banks, markets & hats, GP Office and other Govt. Offices. 7 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Motorized rickshaw vans & rickshaw vans are the basic transport plying within the GP while the motorized boats are used to reach the block HQ & other places from the villages. One major bridge is under construction over Saptamukhi River connecting this Block as well as this GP with the main land of the state. One bus terminus has been opened up from this GP to ply vehicles to the city of Kolkta. At present the commuters avail bus services from Ranmganga point which is other side of Pathar Pratima Bazar to reach the District and State HQ at Kolkata.

There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses in the villages are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearly 20% of the houses damaged fully & partially in these villages.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, charland erosion, changing river meanders and subsequent breach of river embankments. The vulnerable mouzas are Dakshin Shibganj, Dakshin Lakshminarayanpur and kishorinagar which are facing major rivers – Mridangabhanga, Karjon Creek and Saptamukhi. Condition of river embankments is not well enough to protect these villages and the inhabitants from the fury of natural disasters. However the mangroves in the charlands of most of these villages play a very significant role in protecting the embankments from wave action. This GP hosts the Crocodile Project in Bagbatpur Mouza located at the southern most side of the GP and adjacent to the Lothian Wildlife Sanctuary.

Many NGOs, LBOs and voluntary organizations are working in this GP for building up awareness on conservation of the ecology and the biodiversity of the region. These organizations are used to operate from this GP and provide essential support to the cyclone & flood victims during natural disasters.

DigambarpurGP

Digambarpur Gram Panchayat is located in the north of Ramganga GP at present the head quarter of Pathar Pratima Block. This GP is within the mainland and connected with the district and State Head Quarter through PWD Road. The east & west sides of this GP are bordered with Mridangabhanga and Dhutkhali Rivers respectively. Dakshin Roypur Gp is in the north and Ramganaga is in the south. These sides are protected by the earthen dykes which are not so vulnerable to the cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments. This GP is within 15 km of Sundarban Reserve Forest and around 30 km from Sundarban Tiger Reserve area.

Digambarpur GP is comprised of 8 mouzas having a total geographical area of 31.74 sq km. The cultivable area is mainly monocropped. The details of mouza wise information are given in the following table (2001).

JL No.	Mouza	Area	No. of Households	Population	SC Popn.	ST Population	Total Worker
108	Dk. Durgapur	662.07	906	5061	963		2051
142	Indranarayanpur	462.6	575	3346	1186		1747
143	Digambarour	791.97	1034	5766	1555		2628
144	Gurudaspur	187.87	330	1847	545		890
145	Pascghim Sridharpur	212.77	371	2055	809		819
146	Uttar Mahendrapur	136.78	193	1221	0		700
147	Parbatipur	119.79	79	469	0		245
148	Ramnagar Abad	591.65	602	3560	735		1570
	Total:	3165.5	4090	23325	5793 25%	Nil	10650 45.6%

Households belong to Below Poverty Line (BPL) are around 31% (not yet finalized).

The soil possesses low to medium salinity condition during dry season but in the rainy season soil salinity comes down through natural process and becomes suitable for cultivation of Aman paddy. The soil Ph is normal. The major soil types are clay and sandy – loam.

The status of land type of this GP is low land (around 50% of net cultivable area) followed by medium high land (35%) and remaining 15% is high land. As the 50% of the land type belong to medium & high land, the water stagnation in the fields during kharif season is comparatively low which favours the farmers to grow aman paddy with High Yielding Varieties. The cropping intensity in this GP is a bit high (around 135). In addition to aman paddy cultivation, the farmers of this GP are used to grow boro paddy and other winter & summer vegetables n rice fallow lands with the support f supplementary irrigation and with the residual moisture in the soil. The major rabi crops are the winter vegetables, potato, sweet potato, sunflower, til, chilies, summer vegetables etc. grown in around 35% of the cultivable lands. The sweet leave betel vine yards are coming up in this GP. Having access to the Rail heads & wholesale markets, the growers are encouraged o produce these commercial crops for earning remunerative price.

Though this GP has achieved a better cropping intensity in respect o Sundarbans as a whole, it can not absorb the effective work force to its optimum. As a result a portion of work force is migrated to nearby districts and other states in search of a gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Other major livelihoods are pisciculture, animal rearing, small business & transport operating, etc. This GP has one Commercial Bank and a large size co-operative society who provide financial support to the entrepreneurs and general households.

This GP has 15 km bituminous rd connecting Ramganaga point and one link road, 5 km concrete road, 14 km double soling brick paved road, and 24 km kutcha road. These are connected with four important ferry ghats, schools, bank, health centres, local hats and GP Office. 4 CC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Bus, Auto Rickshaws, motorized rickshaw vans are the basic transport systems plying within the GP while the motorized boats are used to carry the passengers from the nearby islands. There is a Subsidiary Health Centre in Gurudaspur village which feeds the inhabitants of nearby 4-5 GPs. This GP has one Higher Secondary School, two High Schools, 11 Primary Schools. All these institutions are connected with all weather roads and are provided with drinking water facility. One piped water supply scheme is operating in this GP.

There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During cyclonic storm AILA occurred on 25th May, 2009 this Gram Panchayat was less affected.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, rapid siltation in river beds and subsequent tidal flux in the rivers. The vulnerable mouzas are Ramnagar Abad & Indranarayanpur facing Mridangabhanga River.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Achintyanagar GP

Achintyanagar Gram Panchayat is located in the eastern side of Pathar Pratima Block within a distance of 2 km. This GP is situated within a cluster of three Gram Panchayats viz Herambagopalpu, Lakshmijanardanpur & Achintyanagar which is completely isolated from the main land and surrounded by the rivers Mridangabhanga in the west, Pakhinal in the south, Thakuran in the east and Lakshmijanardanpur GP in the north. The villages are protected by the earthen dykes which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. However some stretches of river embankments are strengthened with dry brick & brick block pitching. This GP is within 5 km of Sundarban Reserve Forest and around 25 km from Sundarban Tiger Reserve area.

This GP is comprised of 6 mouzas having a total geographical area of 49.45 sq km. The cultivable is mostly monocropped. The details of mouza wise information are given in the following table (2001).

JL No.	Mouza	Area (Ha)	Population	Male	Female	SC	ST	Total Workers
183	Lakshmipur	1009.69	3038	1575	1463	246	00	1486
184	Bishnupur	590.44	2202	1148	1054	698	00	998
185	Kamdevpur	579,.51	2703	1405	1298	389	20	`1353
186	Achintyanagar	1091.03	5225	2624	2601	249	00	2183
197	Purba Sripatinagar	663.28	3587	1826	1761	622	00	1674
198	Paschim Sripatinagar	1011.31	5822	2996	2826	239	00	2538
	Total:	4945.26	22577	11574	11003	2443 21%	20	10222 45%

Total number of household is 3826 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 35% (not yet finalized) which is above the state average.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy. The soil Ph is normal.

The major land type of this GP is low land (around 62% of net cultivable area) followed by medium high land (30%) and remaining 8% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. One major drainage project on Chilkamari Canal has been constructed to drain out excess water from Purba & Paschim Sripatinagar mouzas and also to store rainwater for providing irrigation in the dry season. The cropping intensity is around 117. The coverage of Aman paddy is cent percent of the net cultivable area during kharif season followed by boro paddy,& other rabi crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 17% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of providing employment to the effective work force is very limited. A portion of work force takes up

high risk sea fishing and ishing in the rivers. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of a gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied activities. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are high concentration of Bragadars and Patta – holders in this GP who are counted to more than 50%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries and Sundarban Reserve Forest areas.

Achintyanagar GP has one Gramin Bank and two registered co-operative societies who provide financial support to the households. There are two High Schools, one Higher Secondary School and 9 primary schools in this GP. One Govt. Dispensary and one NGO run health unit is operating in this GP.

This GP has 15 km double soling brick paved road, and 29 km kutcha road. These are connected with five ferry ghats, schools, bank, local hats and GP Office. 5 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Motorized rickshaw vans are the basic transport plying within the GP while the motorized boats are used to reach the block HQ & other places from the villages. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During devastating cyclonic storm AILA occurred on 25th May, 2009 nearly 65% of the houses collapsed in Purba & Paschim Sripatinagar villages which are on the bank of Thakuran River. Land erosion is the acute problem of these villages

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, charland erosion, changing river meanders, rapid siltation in river beds and subsequent breach of river embankments. The most vulnerable mouzas are Purba & Paschim Sripatinagar, Achintyanagar & Lakshmipur facing two major rivers - Thakuran and Mridangabhanga. Condition of river embankments is not well enough to protect these villages and these villages got inundated with saline water flash floods almost every year through breach of river embankments.

Many NGOs, LBOs and voluntary organizations are working in this GP.

G-Plot GP

G-Plot Gram Panchayat is located in the southern most part of Pathar Pratima Block within a distance of 11 km on water ways. This GP is completely isolated from the main land and surrounded by Carjon Creek & Bay of Bengal in the west, Chaltadunia River in the north, Jagaddal in the east and Bay of Bengal in the south. The western and southern stretches of G-Plot Gram Panchayat is on the alongside of the Bay of Bengal. The coastal villages of this GP face the wave actions of the sea and the hazards of sea induced climatic conditions. The villages are protected by the earthen dykes and the sea facing embankments are strengthened by brick block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, coastal

erosion, tidal surge and breach of embankments, etc. This GP is within 5 km of Sundarban Reserve Forest and around 21 km from Sundarban Tiger Reserve area.

G-Plot GP is comprised of 9 mouzas viz Krishnadaspur, Dasour, Uttar Surendraganj, Dk. Surendraganj, Indrapur, Buraburirtat, Sitarampur, Gobardhanpur and Satyadaspur having a total geographical area of 59.22 skm. The area is mainly monocropped. Total population of the GP is 29,185 (2011). Number of total workers in this GP is 13,807 (47%). Total number of household is 4688 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 35% (not yet finalized) which is above the state average. Persons belong to Scheduled Castes & Scheduled Tribes are 4868 (17 %) & 531 (1.8 %) respectively. Having close proximity to the sea a considerable portion of working force that is mainly belonging to farmers and agril. labourers take up sea fishing in the lean season of cultivation in spite of high risks in this venture.

The soil characters widely vary in the villages of this GP. The lands in the villages like Uttar & Dakshin Surendraganj possess low salinity having sandy-loam textured and almost at per the lands of Gangetic plain. The villages adjacent to rivers & sea possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy. The soil Ph is normal.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining 10% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping pattern is cent percent coverage of Aman paddy in the net cultivable area with 80% traditional tall variety and 20% HYV paddy during kharif followed by boro paddy, & other rabi crops like winter vegetables, potato, sunflower, til, chilies, watermelon & summer vegetables, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of generating additional employment to the emerging work force is very limited. A portion of work force takes up high risk sea fishing in the lean season. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 35% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries.

G-Plot GP has one Gramin Bank and two registered co-operative societies who provide financial support to the households. There are one Higher Secondary, one Secondary, one middle school and 11 primary schools in this GP. According to 2011 census literacy rate is around 65%. There is one subsidiary Health centre in this GP but in most time remains doctorless. As such the people of this isolated island villages are to depend on the quacks for treatment of snake bites, enteric diseases and also for emergency cases. Percentage of institutional delivery is also very poor.

In this GP, there are 21 km double soling brick paved road, and 25 km kutcha road. These are connected with six ferry ghats, schools, local hats, fish – landing points and GP Office. 4 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Motorized rickshaw vans are the basic transport plying within the GP while the motorized boats are used to reach the block HQ at Ramganga & other places from the villages. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 60% of the houses collapsed in the villages located in the eastern side of the GP.

This GP has a long coast line facing Bay of Bengal. The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, coastal erosion, changing river meanders and subsequent breach of river embankments. The worst affected mouzas are Gobadhanpur, Sitarampur, Indrapur, Uttar Surendraganje facing major rivers – Chaltadunia and Jagaddal, Thakuran & Bay of Bengal. Condition of river embankments and sea - facing dykes is not well enough to protect these villages and the inhabitants from the fury of natural disasters. The Bay of Bengal has eaten away almost three – fourth parts of Gobardhanpur Mouza and the inhabitants of this mouza have lost their lands, assets & livelihoods and become the victims of coastal erosion. They are compelled to migrate permanently without any rehabilitation package. The people of the coastal villages may be the worst victims of climate change as predicted by the IPCC.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Brajaballavpur GP

Brajaballavpur Gram Panchayat is also located in the southern most part of Pathar Pratima Block within a distance of 7 km on water ways. This GP is completely isolated from the main land and surrounded by Saptamukhi River in the west, Walse Creek in the north, Carjon Creek in the east and Bay of Bengal in the south. The entire southern side of this Gram Panchayat is on the alongside of the Bay of Bengal. The GP faces the wave actions of rivers as well as the sea and the hazards of sea induced climatic disasters. The villages are protected by the earthen dykes and the sea facing embankments are strengthened by brick block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, coastal erosion, tidal surge and breach of embankments, etc. This GP is within 10 km of Sundarban Reserve Forest and around 25 km from Sundarban Tiger Reserve area.

Brajaballavpur GP is comprised of 4 mouzas viz Kshetramohanpur, Brajaballavpur, Gobindapur Abad and Rakshaskhali having a total geographical area of 33.55 skm. Rakshaskhali village is also isolated from the GP itself and bounded by rivers and sea. The area is mainly monocropped. Total population of the GP is 23,260 (2011). Number of total workers in this GP was 11,090 (48%). Total number of household is 3883 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 37% (not yet finalized) which is above the state average. Persons belong to Scheduled Castes & Scheduled Tribes are 5662 (24%) & 25 (less than 1%) respectively. Having close proximity to the sea a considerable portion of

work force that is mainly belonging to farmers and agril. labourers take up sea fishing in the lean season of cultivation in spite of high risks in this venture.

The lands in the villages possess medium to high salinity with heavy textured. The areas adjacent to rivers & sea possess high salinity condition during dry season and become unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water –logged condition. The soil Ph is normal.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining 10% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping pattern is cent percent coverage of Aman paddy in the net cultivable area with 70% traditional tall variety and 30% HYV paddy during kharif followed by boro paddy, & other rabi crops like winter vegetables, potato, sunflower, til, chilies, watermelon & summer vegetables, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals.

Being a monocropped area depending on rainfed kharif crop, the scope of generating additional employment to the effective work force is limited. A portion of work force takes up high risk coastal & sea fishing in the lean season of cultivation. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry and small business. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. More than 30% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries.

Brajaballavpur GP has one Gramin Bank and three registered co-operative societies who provide financial support to the households. There are one Higher Secondary, four Secondary, 8 primary schools and one Public Library in this GP. According to 2011 census literacy rate is around 64%. There is one subsidiary Health centre at Brajaballavpur and almost in the middle portion of the GP. General health care services tendered to the people are to some extent satisfactory for contiguous three villages excepting Rakshaskhali. Some active NGOs are also working in this sector.

In this GP, there are 13 km double soling brick paved road, and 15 km kutcha road. These are connected with seven ferry ghats, schools, local hats, fish –landing points and GP Office. 7 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc to and fro the nearby mainland markets and towns. Motorized rickshaw vans are the basic transport plying within the GP while the motorized boats are used to reach the block HQ at Ramganga & other places from the villages. There is one cyclone / flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 50% of the houses collapsed in the eastern

fringes of the villages of the GP. Three villages of this GP got inundated with saline water for several days after AILA and made the cultivable lands unsuitable for cultivation.

This GP has a long coast line facing Bay of Bengal. The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, coastal erosion, changing river meanders and subsequent breach of river embankments. The entire GP is vulnerable to storm & tidal surges of the rivers and sea. Condition of river embankments and sea- facing dykes is not well enough to protect these villages and the inhabitants from the fury of natural disasters. The works of reconstruction & retrofitting of damaged embankments occurred during AILA are yet to start and as such the inhabitants of this isolated GP are living in uncertainty. According to observations, the impacts of climate change will adversely affect this low lying area due to sea level rise and storm surges from tropical cyclones with higher intensity.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Ramganag GP

Ramganag Gram Panchayat has now housed the Head Quarter of Patahr Pratima Block. This GP is surrounded by Gobadia River in the west, Digambarpur GP in the north, Mridangabhanga River in the east and Kalchera River in the south. The villages are protected by the earthen dykes some portions of which are strengthened by brick block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 15 km of Sundarban Reserve Forest and around 35 km from Sundarban Tiger Reserve area.

Ramganga GP is comprised of 11 mouzas viz Rajrajeswarpur, Biswanathpur, Gayadham, Indraprastha, Jogindrapur, Dk. Mahendrapur, Ramganag, Dk. Gobindapur, Debichak, Sagar Madhabpur, Dk. Shibpur having a total geographical area of 27.26 skm. The area is mainly monocropped. Total population of the GP is 20,528 (2011). Number of total workers in this GP was 9,802 (48%). Total number of household is 3258 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 33% (not yet finalized) which is above the state average. Persons belong to Scheduled Castes & Scheduled Tribes are 3919 (19%) & 80 (0.38%) respectively.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. There is cent percent coverage of Aman paddy in the net cultivable area with 70% traditional tall variety and 30% HYV paddy during kharif followed by boro paddy, & other rabi crops like winter vegetables, potato, sunflower, til, chilies, Hybrid Tomato & summer vegetables, betel

vines, etc. in around 25% of the cultivable area supported with irrigation from storage ponds, canals and medium deep tube wells..

As this is a monocropped area depending on rainfed kharif crop, the scope of generating additional employment to the emerging work force is very limited. A portion of work force (more than 30%) is migrated to nearby districts and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 30% of the hhs are engaged in fisheries, wild shrimp seed collection, small business, transport and other service sectors.

Ramganag GP has one Commercial Bank and two registered co-operative societies who provide financial support to the households. There are one Higher Secondary, two Secondary, one middle school and 10 primary schools in this GP. According to 2011 census literacy rate is 67%. As there is no health centre in this GP, the people are to depend on the PHC at Patahr Pratima and SHC at Grudaspur in adjacent GP. The ICDS centres are working for women & child health care. Most of the block level offices are located in this GP at Ramganaga. The area is rapidly coming up as a business centre availing the connectivity with district and State Head Quarters.

In this GP, there are 12 km black – top road, 22 km double soling brick paved road, and 21 km kutcha road. These are connected with six ferry ghats, schools, local hats, fish – landing points and GP Office and Block HQ. 6 RCC Jetties on the ferry ghats facilitate the commuters in landing & boarding the motorized vessels as well as for export & import of produces and inputs etc. Ramganga is now an important gateway to the Sundarban Reserve Forest area as it is directly linked with Rail Head and State Capital Kolkata on road. Bus, Minibus and Motorized rickshaw vans are the means of transport plying in the GP. Regular ferry services are plying to connect the hinterlands of the blocks down in the islands. The motorized boats are the water crafts for transporting men & materials. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 30% of the houses collapsed in the villages located along side Mridangabhanga River. Hundreds of acres of cultivable lands got inundated with saline water during AILA and turned these lands unsuitable for crop cultivation in the next cropping season.

Three sides of the GP are surrounded by rivers and these are protected mainly by earthen embankments. Presently serious land erosion is going on in the south – eastern side of Ramganga GP. This is mainly for change in meanders of Kalchera River and rapid siltation in the connecting point of Mridangabhanga & Kalchera River. Several retarded embankments have been constructed to save the village as well as the Block HQ from erosion. The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments. Many NGOs, LBOs and voluntary organizations are working in this GP.

6.11 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from Sunderbans and the percentage of dependent people on

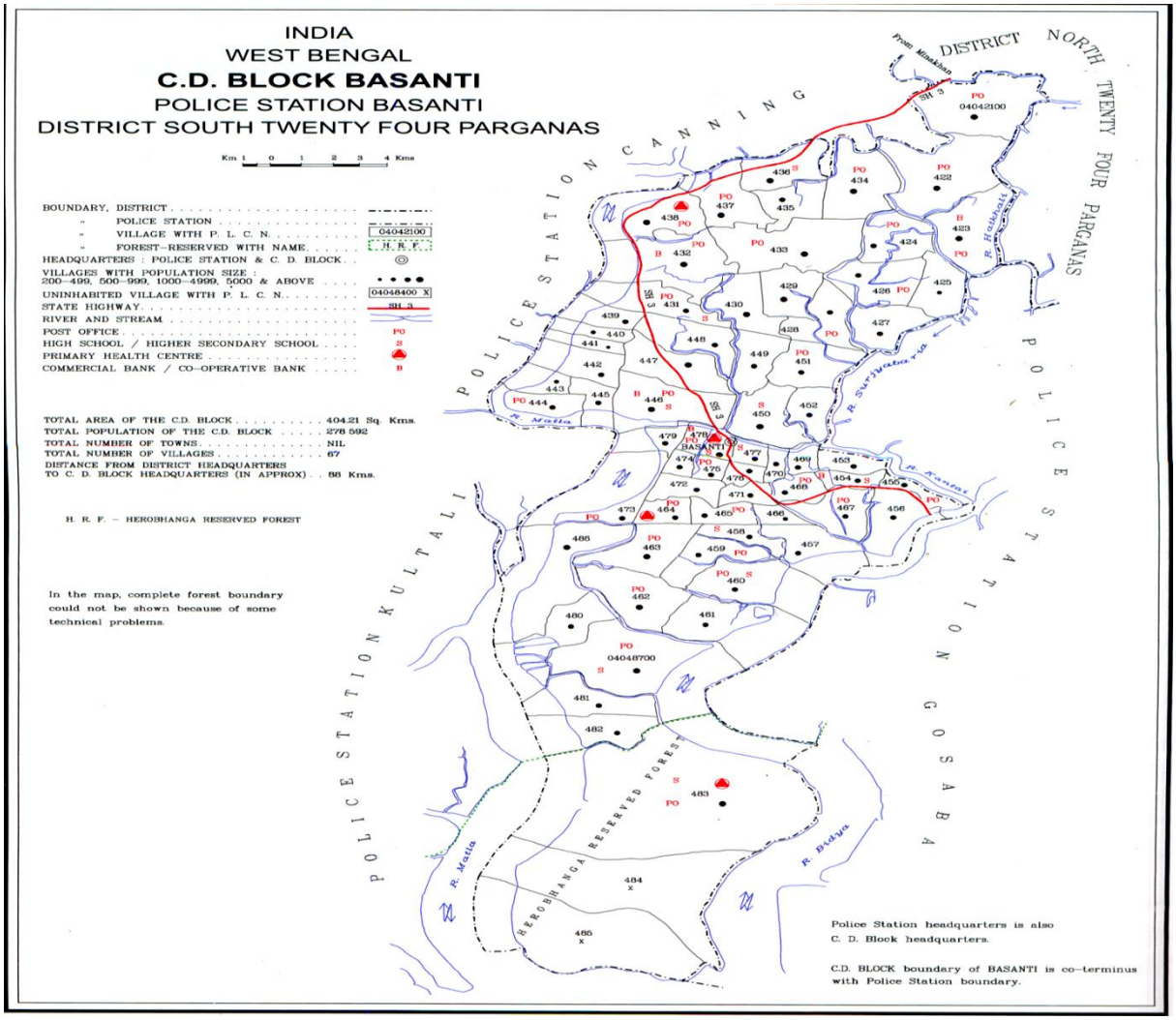
Sunderbans – Ramganga, Brajaballabpur and G Plot GPs are selected for village profile. The village profile survey has been conducted by the field supervisors in the respective project area. A team under the guidance of field supervisor, has collected information and prepared disaster risk mapping of each selected village by interviewing and FGD, depending on findings, villages are selected as part of a cluster to be served by the target beneficiaries by project implementation work.

6.12 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 5 villages in Ramganga GP, 6 villages in G Plot and 3 villages in Brajaballabpur were selected for households Census.

6.2 Basanti Block (in South 24- Parganas District)

Basanti Block is situated in the south – eastern part of South 24-Parganas District with river Bidya on its east, river Matla on the west, Sandeshkhali-I Block on its north and Sundarban Tiger Reserve in the south. The geographical area of the block is 286.03 sq km. This block consists of 13 Gram Panchayats and 65 mouzas (inhabited). It is entirely rural area.



Map-5: Basanti Block

Physical Features

Basanti Block is located on the border of Sundarban Tiger Reserve and Hogol River divides the block in two parts. 7 of its GPs are alongside the mainland of the district and the remaining 6 GPs are on the either side of river Hogol which are connected with a bridge. The river side villages are protected mostly by earthen dykes but in some of the vulnerable portions are strengthened with brick-block pitching.

Climate

The climate of this block area is sub-tropical. The Bay of Bengal and network of creeks and rivers control the extreme climate. The tropical monsoon climate with excess humidity is prevalent for about six months in a year. High humidity prevails throughout the year but humidity goes up to 96% during rainy season. Average temperature varies from 13.7 Celsius to 38 Celsius. Average annual rainfall is 1700 mm.

Cyclones & storm events tend to occur in between May & December with the incidence being highest in May and the post – monsoon months of October & November. In some cases when the cyclonic events having wind force more than 100 km per hr synchronized with the high tide became disastrous as the strong wave dash influenced by storm surge hit the river embankments causing breaches and flash flood with sea water.

In addition to cyclones, summer thunderstorms sometimes in the form of hailstorms named as Norwester (locally *'Kalbaisakhi')* ruins the harvest – ready crops as well as the thatched & semi-pucca houses.

Some of the villages in the mainland area are low lying and lack of proper drainage systems. Heavy rain during monsoon months causes heavy water logging and subsequent crop failure.

Land Use [2001]

The land use pattern of Basanti Block is given below:

Distribution of Land	**Area in Ha**
Net Area under Cultivation	24359
Area under Pasture & Orchard	41
Cultivable Waste Land	95
Homestead Land	32.24
Forest Land	4075.76
Area in which more than crop grown	8536

Administrative Units

The Block Development Office is at the top of the administrative unit of the block in which the Block Development Officer is the executive head. Savapati is the head of the Panchayat Samity where as the Pradhans are the heads of GPs. Other block level administrative units are Land & Land Reforms Office, Registry Office, Agricultural Development Office, Animal Resource Development Office, Block Veterinary Office, Forest Office, Sanitary Office, PHE Office, Electric Supply Office & Sub-station, Office of Inspector of Schools, Field offices of Irrigation & Waterways and Sundarban Development Board, etc.

The Panchayat Samity is assisted by the Gram Panchayats in the development activities. The Block Office is administered by the Sub-Divisional Office located at Canning, which in turn under the administration of the District Magistrate who is the executive head of the district. Under the PRI system, the Savadhipati of Zilla Parishad of the district is the administrative head of the three-tier module.

Demographic Features [2011 census]:

- Total persons – 317595, Male- 162684, Female – 154911
- Total Scheduled Caste Persons - 122666,
- Total Scheduled Tribe persons - 19907
- Sex Ratio [M:F] – 1000:952
- Density of population / sq. km – 786
- Decadal growth rate wrt 2001- 14%,
- Literacy [%] : a) total – 67, b) male – 71, c) female – 55.3

Following table presents the occupation wise distribution of workforce of Basanti Block:

Total workers	101658	32.01 (pc to total population)
Cultivators	26510	26.08 (pc to total workers)
Agril. Laborers	48738	47.94 (Do)
House Hold Workers	2412	2.37 (Do)
Other Workers	24001	23.61(Do)
Main Workers	69905	22.01 (pc to total population)
Marginal Workers	31753	10.0 (pc to total population)
Non Workers	215937	68.0 (pc to total population)

Due to mono – cropping nature of cultivation, the absorbing capacity of effective workforce in agriculture is low. It is evident from the above information that a major portion of the workforce remain unemployed and/or under- employed. A major portion of the workforce migrates to nearby districts even to outside states for a gainful employment.

Livelihoods Features:

Agriculture [2005-06]

Basanti Block has a net cultivable area of 24359 ha and according to 2011 census per capita land holding size is 0.077 ha. The land type is mainly low lying having 60% and the per cents of medium & upland are 29% & 11% respectively. Agriculture in this region depends on monsoon rains. However micro irrigation potentials created through rain water harvesting and trapping of under ground water in some villages, the area under a second crop stands around 35%. The agricultural system of the region is centered on two main cultivating seasons:

The *khariff* season – During this time *aman* paddy is the dominant crop which covers cent percent net cultivable area.

The *rabi & rabi* – summer season - this falls between November to June. During this period some *boro* paddy cultivation with stored water takes place. However the agricultural activities focus more on dry farming and less water consuming crops like winter vegetables, chilies, watermelon, summer vegetables, pulses like *khesari & moong* and oil seeds like til, mustard and sunflower.

Lack of irrigation facility is the main constraint in increasing cropping intensity in this block and as such nearly 60 - 65 % of cultivable land remains fallow for 6-7 months after *aman* paddy harvest. Micro irrigation potentials created through reservoirs and storing the rainwater are the main source of irrigation in this block.

Classification of farming communities based on land – holding pattern of Basanti Block is as follows [2005-06]:

- Small farmers - 4073
- Marginal farmers - 21566
- Bargadars - 19440
- Patta Holders - 8199
- Agricultural Labourers - 42749

Fisheries [2005-06]

Fishery operation and fish catching in rivers and sea are the second major occupation of the inhabitants of this block. Brakish water fisheries play a very dominant role in its economy. Even the cultivators & agril. labourers are getting employment opportunities in this sector during lean season of agricultural operation for earning additional income. Information relating to fisheries are given below:

- Net area available for pisciculture – 4351 ha
- Net area under effective pisciculture – 1838 ha
- No. of persons engaged in this profession – 28042
- Approximate Annual Production – 87898 qntls.

Interesting feature of these brakish water fisheries (*Veries*) is that mono culture operation of Tiger Prawn (*Peanus Monodon*) is done in these water bodies mainly eyeing the export market.

Animal Husbandry

Animal husbandry operation in this block can be treated as the third livelihood option but presently operating in a very poor scale. Production of milk per unit of local breed cow is not economical. Cross breeding programme has been introduced but can not be popularized due to lack of fodder and other physical factors. Rearing of Black Bengal Goat and indigenous breed of sheep – "Garole" is done by the women folk mainly belonging to the SC & ST households and Below Poverty Line (BPL) category.

The coverage of veterinary and animal husbandry support services in the block are given below:

- Block Animal Health Centre – 1
- Additional Block Animal Health Centre – 1
- Animal Development Aid Centre – 3
- Artificial Insemination Centre – 4
- Veterinary Personnel – 7

Social Assets [2005-06]:

- Academic institutions : Primary schools – 144, Middle schools – 3, High schools – 11, Higher Secondary School – 8 College – 1, Special & Non – Formal Education Centres – 376
- Financial institution/Co-op Society : Commercial Bank- 2, Gramin Bank – 3, Co-op. Society – 36
- Medical facilities : Hospitals – 1, Health Centrtes – 4, Sub – Centres – 63 Family Welfare Centre – 64
- Electrification: Mouzas Electrified – 44
- Drinking Water Supply – All 65 mouzas are covered under hand – Operated tube-wells for drinking water supply (sweet water aquifer – 300m (+) below ground level), Piped Water Supply Schemes – 1.

Transport & communication

Basanti Block area is comparatively well of now in terms of connectivity with the construction of two major bridges – i) bridge over Hogol River connecting 6 Gram Panchayats of the block & II) bridge over Matla River connecting the mainland of the district. These bridges have reduced the time lag for reaching the Rail Station at Canning as well as to the District & State Head Quarters. All the villages of this block are now connected with metalled roads and all weather roads made of double soling brick pavement. The road network has also opened the scope of employment in the transport sector. On the other hand the local producers can transport their produces to the markets & Rail head at Canning within a very short time. The inhabited islands are connected with water based transport through improvised diesel operated mechanized boats. Concrete jetties have been constructed at almost all the ferry *ghats*, market places for boarding the vessels. Existing transport networks of the block are given below:

- No. of Ferry Services – 7
- Bus Terminus originated from the block – 2
- Nearest Rly. Station from Block – 16 km
- Distance from District HQ – 61 km
- Bituminous Road – 72.7 km
- Brick Paved & Concrete Road – 110 km
- RCC Jetties – 15 No.

Basanti Block is the main gateway to approach the Sundarban Reserve Forest & Sundarban Tiger Reserve. These are at Sonakhali, Gadkhali and Jharkhali. During tourist season lakhs of domestic and foreign tourists move through this block to Sundarbans to enjoy the mystical beauty of this evergreen forest land.

Local Organization:

Basanti Block has a good network of voluntary organizations and NGOs who are working in the fields of awareness building, implementation of rural projects, training and production units through SHGs, literacy and organizing general health awareness programmes, drinking water & sanitation programmes, disaster management programmes, etc. Major active organizations are -

Weaknesses

- **i.** Basanti Block is very much prone to cyclonic storm originated from the low-pressure zone of Bay-of-Bengal. As this is surrounded by big rivers Bidya & Matla, the earthen embankments encircled the island areas are mostly vulnerable to the upsurge & flashflood especially during high tide synchronized with the high velocity wind. Breaches of river embankments, land erosion, land mass losses are major events during pre-monsoon period (i.e. from May) to post monsoon month (i.e. November) in each year. The devastating cyclonic storm AILA occurred on 25th May, 2009 seriously damaged the livelihoods & assets of 8 Gram Panchayats of this block.
- **ii.** Nearing 75% of the houses in the area are non-permanent kutcha type and thatched houses made of local materials. Norwester, hailstorm in summer months and cyclonic storm surges during pre-monsoon & post-monsoon months destroy thatched houses.
- **iii**. The Villages located alongside the estuarine waterways are mostly vulnerable to soil erosion, embankment failures, flash flood and tidal upsurge, etc. One new settlement namely Tridibnagar settled by the refugees from Bangladesh has come up along side Bidya & Herobhanga Rivers is most vulnerable to such natural disasters. During AILA almost all the houses collapsed and the entire area got submergence with saline water.
- **iv.** Out – migration of people is increasing, as the local employment opportunities can not absorb the effective workforce of the block, which also disturbs the socio-economic structures of the villages.
- **v**. 80% of net cultivable area is under rain fed kharif paddy cultivation with low yield. Any change in monsoonal pattern may jeopardize the socio – economic condition of the block.
- **vi.** Population growth imposes pressure on the monocropped agrarian economy of the block which in turn mounts serious pressure for harnessing natural resources damaging the ecology and the rich biodiversity of the block as well as the nearby forest area.
- **vii**. Impacts of climate change especially the extreme events and sea level rise will adversely affect the low lying areas and the villages along side the estuaries.

Jharkhali GP

Jharkhali GP is situated in the southern most part of Basanti Block. This is comprised of 3 mouzas which were originally under Nafarganj GP. Jharkhali GP emerged in 2005. Total area of this GP is 56.36 sq km.

Jharkhali is (demarcated as Lt No. -126) the latest settlement in Sundarbans reclaiming the Herobhanga Forest Block. In 1962, 3 blocks of Herobhanga Forest (lot No. – 124,125 & 126) was handed over to the Refugee Relief & Rehabilitation Deptt. for settlement of the refugees from the then East Pakistan. Out of these three lots, Lot No. -126 was deforested and settlement by the refugees was made. Afterwards (from 2001) the Lot No. – 125 (Herobhanga -2) started deforestation & settlement has been made. This area has been named as Tridibnagar though it is yet to be notified as mouza. The west, south & east of this GP are surrounded by matla, Hrobhanga & Bidya Rivers and the north is

bordered by Nafarganj GP. Demographic information relating to this GP are given in the following table (2001).

JL No.	Mouza	Area (Ha)	Population	Male	Female	SC	ST	Total Workers
173	Parbatipur	512.74	2361	1233	1128	2159	78	729
174	Laskarpur	446.47	3487	1762	1725	3173	153	1476
175	Jharkhali	4558.39	12468	6559	6089	11622	69	4406
	Total:	5517.60	18496	9554	8942	16934 (91.5%)	300 (1.6%)	6601 (36%)

Total number of household in this GP is 3752. Concentration of Scheduled Castes is very high (91.5%) in this GP. They also belong to the economically weaker section of the community. It is observed from the table that only 36% of the people get full time works mainly in agriculture, fisheries, small business, van pulling and natural resource collecting.

The land type of the GP is medium. Water stagnation in the rainy season is comparatively low as there are regulated drainage structures in the villages. Soil is high to moderate saline. Aman paddy is the main crop which is cultivated during kharif season. Crops in dry season are boro paddy, winter & summer vegetables grown in a very limited areas. Other livelihoods of the people are fishery, fish & crab catching, honey collection, tourist operation, etc.

The State Govt has a plan for setting up eco-tourism centre in this GP (Herobhanga-2) to attract the domestic and foreign tourists to Sundarban Tiger Reserve area. The Forest Department has already set up the first Tiger Rescue Centre in the mangrove charland of Herobhanga River. A Mangrove Eco-garden with almost all mangrove species of Sundarbans has been established adjacent to the TRC. Two big brakish water fishery projects have been set up in this GP which provide employment opportunities to the fishermen folk of the area. However these activities can not feed the workforce, they are to depend largely on harnessing natural resources of STR. Apart from that a portion of workforce is used to migrate seasonally in search of employment. Jharkhali GP is connected with the Block HQ at Sonakhali with State Highway (31 km). This is also connected with the Sub-Division Office at Canning Town and District HQ by road and two bridges over Hogol & Matla River. For this connectivity the remote villages of the GP are easily accessed with the Rail Head (Canning) & State Capital at Kolkata. There are 15 km metalled road and 21 km BP Roads in the GP. RCC jetties have been constructed on the ferry ghats. Jharkhali is one of the important gate ways to SUndarban Tiger Reserve.

The major climatic disasters are the cyclonic storms, flash flood, hailstorms, etc. During AILA 2009, most of the villages got inundated with tidal flask as the river embankments bordering Bidya & Hrobhanga Rivers were completely washed out. 100% *cuchha* & semi-pucca houses collapsed and the most of the villagers became homeless. The lands & sweet water reservoirs contaminated with saline water and the fishery structures were seriously damaged. The inhabitants especially the weaker & poor sections of the people lost their assets & livelihoods. As there is no cyclone/flood shelter in the GP, the cyclone victims took shelter in school buildings and other public/private buildings near Jharkhali market.

This GP is located adjacent to the Sundarban Tiger Reserve area, just other side of Herobhanga River, for which incidence of tiger infestation in the inhabited areas of this GP is frequent. The cattle of the villagers are the easy prey to the tigers and some times

villagers become the victims. Tiger infestation in the villages of this GP is one of the major concerns.

Infrastructures towards social services are yet to be developed in this GP. Some hand operated tube wells provide drinking water but the inhabitants face serious drinking water crisis during long summer months. Extension of grid power supply has reached the villages. Academic institutions are yet to come up to absorb the school – goers. The people of this GP are still living in vulnerable condition.

Nafarganj GP

Nafarganj Gram Panchayat is located in the southern side of Basanti Block. This GP is surrounded by the river Matla in the west, Bidya River in the east and Jharkhali GP in the south and Bharatgarh GP in north. The villages are protected by the earthen dykes which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. However some stretches of river embankments are strengthened with dry brick & brick block pitching. This GP is within 10 km of Sundarban Reserve Forest and Sundarban Tiger Reserve area.

This GP is comprised of 3 mouzas having a total geographical area of 49.45 sq km. The cultivable is mostly monocropped. The details of mouza wise information are given in the following table (2001).

JL No.	Mouza	Area (Ha)	Population	Male	Female	SC	ST	Total Workers
150	Hiranmoypur	863.60	5817	2993	2824	4836	335	2251
172	Nafarganj	868.05	3504	1744	1760	2327	111	1195
193	Birinchibari	565.35	5446	2813	2633	2396	704	3183
	Total:	**2297.00**	**14767**	**7550**	**7217**	**9559 (64.7%)**	**1150 (7.5%)**	**6629 (45%)**

Total number of household is 2839 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Concentration of Scheduled Castes (64.7%) & Scheduled Tribes (7.5%) is very high in this GP. Major portion of these communities also belong to the economically weaker sections of the people. Households belong to Below Poverty Line (BPL) are more than 35% (not yet finalized) which is above the state average.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of traditional varieties Aman paddy. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land 25% and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping intensity is around 120. The coverage of Aman paddy is cent percent of the net cultivable area during kharif season followed by boro paddy,& other rabi crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of providing employment to the effective work force is very limited. A portion of work force takes up high risk activities like fishing in the rivers and crab catching in the Sundarban Reserve Forest areas. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of a gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied activities. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are high concentration of Bragadars and Patta – holders in this GP who are counted to more than 50%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries and Sundarban Reserve Forest areas.

This GP has 12 km pucca road, 15 km double soling brick paved road, and 29 km kutcha road. These are connected with ferry ghats, schools, bank, local hats and GP Office. Auto rickshaw, small bus & motorized rickshaw vans are the means of transport plying within the GP. There is one cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During devastating cyclonic storm AILA occurred on 25th May, 2009 nearly 50% of the houses collapsed in the villages along side Bidya River.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, and breach of embankment. Condition of river embankments is not well enough to protect these villages as such these villages got inundated with saline water flash floods almost every year through breach of river embankments.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Ramchandrakhai GP

Ramchandrakhali Gram Panchayat is the proper GP which has housed Basanti Block office. This GP is surrounded by the river Matla in the west, Hana River in the east and Hogol River in the south and Uttar Mokamberia GP in north. Three sides of the GP are protected by the earthen dykes which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. However some stretches of river embankments are strengthened with dry brick & brick block pitching. This GP is within 30 km of Sundarban Reserve Forest and Sundarban Tiger Reserve area.

This GP is comprised of 5 mouzas having a total geographical area of about 30 sq km. The cultivable is mostly monocropped. The details of mouza wise information are given in the following table (2001).

JL No.	Mouza	Area (Ha)	Population	Male	Female	SC	ST	Total Workers
134	Sonakhali	1341.30	9062	4657	4405	3858	289	2796
137	Khirishkhali	492.97	3824	1961	1863	496	00	1172
138	Ramchandrakhali	674.39	6451	3304	3147	1401	311	1770
139	Kalahazra	554.42	4264	2170	2094	254	1058	1480
140	Hogalduri	403.07	3051	1592	1459	246	226	1007
	Total	**3466.15**	**26652**	**13684**	**12968**	**6255 23.5%**	**1884 7%**	**8225 31%**

Total number of household is 4669 who are basically cultivators and belong to marginal, sub-marginal farmers' and agril. Labour categories. Households belong to Below Poverty Line (BPL) are around 35% (not yet finalized) which is above the state average.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land 25% and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1.3 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping intensity is around 120. The coverage of *Aman* paddy is cent percent of the net cultivable area during kharif season followed by *boro* paddy, & other *rabi* crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 20% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of providing employment to the effective work force is very limited. PC of total workers is only 31% of the total population. A portion of work force takes up high risk activities like fishing in the rivers and crab catching in the Sundarban Reserve Forest areas. But a major portion of work force (more than 40%) is migrated to nearby districts and other states in search of a gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied activities. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are high concentration of Bragadars and Patta – holders in this GP who are counted to more than 50%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries and Sundarban Reserve Forest areas.

This GP has 12 km pucca road, 15 km double soling brick paved road, and 29 km kutcha road. These are connected with ferry ghats, schools, bank, local hats and GP Office. Auto rickshaw, small bus & motorized rickshaw vans are the means of transport. There is one cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During devastating cyclonic storm AILA occurred on 25th May, 2009 nearly 50% of the houses collapsed in the villages along side Bidya River.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, and breach of embankment. Condition of river embankments is not well enough to protect these villages from tidal surge as such these villages got inundated with saline water flash floods almost every year through breach of river embankments.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Chunakhai GP

Chunakhali Gram Panchayat is located in the mainland of the block and connected with roads. This GP is surrounded by the river Kartal in the east & south, Fulmalancha GP in the west, and Charabidya GP in north. Two sides of the GP are protected by the earthen dykes

which are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. However some stretches of river embankments are strengthened with dry brick & brick block pitching. This GP is within 35 km of Sundarban Reserve Forest and Sundarban Tiger Reserve area.

This GP is comprised of 5 mouzas having a total geographical area of 30.82 sq km. The cultivable is mostly monocropped. The details of mouza wise information are given in the following table (2001).

JL No.	Mouza	Area (Ha)	Population	Male	Female	SC	ST	Total Workers
59	Chunakhali	950.20	9433	4873	4560	3319	2113	4035
60	Baria	558.47	4004	2041	1963	2116	1554	1738
61	Bagulakhali	458.51	971	501	470	181	15	530
62	Purba Bayersing	590.44	3608	1880	1728	2160	637	1748
63	Sachiakhali	524.47	3626	1868	1758	456	721	1306
	Total:	**3082.09**	**21642**	**11163**	**10479**	**8232 38%**	**5040 23.3%**	**9087 42%**

Total number of household is 4020 who are basically cultivators and belong to marginal, sub-marginal farmers' and agril. Labour categories. Households belong to Below Poverty Line (BPL) are around 37% (not yet finalized) which is above the state average.

The soil possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of *Aman* paddy. The soil Ph is normal but in some parts it tends to acidic.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land 20% and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is very high (ranging from 0.5 to 1. m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cropping intensity is around 117. The coverage of *Aman* paddy is cent percent of the net cultivable area during kharif season followed by *boro* paddy,& other *rabi* crops like winter vegetables, potato, sunflower, til, chilies, etc. in around 15 - 17% of the cultivable land supported with irrigation from storage ponds & canals.

As this is a monocropped area depending on rainfed kharif crop, the scope of providing employment to the effective work force is very limited. However the brakish water fisheries generate additional employment in the GP. PC of total workers is only 42% of the total population. A portion of work force takes up high risk activities like fishing in the rivers and crab catching in the Sundarban Reserve Forest areas. But a portion of work force is migrated to nearby districts and other states in search of gainful employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture, fisheries and allied activities. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. There are high concentration of Bragadars and Patta – holders in this GP who are counted to more than 50%. Nearing 25% of the hhs are engaged in fisheries, fish catching, crab catching, honey collection and wild shrimp seed collection in the estuaries and Sundarban Reserve Forest areas.

This GP has 11 km pucca road, 15 km double soling brick paved road, and 26 km kutcha road. These are connected with ferry ghats, schools, bank, local hats, GP Office and State Highway. Auto rickshaw, bus & motorized rickshaw vans are the means of transport. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are also vulnerable to cyclonic storms and flash flood. During devastating cyclonic storm AILA occurred on 25th May, 2009 nearly 50% of the houses damaged fully & partially along side Kartal River.

The major climatic disasters faced by this GP are cyclonic storms, storm induced tidal surge, flash flood, and breach of embankment. Condition of river embankments is not well enough to protect these villages from tidal surge as such these villages got inundated with saline water flash floods almost every year through breach of river embankments. The early warning system for natural calamities at the GP level is almost absent.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Bharatgarh GP

Bharatgarh Gram Panchayat under Basanti Panchayat Samity is located around 6 km south of the Block Head Quarter at Sonakhali. This GP is surrounded by Matla River in the west, Basanti GP in the north, Masjidbati GP in the east and Jyotishpur GP in the south. The villages along Matla River are protected by the earthen dykes some portions of which are strengthened by brick block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 15 km of Sundarban Tiger Reserve area.

Bharatgarh GP is comprised of 7 mouzas viz Bharatgarh, Maheshpur, Sibganj, Chak Pitambar Dutta, Kumirmari, Anandabad, Garanbose having a total geographical area of 29.64 skm. The area is mainly monocropped. Total population of the GP is 17663 (2011). Number of total workers in this GP is 8741 (around 50 %). Total number of household is 4875 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 37% (not yet finalized). Persons belong to Scheduled Castes & Scheduled Tribes are 11196 (63.3%) & 1696 (9.6%) respectively. Concentration of backward classes is very high in this GP (73%).

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. There is cent percent coverage of Aman paddy in the net cultivable area with 80% traditional tall variety and 20% HYV paddy during kharif followed by boro paddy, & other rabi crops like winter vegetables, potato, chilies, betel vine etc. in around 25% of the cultivable area supported with irrigation from storage ponds, canals and medium deep tube wells.

As this is a monocropped area depending on rainfed kharif crop, the scope of generating additional employment to the emerging work force is very limited. A portion of work force (more than 40%) is migrated to nearby districts and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 30% of the hhs are engaged in fisheries, wild shrimp seed collection, small business, transport and other service sectors.

Bharatgarh GP has one Higher Secondary, two Secondary, and 9 primary schools in this GP. According to 2011 census literacy rate is 73 %. The people of this GP are to depend on the PHC at Basanti which is linked with pucca road. The ICDS centres are working for women & child health care. Some NGO run health units and dispensaries are also operating in this GP.

In this GP, there are 12 km black – top road, 16 km double soling brick paved road, and 24 km kutcha road. These are connected with ferry ghats, schools, local hats, and fish –landing points and GP Office and Block HQ. Bharatgarh is directly linked with Rail Head at Canning after construction of bridges across Hogal and Matla Rivers. This is also connected with block, Sub-Division & district offices through roads. Bus, Minibus, Auto Rickshaw and Motorized vans are the transports plying in the GP. There is one cyclone/ flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 some of these houses collapsed mainly due to strong wind.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Masjidbati GP

Masjidbati Gram Panchayat under Basanti Panchayat Samity is located around 5 km south-east of the Block Head Quarter at Sonakhali and in the southern side of river Hogol. This GP is surrounded by Basanti & Bharatgarh GP in the west, Hogol River in the north, Kartal River in the east and Bidya River in the south. The villages along these mighty rivers are protected by the earthen dykes some portions of which are strengthened by brick block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 16 km of Sundarban Tiger Reserve area.

Masjidbati GP is comprised of 5 mouzas viz Ramkrishnapur, Dk. Batattala, Masjidbati, Godkhali, Dk. Mokamberia having a total geographical area of 19.4 skm. The area is mainly monocropped. Total population of the GP is 115,343 (2011). Number of total workers in this GP is 5,304 (around 35%). Total number of household is 2743 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 38% (not yet finalized). Persons belong to Scheduled Castes & Scheduled Tribes are 8413(54.8 %) & only 83 respectively.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining 15% is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. There is cent percent coverage of Aman paddy in the net cultivable area with 75% traditional tall variety and 25% HYV paddy during kharif followed by boro paddy, & other rabi crops like winter vegetables, potato, chilies, summer vegetables etc. One thing may be mentioned here that the cultivators of this GP are growing high value vegetables in the field *bundhs (Ail* Crop) and are getting remunerative prices from their produces. In around 30% of the cultivable area supported with irrigation from storage ponds, canals and medium deep tube wells.

In spite of better agricultural activities in this GP, the scope of generating additional employment to the emerging work force is limited. A portion of work force (more than 30%) is migrated to nearby districts and other states and even to Andaman & Nicobar Islands in search of employment. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 30% of the hhs are engaged in fisheries, wild shrimp seed collection, small business, transport and other service sectors.

Masjidbati GP has one Higher Secondary, two Secondary, 10 primary schools, two madrashas. According to 2011 census literacy rate is 61%. The people of this GP are to depend on the PHC at Basanti which is linked with pucca road. The ICDS centres are working for women & child health care.

In this GP, there are 15 km black – top road, 14 km double soling brick paved road, and 24 km kutcha road. These are connected with ferry ghats, schools, local hats, fish – landing points and GP Office and Block HQ. Masjidbai is now directly linked with Rail Head at Canning after construction of bridges across Hogal and Matla Rivers. This is also connected with block, Sub-Division & District offices through roads. Bus, Minibus, Auto Rickshaw and Motorized vans are the means of transport plying in the GP. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 50% of the houses collapsed mainly due to strong wind and flash flood.

Godkahli point located in this GP is now the most important and busy gateway of Sundarban Tiger Reserve. This point is well connected with the mainland. However facilities are yet to come up at this transit point for providing minimum services to the tourists.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments. Land erosion mainly in the northern side of this GP is very serious. Change in meanders and siltation in the river bed of Hogol river affect the *charlands* and

causing breach of river embankments. Series of retarded embankments have been constructed to save the villages alongside this river. As this GP is surrounded by three major tidal rivers, is one of the most vulnerable GP in Basanti Block.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Jyotishpur GP

Jyotishpur Gram Panchayat under Basanti Panchayat Samity is located around 12 km south- of the Block Head Quarter at Sonakhali and in the southern side of river Hogol. This GP is surrounded by Masjidbati & Bharatgarh GP in the west, Bharatgarh GP in the north, Bidya River in the east and Nafarganj GP in the south. The villages along river Bidya are protected by the earthen dykes some portions of which are protected by mangrove forests.

However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 14 km of Sundarban Tiger Reserve area.

Jyotishpur GP is comprised of 5 mouzas viz Harekrishnapur, Ranigarh, Joygopalpur, Jyotishpur, Radharanipur having a total geographical area of 29.74 skm. Total population of the GP is 18975 (2011). Number of total workers in this GP is 6408 (around 34 %). Total number of household is 3350 who are basically cultivators and belong to marginal, sub-marginal farmers *Bargadars* and *patta* holder's categories. Households belong to Below Poverty Line (BPL) are around 40% (not yet finalized). Persons belong to Scheduled Castes & Scheduled Tribes are 8940 (47%) & 1104 (6.6%) respectively. Concentration of backward classes i.e. Scheduled castes & Scheduled Tribes are considerably high in this GP (53.6%). The lands under brakish water fisheries (*Veries*) had been occupied and distributed amongst the landless people under land reforms programme and for that the number of patta holder families in this GP is considerably high. But the lands brought under cultivation are still highly saline and productivity of aman paddy is also very low.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is basically normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining (15%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cultivable are mostly monocropped with rainfed Aman paddy. The cultivation in rabi season is limited due to scarcity in irrigation and for high saline condition prevailing in the aman fallow lands. Comparatively small portion (Less than 15%) can be brought under boro paddy, & other rabi crops like winter vegetables, potato, chilies, summer vegetables etc.

Being a monocropped area, the scope of generating additional employment to the emerging work force is limited. A portion of work force (more than 40%) is migrated to nearby districts and other states in search of employment. Livelihoods of the people are

centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, wild shrimp seed collection and transport sectors.

Jyotishpur GP has one Higher Secondary, two Secondary, and 8 primary schools. According to 2011 census literacy rate is 55 %. The people of this GP are to depend on the PHC at Basanti which is linked with pucca road. The ICDS centres are working for women & child health care.

In this GP, there are 11 km black – top road, 12 km double soling brick paved road, and 21 km kutcha road. These are connected with ferry ghats, schools, local hats, and GP Office and Block HQ. Most of the villages of this GP are now directly linked with Rail Head at Canning after construction of bridges across Hogal and Matla Rivers. This is also connected with Block Sub-Division & District offices through roads. Bus, Minibus, Auto Rickshaw and Motorized vans are the transports plying in the GP. There is one cyclone/ flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 60%of the houses collapsed mainly due to strong wind and flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments. Breach of river embankments & land erosion alog side Bidya River are major natural events causing serious distress to the people. Poverty coupled with these natural disasters makes this GP vulnerable.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Basanti GP

Basanti Gram Panchayat under Basanti Panchayat Samity is located just on the southern side of Hogol River and opposite to the block head quarter at Sonakhali. Originally the HQ of Basanti was in this GP. This GP is surrounded by Matla River in the west, Hogol River in the north, Masjidbati in the east and Bharatgarh GP in the south. The villages along the rivers are protected by the earthen dykes some vulnerable portions are protected by brick & block pitching. However the villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 25 km of Sundarban Tiger Reserve area.

Basanti GP is comprised of 10 mouzas viz Matgaran, Sjnetala, Chanderkona, Ballartop, Krishnanagar, Srirampur, Kaliadanga, Radhaballavpur, Basanti and Purandar having a total geographical area of 19.88 skm. Total population of the GP is 28941 (2011). Number of total workers in this GP is 8007 (around 33 %). Total number of household is 4848 who are basically cultivators and belong to marginal, sub-marginal farmers' categories. Households belong to Below Poverty Line (BPL) are around 35% (not yet finalized). Persons belong to Scheduled Castes & Scheduled Tribes are 5541 (19%) & only 97 (less tan 1%) respectively.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is basically normal.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (20%) and remaining (15%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cultivable lands are mostly monocropped with rainfed Aman paddy. The cultivation in rabi season is limited due to scarcity in irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, potato, chilies, sunflower, til, summer vegetables, betel vine, etc.

Being a monocropped area, the scope of generating additional employment to the emerging work force is limited. A portion of work force (more than 40%) is migrated to nearby districts and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, wild shrimp seed collection, small business, service & transport sectors. Basanti is a market centre and feeds the hinterlands.

Basanti GP has one Higher Secondary, three Secondary, and 15 primary schools. According to 2011 census literacy rate is 65%. The people of this GP are to depend on the PHC at Basanti and some private health clinics & dispensaries. The ICDS centres are working for women & child health care. Apart from hand – operated tube wells one piped water supply scheme is operating for supply of drinking water to Basanti and adjacent villages.

In this GP, there are 13 km black – top road, 16 km double soling brick paved road, and 24 km kutcha road. These are connected with ferry ghats, schools, Basanti Bazar, and GP Office and the Sttae Highway. Most of the villages of this GP are now directly linked with Rail Head at Canning after construction of bridges across Hogal and Matla Rivers. This is also connected with Block, Sub-Division & District offices through roads. Bus, Minibus, Auto Rickshaw and Motorized vans are the transports plying in the area. There is one cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 40%of the houses collapsed mainly due to strong wind and flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments. Breach of river embankments & land erosion along side Hogol & Matla River are major natural events causing serious distress to the people. These rivers have eaten away the cultivable lands and house property of Basanti market area and even the RCC jetties. Most vulnerable villages of the GP are Basanti, Purandar, Sajnetala which are facing the regular land erosion & breach of embankments.

Many NGOs, LBOs and voluntary organizations are working in this GP.

Uttar Mokamberia GP

Uttar Mokamberia Gram Panchayat under Basanti Panchayat Samity is located in the mainland and around 5 km north of Basanti Block Head Quarter at Sonakhali. This GP is surrounded by Matla River in the west, Kanthalberia GP in the north, Ramchandrakhali in the east and Matla River in the south. The villages along the rivers are protected by the earthen dykes which are very much vulnerable along Matla Rive. However regenerated mangroves in the charlands of Matla give some protection to these embankments. The villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 35 km of Sundarban Tiger Reserve area.

Uttar Mokamberia GP is comprised of 10 mouzas viz Dk. Naraytala, Naliakhali, Tentulberia, Amratala, Uttar Battala, Harbhangi, Charanekhali, Uttar Sonakhali Uttar Mokamberia having a total geographical area of 38.58 skm. Total population of the GP is 20,654 (2011). Number of total workers in this GP is 6548 (around 32%). Total number of household is 4728 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 39% (not yet finalized). Persons belong to Scheduled Castes & Scheduled Tribes are 5027 (24%) & 1935 (9.3%) respectively.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal but in some patches Acidic soils are found.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining (10%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.0 m) during kharif season. However regulated drainage structures (HP Sluices) drain out excess water to the rivers and save the standing crop from submergence. The cultivable lands are mostly monocropped with rainfed traditional Aman paddy. The cultivation in rabi season is limited due to scarcity in irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, potato, chilies, sunflower, til, summer vegetables etc.

Being a monocropped area, the scope of generating additional employment to the emerging work force is limited. A portion of work force (more than 40%) is migrated to nearby districts, Kolkata and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries and animal husbandry. 85% of the households are farmers. Most of the owner cultivators belong to marginal & sub-marginal farmers owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, wild shrimp seed collection, small business, & transport sector.

Uttar Mokamberia GP has one Higher Secondary, two Secondary, and 12 primary schools. According to 2011 census literacy rate is 57 %. The people of this GP are to depend on the PHC at Basanti and Sub Centre and Kanthalberia GP. Some private health clinics & dispensaries are also operating in adjacent areas. The ICDS centres are working for women & child health care. Hand operated tube wells are the main source for supply of drinking water in this GP. One piped water supply scheme is operating in this GP.

In this GP, there are 9 km black – top road, 14 km double soling brick paved road, and 21 km kutcha road. These are connected with ferry ghats, schools, Block HQ at Sonakhali, GP Office and the State Highway. Most of the villages of this GP are now directly linked with Rail Head at Canning after construction of bridges across Hogal and Matla Rivers. This is also connected with Block, Sub-Division & District offices through roads. Bus, Minibus, Auto Rickshaw and Motorized vans are the transports plying in the area. There is no cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 40% of the houses collapsed mainly due to strong wind and flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, changing river meanders and subsequent breach of river embankments and water-logging in rainy season. Breach of river embankments along side Matla River is a major concern of the nearby villages.

Many NGOs, LBOs and voluntary organizations are working in this GP.

6.21 Decision Taken

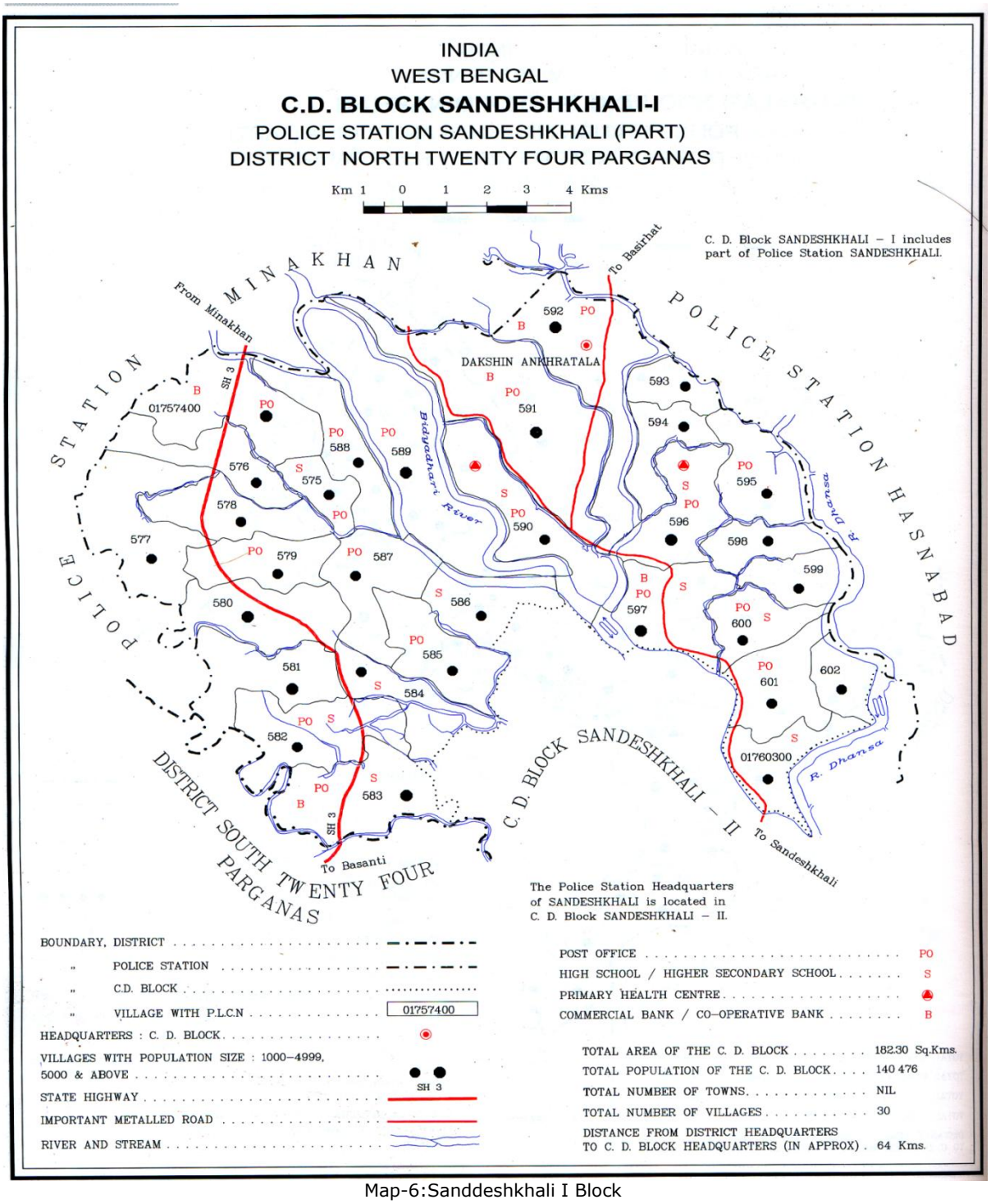
After analyzing information and careful analysis of primary and secondary data, dependency and closeness from Sunderbans and the percentage of dependent people on Sunderbans – Basanti, Uttar Mokamberia, Bharatgarh, Masjidbati and Jotishpur GPs are selected for village profile. The village profile survey has been conducted by the field supervisors in the respective project area. A team under the guidance of field supervisor, has collected information and prepared disaster risk mapping of each selected village by interviewing and FGD, depending on findings, villages are selected as part of a cluster to be served by the target beneficiaries by project implementation work.

6.22 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 1 village from Basanti, 3 villages from Uttar Mokamberia, 4 villages from Bharatgarh, 1 village from Masjidbati and 2 villages from Jotishpur were selected for households Census.

6.3 Sandeshkhali-I Block (in North 24- Parganas District)

Sandeshkhali-I Block is situated in the south- western part of North 24-Parganas District with river Minakhan & Canning-II Block on its east, Hingalganj Block on the west, Minakhan & Hasnabad Blocks on its north and Gosaba Block in the south. This consists of 8 Gram Panchayats and 30 mouzas. It is entirely rural area.



Map-6:Sanddeshkhali I Block

Physical Features

6 Gram Panchayats of Sandeshkhali-I Block is located in the mainland of the district and the remaining two GPS are in the islands. However several rivers & creeks have separated the GPs.The villages alongside the rivers are protected mostly by earthen dykes but the embankments in some of the vulnerable portions are strengthened with brick-block pitching.

- Geographical Area – 181.21 sq.km
- Agricultural area (Aman) – 8064 ha
- Forest Area – Nil
- No. of Mouzas – 30
- No. of Gram Panchayats – 8
- No. of Households (2001) – 20900

Climate

The climate of this region is sub-tropical. The Bay of Bengal and network of creeks and rivers control the extreme climate. The tropical monsoon climate with excess humidity is prevalent for about six months in a year. High humidity prevails throughout the year but humidity goes up to 96% during rainy season. Average temperature varies from 13.7 Celsius to 38 Celsius. Average annual rainfall is 1700 mm.

Cyclones & storm events tend to occur in between May & December with the incidence being highest in May and the post – monsoon months of October & November. These cyclones normally bring high winds, heavy rainfall and strong tidal surge. These incidents damage the river embankments and made the adjacent villages inundated with saline water. The brakish water fisheries occupy huge area in some of the GPS and these areas are vulnerable to tidal surge and flash flood. During Cyclonic storm AILA (2009) more than 30 km of river embankments seriously damaged and the adjacent villages were inundated with sea water for a days together.

Some of the villages in the mainland area are also low lying and in lack of proper drainage systems. Heavy rain during monsoon months causes heavy water logging and subsequent crop failure.

Land Use

The land use pattern of Sandeshkhali -I Block is given below:

Distribution of Land	**Area in Ha**
Net Area under Cultivation	8064
Area under Pasture & Orchard	116
Homestead Land	13.64
Forest Land	0
Area in which more than crop grown	5000

Administrative Units

The Block Development Office is at the top of the administrative unit of the block in which the Block Development Officer is the executive head. At Panchayat Samity (PS) level Savapati is the head.

Offices of BDO & Panchayat Samity are situated at Nazat which is connected with State High Way. This point is 34 km away from the Sub-Division HQ at Bashirhat. Other block level administrative units are Land & Land Reforms Office, Registry Office, Agricultural Development Office, Animal Resource Development Office, Block Veterinary Office, Forest Range Office, Sanitary Office, PHE Office, Electric Supply Office, Office of Inspector of Schools, Field offices of Sundarban Development Board, etc.

The Panchayat Samity is assisted by the Gram Panchayats in the development activities. The Block Office is administered by the Sub-Divisional Office located at Bashirhat, which in turn under the administration of the District Magistrate who is the executive head of the district. The District HQ at Barasat is around 70 km from the block head quarter.

Demographic Features [2011 census]:

- Total persons – 160142 Male- 82035, Female – 78107
- Total Scheduled Caste - 51651 Male (SC)- 26746, Female (SC) -24904
- Total Scheduled Tribe – 41596, Male (ST)- 21149, Female (ST) -20447
- Sex Ratio [M:F] – 1000:952
- Density of population / sq. km – 878
- Decadal growth rate wrt 2001- 14%,
- Literacy [%] : a) total – 62.8, b) male – 73.1, c) female – 55.6

Following table presents the occupation wise distribution of workforce of Sandeshkali-I Block [2005-06]:

Total workers	53625	33.49 (pc to total population)
Cultivators	8926	16.65 (pc to total workers)
Agril. Laborers	21866	40.78 (Do)
House Hold Workers	1411	2.63 (Do)
Other Workers	14207	25.20 (Do)
Main Workers	40590	25.35 (pc to total population)
Marginal Workers	13034	8.14 (pc to total population)
Non Workers	106517	66.51 (pc to total population)

Being a mono-cropped area the absorbing capacity of effective workforce in agriculture is low. Other workers in this block are mainly engaged in brakish water fishery activities and in transport sector. It is evident from the above information that a major portion of the workforce remain unemployed and/or under- employed. A portion of the workforce migrates to nearby districts even to outside states in search of employment.

Livelihoods Features:

Agriculture [2005-06]

Sandeshkhali -I Block has a net cultivable area of 8064 ha and according to 2011 census per capita land holding size is 0.05 ha. The land type is mainly low lying having 65% and the per cents of medium & upland are 25% & 10% respectively. Agriculture in this region depends on monsoon rains. However micro irrigation potentials created through rain water harvesting and trapping of under ground water (Medium deep TW) in some villages, the area under a second crop stands around 62%.

Classification of farming communities based on land – holding pattern of Sandeshkhali-I Block is as follows:

- Small farmers – 2730
- Marginal farmers – 21430
- Bargadars – 7652
- Patta Holders – 13607
- Agricultural Labourers – 19181

Major crops grown in the block are Paddy (*Aman & Boro*), wheat, potato, til, mustard & summer vegetables, coconut, etc.

Fisheries [2005-06]

Fishery operation in brakish water fisheries is the second major occupation of the inhabitants of this block. A considerable area has been brought under this operation for cultivation of monoculture with tiger prawn (P. monodon). There is a big market of prawn seed and Prawn in which a good number of skilled & unskilled labours are engaged. Information relating to fisheries are given below:

- Net area available for pisciculture – 1632 ha
- Net area under effective pisciculture – 1469 ha
- No. of persons engaged in this profession – 11272
- Approximate Annual Production – 13608 qntls.

Animal Husbandry

Animal husbandry operation in this block can be treated as the third livelihood option but presently operating in a very poor scale. The women folk mainly belonging to the SC& ST and also to Below Poverty Line (BPL) category are engaged in animal rearing specially the Black Bengal Goat, Garole Sheep, & pigs with their inherent skill. As the cultivable lands are coming under fisheries, the grazing grounds for the cattle are decreasing which in turn effects on cattle rearing in this block. Having the facility of huge water bodies, the households tend to rear ducks.

The coverage of veterinary and animal husbandry support services in the block are given below:

- Block Animal Health Centre - 1
- Animal Development Aid Centre -3
- Artificial Insemination Centre - 5
- Veterinary Personnel - 5

Social Assets [2005-06]:

a. Academic institutions : Primary schools – 87, Middle schools – 3, High schools – 6, Higher Secondary School – 6, College –1, Special & Non – Formal Education Centres - 213
b. Financial institution/ Co-op Society : Commercial Bank- 4, Gramin Bank – 3, Co-op. Society- 31
c. Medical facilities : Hospita-1, Health Centrtes – 3, Sub – Centres - 42 , Family Welfare Centre – 38
d. Electrification: Mouzas Electrified – 24, Mouzas

e. Drinking Water Supply – All 30 mouzas are covered under hand –operated tube-wells for drinking water supply (sweet water aquifer – 300m(+) below ground level).

Transport & communication

The mainland areas of his block s well connected with the Sub-Division & District HQs. One bridge over BIdyadhjari River at Chaital has substantially reduced the length to access the State capital at Kolkata. The island Gram Panchayats are connected with ferry services. All weather road networks have been set up within the villages of both islands and in main lands. The inhabited islands are connected with water based transport through improvised diesel operated mechanized boats. Concrete jetties have been constructed at almost all the ferry ghats, market places for boarding & landing the vessels. One bridge at Nazat point over Betni River is proposed to be constructed which will set up connection with the island GP of this block with the main land.

Existing transport networks of the block are given below:

- No. of Ferry Services – 10
- Bus Terminus originated from the block – 4
- Nearest Rly. Station from Block – 31 km
- Distance from District HQ – 70 km
- Bituminous Road – 61 km
- Brick Paved & Concrete Road – 111 km
- RCC Jetties – 11 No.

Local Organization:

SANDESHKGHALI-I Block has a good network of voluntary organizations and NGOs who are working in the fields of awareness building, implementation of rural projects, training and production units through SHGs, literacy and organizing general health awareness programmes, drinking water & sanitation programmes, disaster management programmes, etc.

Weaknesses

i) Sandeshkhali-I Block is very much prone to cyclonic storm originated from the low-pressure zone of Bay-of-Bengal. As this is surrounded and criss-crossed by rivers and, the earthen embankments are the life line of the nearby villages. These embankments are mostly vulnerable to the upsurge & flashflood especially during high tide synchronized with the high velocity wind. Breaches of river embankments, land erosion, land mass losses are major events during pre-monsoon period to post monsoon month in each year. The devastating cyclonic storm AILA occurred on 25th May, 2009 seriously damaged the livelihoods & assets of 6 Gram Panchayats of this block.

ii) Nearing 90% of the houses in the area are non-permanent kutcha type and thatched houses made of local materials. Norwester, hailstorm in summer months and cyclonic storm surges during monsoon months destroy thatched houses. The brakish water fisheries, one of the major livelihood options in this block face serious loss due to such events.

iii) This block is dominated by the Scheduled Caste & scheduled Tribe population who are economically weaker sections of the community and the most vulnerable to the natural disasters.

iv) The monoculture operation of fisheries with tiger prawn is facing some disease problem in recent years which affects the fishery operation in the block. Conversion of land from fisheries to brick fields becomes a favourable option to the owners/entrepreneurs but this tends to damage the ecology & socio-economic base of the society as a whole. The situation becomes more vulnerable.

v) Indiscriminate tapping of ground water for boro cultivation is degrading the soil character of the lands as well as affecting the sweet water aquifer. This activity will adversely affect the agriculture sector in near future.

vi) Population growth imposes pressure on the monocropped agrarian economy of the block which in turn mounts serious pressure for harnessing natural resources damaging the ecology and the rich biodiversity of the block.

vii) The disaster/cyclone warning system is based in Block Development Office, Police Station and in some of the Gram Panchayat offices to communicate the probable incidents before hand. However the incidence of AILA occurred in 2009 proved that the weather warning system was not so well operative.

vii) Impacts of climate change especially the extreme events and sea level rise will adversely affect the low lying areas and the weaker sections of the people. Any change in the monsoonal pattern may adversely affect the agrarian economy of the block.

Kalinagar GP

Kalinagar GP is located in the eastern side of Sandeshkhali-I Panchayat Samity. This GP is completely isolated from the mainland. Sundarban Tiger Reseve area is around 35 km away from the GP.

The GP is comprised of five mouzas having a total area of 2526.15 ha (2001) of which total number of household is 4200. Basic information relating to demography etc. are given in the following table (as per 2001 census).

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC) Population	T-(ST) Population	Total Workers
24	Puntimari	235.53	1508	792	716	653	609	665
25	Gazalia	556.14	2688	1361	1327	1713	400	1314
26	Ghatihara	522.04	3207	1620	1587	1824	794	1754
27	Ghoshpur	548.75	6231	3203	3028	3306	1491	3320
28	Kalinagar	663.69	7526	3917	3609	2476	1690	4207
	Total:	2526.15	21160	10893	10267	9972 (47.1%)	4984 (23.5%)	7948 (37.5%)

The major land type of the GP is low & mediumand is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields Nearing 25% of the cultivable area can be brought under Boro paddy cultivation with under ground water sources (STW/MTW). Another 5% of the area is covered with *rabi & rabi* – summer crops. The soil of the GP is moderate saline.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, land erosion& change in river meanders, etc. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages of this GP got flooded with saline water which damaged the physical assets and livelihoods of the people along with its biodiversity. Most stretches of the river embankments are still invulnerable condition.

There are 5 km metalled road, 17 km brick – paved roads, and 26 km *kutcha* roads in the GP. The villages are connected with the Block HQ at Nazat through waterways. 6 RCC Jetties constructed on the ferry *ghats*, market centres, etc play a very important role in boarding the commuters to and fro the villages. Motorised and man-pulled rickshaw vans are the means of transportation within the villages. There is one cyclone shelter in this GP but school, college buildings & other public & private premises are used to shelter the victims during disasters.

Agriculture is the mainstay of the people of this GP which counts to 75% followed by fisheries 15% and the rest 10% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. SC & ST population of his GP are 47.1% and 23.5% respectively. Most of these people belong to economically weaker section of the community and their poverty level is high. However Mahatma Gandhi National Rural Employment Guarantee Programme and other Central & State Govt. projects to provide employments to the job seekers and to distribute food staff in subsidized prices amongst these families ensure the food security for most of the people.

Kalinagar GP has a very high standard education infrastructure for which a large section of students from mainland areas of the block attend the schools in spite of communication hazards. Commercial Banks, Grameen Banks & Cop-operative societies are operating in this GP. Kalinagar Market has a very good reputation for marketing of agriculture and allied produces like rice, fish, crab, vegetables, etc.

Many NGOs, LBOs & CBOs are working in the Block.

Hatgachi GP

Hatgachi Gram Panchayat under Sandeshkhali - I Panchayat Samity of North 24-Parganas District is located in the mainland and around 15 km south -west of Block Head Quarter at Nazat. One is to cross river Bidya to reach block head quarter or other wise to travel through State Highway crossing bridge at Chaital on Bidya River. This GP is surrounded by Bayermari-I GP in the west, Bidya River in the north, Bermajur-I GP in the east and Sarberia – Agarhati GP in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, and breach of embankments, etc. This GP is within 55 km of Sundarban Tiger Reserve area.

Hatgachi GP is comprised of 4 mouzas viz Hatgachi, Kanmari, Nalkora, and Rajbari having a total geographical area of 20.08 skm. Total population of the GP is 19,705 (2011). Number of total workers in this GP is 6115 (around 31%). Total number of household is 3402 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 37% (not yet finalized). Percentage of population belong to Scheduled Castes & Scheduled Tribes are 51.78% & 31% respectively. High concentration of backward classes in this GP also indicates its economic backwardness.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal. A considerable area of this GP is under brakish water fisheries (*Nona Veries)*.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining (10%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.3 m) during kharif season. There is problem of draining out excess water in the monsoon months. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The cultivation in rabi season is limited due to scarcity of irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, potato, til, and summer vegetables etc.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 30%) is migrated to nearby districts, Kolkata and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and allied sectors like fisheries (Nona-veries). Most of the owner cultivators belong to marginal & sub-marginal farmers and Bargadars owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, small business, & transport sector.

Hatgachi GP has one Higher Secondary, one Secondary, one middle school and 9 primary schools. According to 2011 census literacy rate is 55 %. The people of this GP are to depend on the Subsidiary Health Centre located at Kanmari. Some private health clinics & dispensaries are also operating in adjacent areas. The ICDS centres are working for women & child health care. Hand operated tube wells are the main source for supply of drinking water in this GP.

In this GP, there are 15 km black – top road, 14 km double soling brick paved road, and 16 km kutcha road. These are connected with ferry ghats, schools, local makets, GP Office and the State Highway. Most of the villages of this GP are now directly linked with the State Highway No. - 46 connected with Kolkata. State Buses, private buses, Auto Rickshaw and Motorized vans are the means of transports plying in the area. There is a State Bus service from Kolkata to Kanmari Bazar. There is one cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 45% of the houses collapsed mainly due to strong wind and flash flood. Most of the *veries* were flooded with sea water and the entire stock of fish was lost causing huge monetary loss to the operators.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, land erosion, subsequent breach of river embankments and water-logging in rainy season. Breach of river embankments along side Bidya River is a major concern of the nearby villages as these embankments are very much vulnerable to the natural disasters.

Many NGOs, LBOs and voluntary organizations are working in this GP.

6.3 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from Sunderbans and the percentage of dependent people on Sunderbans – Hatgachi GP is selected for village profile. The village profile survey has been conducted by the field supervisors in the respective project area. A team under the guidance of field supervisor, has collected information and prepared disaster risk mapping of each selected

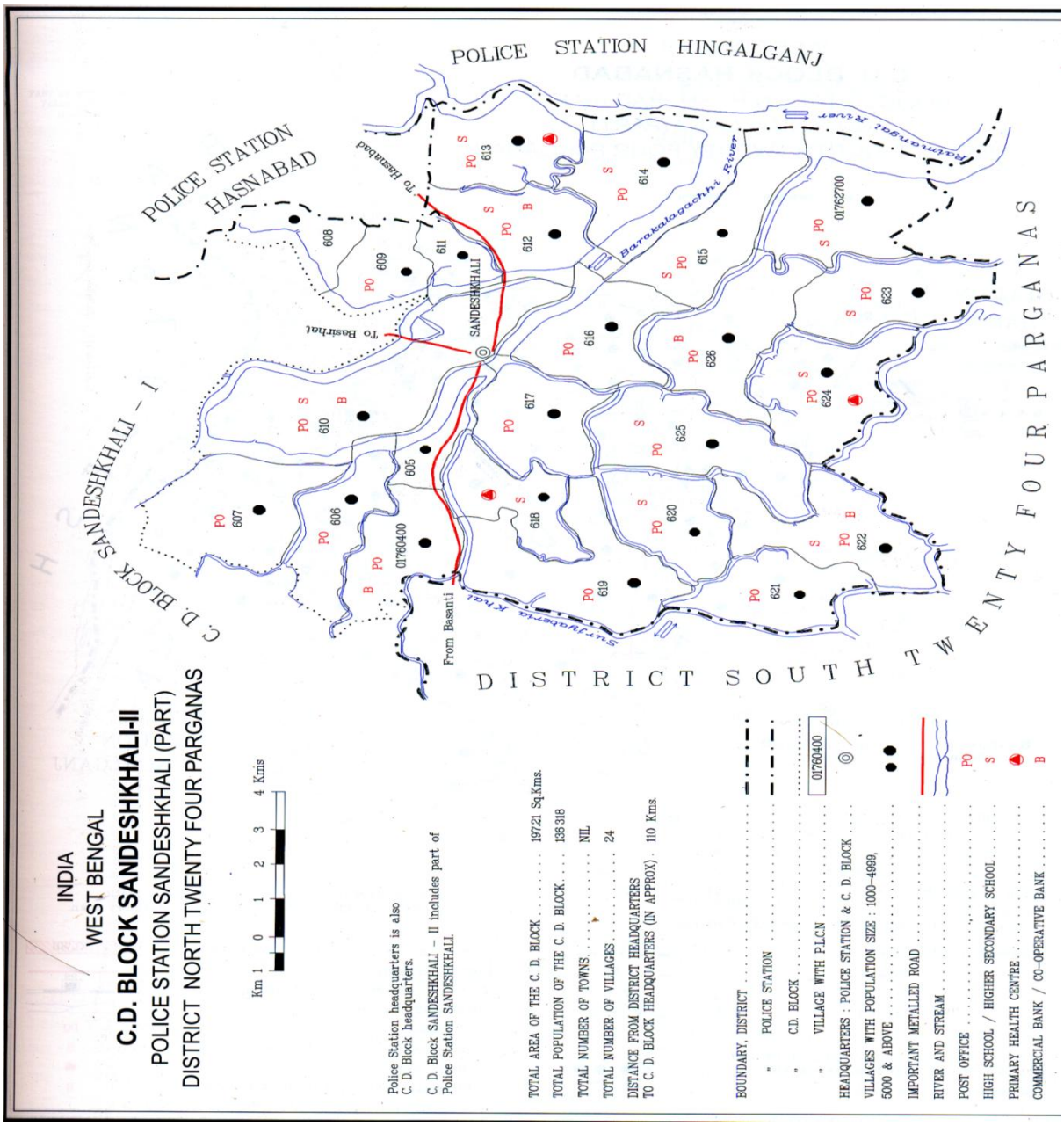
village by interviewing and FGD, depending on findings, the village is selected to be served by the target beneficiaries by project implementation work.

6.32 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 1 village from hatgachi was selected for households Census.

6.4 Sandeshkhali-II Block (in North 24- Parganas District)

Sandeshkhali-II Block is situated in the south- western part of North 24-Parganas District with river Raymangal & Hingalganj Block on its east, Sandeshkhali & Basanti Block on the west, Sandeshkhali-I Blocks on its north and Gosaba Block in the south. This consists of 8 Gram Panchayats and 30 mouzas. It is entirely rural area.



Map-7: Sandeshkhali II Block

Physical Features

2 Gram Panchayats of Sandeshkhali-II Block is located in the mainland of the district and the remaining 6 GPS are in the islands. Several rivers & creeks have separated these GPs. The villages alongside the rivers are protected mostly by earthen dykes but the embankments in some of the vulnerable portions are strengthened with brick-block pitching.

- Geographical Area – 197.21 sq.km
- Agricultural area (Aman)– 7730 ha
- No. of Mouzas – 24
- No. of Gram Panchayats – 8
- No. of Households (2001) – 21677

Climate

The climate of this region is sub-tropical. The Bay of Bengal and network of creeks and rivers control the extreme climate. The tropical monsoon climate with excess humidity is prevalent for about six months in a year. High humidity prevails throughout the year but humidity goes up to 96% during rainy season. Average temperature varies from 13.7 Celsius to 38 Celsius. Average annual rainfall is 1700 mm.

Cyclones & storm events tend to occur in between May & December with the incidence being highest in May and the post – monsoon months of October & November. These cyclones normally bring high winds, heavy rainfall and strong tidal surge. These incidents damage the river embankments and made the adjacent villages inundated with saline water. The brakish water fisheries occupy huge area in some of the GPS and these areas are vulnerable to tidal surge and flash flood. During cyclonic storm AILA (2009) more than 41 km of river embankments seriously damaged and the adjacent villages were inundated with sea water for days together.

The villages in the mainland area along side the river Betni are low lying and protected by weak embankments. Brakish water fisheries cover most areas in these villages. These villages are very much vulnerable to breach of embankments, land erosion and ingress of saline water.

Land Use

The land use pattern of Sandeshkhali –II Block is given below:

Distribution of Land	**Area in Ha**
Net Area under Cultivation	7730
Area under Pasture & Orchard	76
Homestead Land	14.30
Forest Land	32
Cultivable waste land	4000
Area in which more than crop grown	3040

Administrative Units

The Block Development Office is at the top of the administrative unit of the block in which the Block Development Officer is the executive head. At Panchayat Samity (PS), Savapati is the head. The Block HQ & Panchayat Samity office are located at Sandeshkhali which is isolated from the main land. The distance of Sub- Division HQ at Bashirhat is around 60 km.

Other block level administrative units are Land & Land Reforms Office, Registry Office, Agricultural Development Office, Animal Resource Development Office, Block Veterinary Office, Sanitary Office, PHE Office, Office of Inspector of Schools, Field offices of Sundarban Development Board, etc.

The District HQ at Barasat is around 100 km from the block head quarter.

Demographic Features [2011 census]:

- Total persons – 155402 Male- 80107, Female – 75295
- Total Scheduled Caste - 69392 Male (SC)- 36110, Female (SC) -33281
- Total Scheduled Tribe – 34444, Male (ST)- 17468, Female (ST) -16975
- Sex Ratio [M:F] – 1000:940
- Density of population / sq. km – 788
- Decadal growth rate wrt 2001- 14%,
- Literacy [%] : a) total – 59.3, b) male – 71, c) female – 46.8

Following table presents the occupation wise distribution of workforce of Sandeshkali-II Block [2005-06]:

Total workers	56384	36.28 (pc to total population)
Cultivators	11239	19.93 (pc to total workers)
Agril. Laborers	29826	52.90 (Do)
House Hold Workers	1110	1.97 (Do)
Other Workers	27979	50.45 (Do)
Main Workers	34824	22.41 (pc to total population)
Marginal Workers	21596	13.87(pc to total population)
Non Workers	99018	63.72 (pc to total population)

This being a mono-cropped area, the absorbing capacity of effective workforce in agriculture is low. This is observed from the above table that only 36% of the total population is the main & marginal workers. Other workers in this block are mainly engaged in brakish water fishery activities and in transport sector. It is evident from the above information that a major portion of the workforce remain unemployed and / or under- employed. A portion of the workforce migrates to nearby districts even to outside states in search of employment. Child especially girl child trafficking is alarmingly increasing and is becoming a nuisance.

Livelihoods Features:

Agriculture [2005-06]

Sandeshkhali -II Block has a net cultivable area of 7730 ha and according to 2011 census per capita land holding size is 0.05 ha. The land type is mainly low lying having 70% and the per cents of medium & upland are 20% & 10% respectively. Agriculture in this region depends on monsoon rains. However micro irrigation potentials created through rain water harvesting and tapping of under ground water (Medium deep TW) in some villages, the area under a second crop stands around 39%. Soil is moderate to high salinity.

Classification of farming communities based on land – holding pattern of Sandeshkhali-I Block is as follows:

- Small farmers - 3880
- Marginal farmers – 20664

- Bargadars – 5866
- Patta Holders – 14146
- Agricultural Labourers - 26164

Major crops grown in the block are Paddy (Aman & Boro), potato, til, mustard & summer vegetables, coconut, etc. As the area is low lying, traditional varieties of Aman paddy (Tall varieties) are grown in the khariff season. Yield rate is comparatively low around 2mt per ha.

Fisheries [2005-06]

Fishery operation in brakish water fisheries is the second major occupation of the inhabitants of this block. A considerable area has been brought under this operation for cultivation of monoculture with tiger prawn (P. monodon). There is a big market of prawn seed and Prawn in which a good number of skilled & unskilled labours are engaged. Information relating to fisheries are given below:

- Net area available for pisciculture – 2868 ha
- Net area under effective pisciculture – 2582 ha
- No. of persons engaged in this profession – 14569
- Approximate Annual Production - 6471 qntls.

In current years the brakish water fisheries are facing problems of diseases and fall in productivity. This in turn effects the engagement of manpower in this sector and overall economy of the block. The fishery operation in the block is in a vulnerable condition.

Animal Husbandry

Animal husbandry operation in this block can be treated as the third livelihood option but presently operating in a very poor scale. The women folk mainly belonging to the SC& ST and also to Below Poverty Line (BPL) category are engaged in animal rearing specially the Black Bengal Goat, Garole Sheep, & pigs with their inherent skill. As the cultivable lands are coming under fisheries, the grazing grounds for the cattle are decreasing which in turn effects on cattle rearing in this block. Losing the grazing ground to brakish water fisheries, the natural atmosphere for cattle rearing becomes unfavourable and as such the number of livestock is decreasing gradually. These are also vulnearbale to natural disasters and post disaster diseases. Having the facility of huge water bodies, the households tend to rear ducks.

The coverage of veterinary and animal husbandry support services in the block are given below:

- Block Animal Health Centre – 1
- Veterinary Personnel – 2

It is evident from above that the veterinary coverage in this island Block is not at all satisfactory to the cattle keeper.

Social Assets [2005-06]:

a. Academic institutions : Primary schools – 90, Middle schools – 1, High schools – 13, Higher Secondary School – 8, Special & Non – Formal Education Centres - 244

b. Financial institution/ Co-op Society : Commercial Bank- 3, Gramin Bank – 3, Co-op. Society- 29
c. Medical facilities : Health Centrtes – 3, Sub – Centres - 35, Family Welfare Centre – 36
d. Electrification: Mouzas Electrified – 13 Mouzas out of 24
e. Drinking Water Supply – All 24 mouzas are covered under hand –operated tube-wells for drinking water supply (sweet water aquifer – 300m(+) below ground level).

Transport & communication

The mainland areas of this block s well connected with the Sub-Division & District HQs. One bridge over BIdyadhjari River at Chaital has substantially reduced the length to access the State capital at Kolkata. The island Gram Panchayats are connected with ferry services. All weather road networks have been set up within the villages of both islands and in main lands. The inhabited islands are connected with water based transport through improvised diesel operated mechanized boats. Concrete jetties have been constructed at almost all the ferry ghats, market places for boarding & landing the vessels.

Existing transport networks of the block are given below:

- No. of Ferry Services – 13
- Bus Terminus originated from the block – 3
- Nearest Rly. Station from Block (Canning) – 25 km
- Distance from District HQ – 70 km
- Bituminous Road – 19 km
- Brick Paved & Concrete Road – 35 km
- RCC Jetties – 15 No.

Local Organization:

Sandeshkhali-II Block has a good network of voluntary organizations and NGOs who are working in the fields of awareness building, implementation of rural projects, training and production units through SHGs, literacy and organizing general health awareness programmes, drinking water & sanitation programmes, disaster management programmes, etc.

Weaknesses

i) Sandeshkhali-II Block is very much prone to cyclonic storm originated from the low-pressure zone of Bay-of-Bengal. This block is surrounded and criss-crossed by big rivers like Raymangal, Barakalagachia, Chotokalagachia, Betni, Sahebkhali, etc. The earthen embankments are treated to be the life line of the villages. These embankments are mostly vulnerable to the upsurge & flashflood especially during high tide synchronized with the high velocity wind. Breaches of river embankments, land erosion, land mass losses are the major events during pre-monsoon period to post monsoon month in each year. The river embankments along side the veries are mostly vulnerable as these are at the mercy of the fishery owners for maintenance.

The devastating cyclonic storm AILA occurred on 25th May, 2009 seriously damaged the livelihoods & assets of all 8 Gram Panchayats of this block.

ii) Nearing 90% of the houses in the area are non-permanent kutcha type and thatched houses made of local materials. Norwester, hailstorm in summer months and cyclonic storm surges during monsoon months destroy thatched houses. The brakish water fisheries, one of the major livelihood options in this block face serious loss due to such events.

iii) This block is dominated by the Scheduled Caste & scheduled Tribe population who are economically weaker sections of the community and the most vulnerable to the natural disasters. Most of the tribal households are landless and their nutrition status is also very poor.

iv) The monclture operation of fisheries with tiger prawn is facing some disease problem in recent years which affects the fishery operation in the block. The disease along with other related problems towards export of prawn and crab make this important economic activities vulnerable

v) Population growth imposes pressure on the monocropped agrarian economy of the block which in turn mounts serious pressure for harnessing natural resources damaging the ecology and the rich biodiversity of the adjacent Sundraban region.

vi) The disaster/cyclone warning system is based in Block Development Office, Police Station and in some of the Gram Panchayat offices to communicate the probable incidents before hand. However the incidence of AILA occurred in 2009 proved that the weather warning system was not so well operative.

vii) Impacts of climate change especially the extreme events and sea level rise will adversely affect the island areas and low lying areas of mainland villages of the block. The worst affected are the weaker sections of the people belonging to the SC & ST categories.

Jeliakhali GP

Jeliakhali GP is located in the southern side of Sandeshkhali-II Panchayat Samity. Betni River has separated the panchayat samity from this GP. This GP is completely isolated from the mainland and also criss – crossed by rivers & creeks. Sundarban Tiger Reserve area is around 25 km away from the GP.

The GP is comprised of three mouzas having a total area of 2459.28 ha (2001) of which total number of household is 3429. Basic information relating to demography etc. are given in the following table (as per 2001 census.

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
44	Bhangatushkhali	723.58	6165	3130	3035	538	1042	1565
45	Jeliakhali Purba	576.68	4252	2229	2023	2239	900	1528
48	Jeliakhali Paschim	1159.02	8319	4288	4031	3649	1496	3051
	Total:	2459.28	18736	9647	9089	6426 34.3%	3438 18.3%	6144 33%

Agriculture is the mainstay of the people of this GP which counts to 75% followed by fisheries 20% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. SC & ST population of his GP are very high which represent 34.3% and 18.3% respectively. Most

of these people belong to economically weaker section of the community and their poverty level is high. The ST households are mostly landless labourers work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment Guarantee Programme and other Central & State Govt. projects provide employments to the job seekers and to distribute food stuff in subsidized prices amongst these families to ensure the food security for most of the people.

It is also to be observed that only 33% of the population is the workers and the remaining portion are either unemployed or under –employed. Migration from the villages is the normal feature.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. around 15% of the area is covered with rabi & rabi – summer crops. The soil of the GP is moderate to high saline. A considerable area is under brakish water fisheries.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, land erosion& change in river meanders, etc. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages of this GP got flooded with saline water which damaged the physical assets and livelihoods of the people along with its biodiversity. Most stretches of the river embankments are still in vulnerable condition.

There are 14 km brick – paved roads, and 46 km kutcha roads in the GP. The villages are connected with the Block HQ at Sandeshkhali through waterways. 6 RCC Jetties constructed on the ferry ghats, market centres, etc play a very important role in boarding the commuters and o export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation within the villages. Nearest Bus terminus is at Dhamakhali which connects the District HQ & State capital through roads. There is one cyclone shelter in this GP but school buildings & other public & private premises are used to shelter the victims during disasters.

Considering the location of the GP and isolation in nature, the villages are very venerable to the natural disasters. As the large section of the people belong o economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Bolock.

Sandeshkhali GP

Sandeshkhali GP is the proper GP in which Sandeshkhali-II Block Office is situated. This GP is isolated from mainland and is surrounded by Betni, Barakalagachia and Dansa Rivers. This GP is completely isolated from the mainland and also criss – crossed by rivers & creeks. Sundarban Tiger Reserve area is around 25 km away from the GP.

The GP is comprised of four mouzas having a total area of 2952.99 ha (2001) of which total number of household is 3207. Basic information relating to demography etc. are given in the following table (as per 2001 census.

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
34	Tongtala	371.10	1505	771	734	1189	193	660
35	Bauthakurani	437.06	2435	1253	1182	1990	194	1162
37	Dwarikjangal	1863.98	9680	5053	4627	3720	3481	3343
38	Dholkhali	280.85	2151	1103	1048	1408	271	766
	Total:	2952.99	15771	8180	7591	8307 52.67%	4139 26.2%	5931 38%

Agriculture is the mainstay of the people of this GP which counts to 70% followed by fisheries 20% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. Concentration of SC & ST population of this GP is very high which represent 52.67% and 26.2% respectively. Most of these people belong to economically weaker section of the community and their poverty level is very high. The ST households are mostly landless labourers work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment Guarantee Programme provides employments to the job seekers. Different Central & State Govt. projects distribute food stuff in subsidized prices amongst these families to ensure the food security of the people belonging to these weaker sections.

It is also to be observed that total workers in this GP ate only 38% of the population and the remaining portion are either unemployed or under–employed. Migration from the villages is the normal feature.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. around 10% of the area is covered with boro paddy and rabi & rabi – summer crops. The soil of the GP is moderate to high saline. A considerable area (more than 50%) under Dwarikjanagal mouza is brakish water fisheries.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, land erosion& change in river meanders, etc. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages of this GP got flooded with saline water for days together which damaged the physical assets and livelihoods of the people along with its biodiversity. Most stretches of the river embankments are still in vulnerable condition.

There are 21 km pucca rd, 17 km brick – paved roads, and 46 km kutcha roads in the GP. 7 RCC Jetties on the ferry ghats, market centres, school ghats, etc play a very important role in boarding the commuters and to export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation within the villages. Nearest Bustermins is at Dhamakhali which is other side of river Betni from where the District HQ at Barasat & Kolkata are connected with bus services. There is one cyclone shelter in this GP. The school buildings & other public & private premises are used to shelter the victims during disasters.

As this GP houses the Block HQ, it is comparatively in better position in respect to the social infrastructure like roads, electricity, drinking water supply, and academic institutions. However the river embankments especially the embankments alongside Barakalagachia River are very much fragile and the people are living in vulnerable condition.

Considering the location of the GP and isolation in nature, the villages are very venerable to the natural disasters. As the large section of the people belongs to economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Block.

Bermajur-I GP

Bermajur-I Gram Panchayat under Sandeshkhali - II Panchayat Samity of North 24-Parganas District is located in the mainland and around 15 km north -west of Block Head Quarter at Sandeshkhali. One is to cross river Betni to reach block head quarter. This GP is surrounded by Hatgachi GP in the west, Bidya River & Bermajur-II GP in the north and east, and Dhulian Khal in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to natural disasters like cyclonic storm induced flash flood, land erosion, tidal surge and breach of embankments, etc. This GP is within 60 km of Sundarban Tiger Reserve area.

Bermajur-I GP is comprised of one Revenue Mouza namely Bermajur bearing J.L. No.- 16 under Sandeshkhali Police Station having a total geographical area of 10.39 skm. Total population of the GP is 12420 (2011). Number of total workers in this GP is 4178 (around 34 %). Total number of household is 2038 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 39% (not yet finalized). Percentage of population belong to Scheduled Castes & Scheduled Tribes are (28 %) & (22.6%) respectively and in totality it is more than 50%. High concentration of backward classes in this GP also indicates its economic backwardness.

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal. More than 50% of the lands of this GP are under brakish water fisheries.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining (10%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.3 m) during kharif season. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The cultivation in rabi season is limited due to scarcity in irrigation and availability of suitable land. Major crops under Rabi season cultivation are boro paddy, winter vegetables and summer vegetables etc.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 30%) is migrated to nearby districts, Kolkata and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and fisheries (*Nona veries*). Most of the owner cultivators belong to marginal & sub-marginal farmers and Bargadars owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, small business, & transport sector.

Bermajur-I GP has one Higher Secondary, one Secondary, and 5 primary schools. According to 2011 census literacy rate is 61%. The people of this GP are to depend on the Subsidiary Health Centre located at Kanmari. Some private health clinics &

dispensaries are also operating in adjacent areas mainly run by the NGOs. The ICDS centres are working for women & child health care. Hand operated tube wells are the main source for supply of drinking water in this GP.

In this GP, there are 5 km black – top road, 6 km double soling brick paved road, and 16 km kutcha road. These are connected with ferry ghats, schools, local makets, GP Office and the State Highway. Most of the villages of this GP are now linked with the State Highway No. - 46 connected with Kolkata. State Buses, private buses, Auto Rickshaw and Motorized vans are the transports plying in the area. There is no cyclone / flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 nearing 35 % of the houses collapsed mainly due to strong wind and flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, subsequent breach of river embankments and water-logging in rainy season. Breach of river embankments along side Bidya River is major a major concern of the nearby villages as these embankments are very much vulnerable to the natural disasters. Fishery operations in this area are not remunerative in recent years mainly due to diseases.The economic activities relating to this trade is decreasing. This makes this GP more vulnerable in respect to livelihoods and this is enforcing migration.

Different NGOs, LBOs and voluntary organizations are working in this GP.

Bermajur-II GP

Bermajur-II Gram Panchayat under Sandeshkhali - II Panchayat Samity of North 24-Parganas District is located in the mainland and 1 km north - west of Block Head Quarter at Sandeshkhali. One is to cross river Betni to reach block head quarter. This GP is surrounded by Bermajur-I & Sarberia - Agarhati GP in the west, Dhulian Khal in the north, Bidyadhari River in the east and Rampur Nadi in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to land erosion and breach of embankments. Some of the major establishments including Bus Stand and markets are facing serious land erosion. Other natural disasters like cyclonic storm induced flash flood, tidal surge and breach, etc are also very much concern of this GP. This GP is within 50 km of Sundarban Tiger Reserve area.

Bermajur-II GP is comprised of three Revenue Mouzas namely Rampur, Dhamakhali and Jhupkhali having a total geographical area of 17.47 skm. Total population of the GP is 18,162 (2011). Total number of household is 2992 who are basically cultivators and belong to marginal, sub-marginal farmers and Bargadar categories. Households belong to Below Poverty Line (BPL) are around 39% (not yet finalized). Percentage of population belong to Scheduled Castes & Scheduled Tribes are (9.7%) & (16%) respectively. Number of total workers in this GP is 5875 (around 33%).

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal. More than 50% of the lands of this GP are under brakish water fisheries.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (25%) and remaining (10%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1.3 m) during kharif season. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The cultivation in rabi season is limited due to scarcity in irrigation and availability of suitable land. Major crops under Rabi season cultivation are boro paddy, winter vegetables and summer vegetables etc supported with irrigation from medium deep tube-wells.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 40%) is migrated to nearby districts, Kolkata and other states in search of employment. They are mainly seasonal migrants. Livelihoods of the people are centred round agriculture and fisheries (Nona *veries*). Most of the owner cultivators belong to marginal & sub-marginal farmers and Bargadars owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, crab culture, small business, & transport sector.

Bermajur-II GP has one Higher Secondary, one Secondary, and 6 primary schools and one Madrasa. According to 2011 census literacy rate is 56 %. The people of this GP are to depend on the Subsidiary Health Centre located at the adjacent GPs and at PHC located at Sandeshkhali. Some private health clinics & dispensaries are also operating in adjacent areas mainly run by the NGOs. The ICDS centres are working for women & child health care. Hand operated tube wells are the main source for supply of drinking water in this GP.

In this GP, there are 15 km black – top road, 13 km double soling brick paved road, and 19 km kutcha road. These are connected with ferry ghats, schools, local makets, GP Office and the State Highway. Most of the villages of this GP are now linked with the State Highway. connected with Kolkata. State Buses, private buses, Auto Rickshaw and Motorized vans are the transports plying in the area. There is one cyclone/flood shelter in this GP however during disasters the affected people take shelter in the schools premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 50% of the houses collapsed mainly due to strong wind and saline flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, subsequent breach of river embankments and water-logging in rainy season. Breach of river embankments along side Bidya & Betni River is major a major concern of the villages as these embankments are very much vulnerable to the natural disasters. Fishery operations in this area are not remunerative in recent years mainly due to diseases and the economic activities relating to this trade is decreasing. Some of the *veries* are transformed to Brick Fields and the employment opportunities to the local unskilled agricultural & fishery workers are shrinking considerably. This makes this GP more vulnerable in respect to livelihoods and this is enforcing migration. The economic vulnerability coupled with natural disasters makes this GP one of the most vulnerable in Sandeshkhali-II Block.

Different NGOs, LBOs and voluntary organizations are working in this GP.

6.41 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from Sunderbans and the percentage of dependent people on

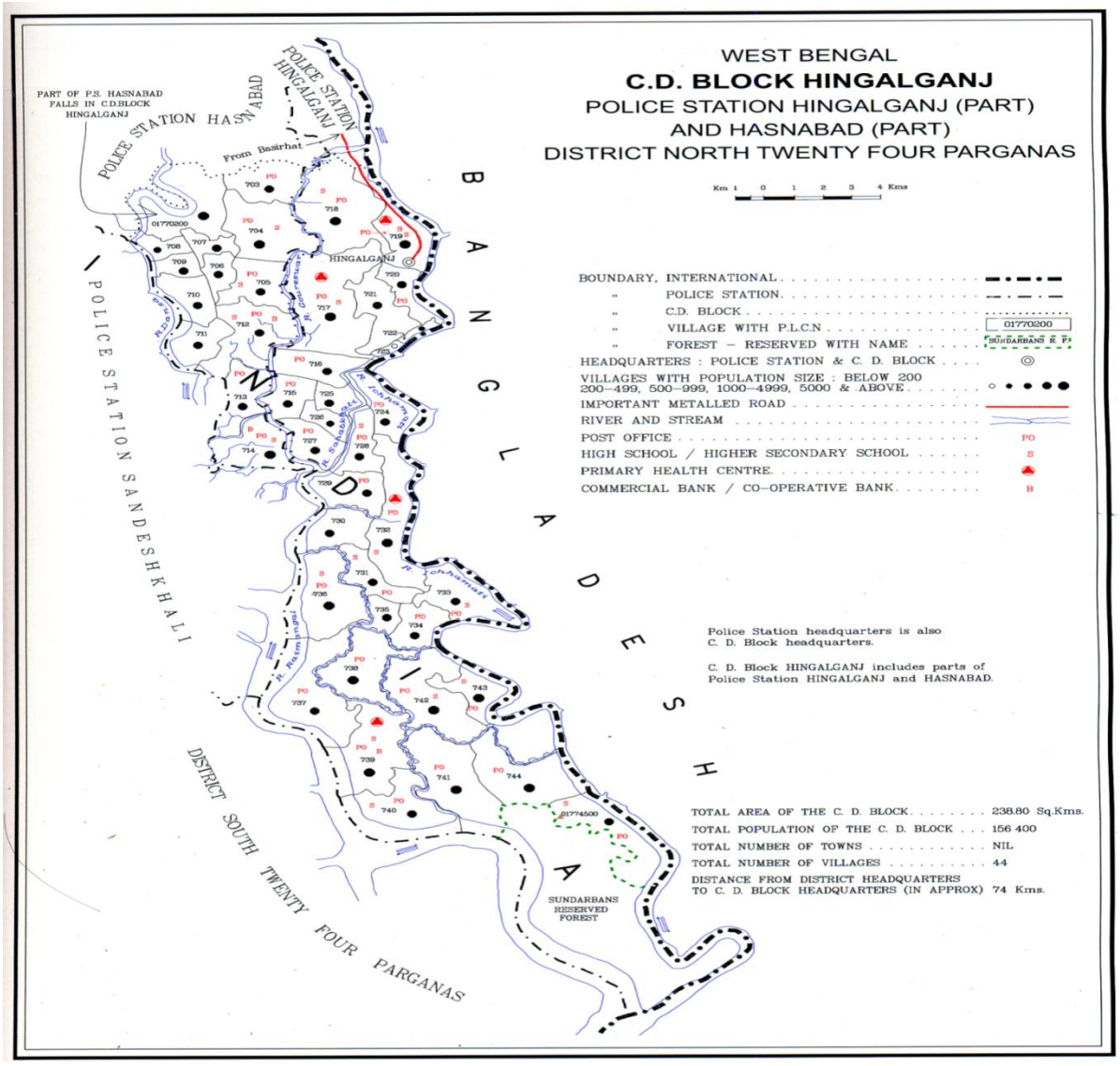
Sunderbans – Bermajur-I and Bermajur-II GPs are selected for village profile. The village profile survey has been conducted by the field supervisors in the respective project area. A team under the guidance of field supervisor, has collected information and prepared disaster risk mapping of each selected village by interviewing and FGD, depending on findings, villages are selected as part of a cluster to be served by the target beneficiaries by project implementation work.

6.42 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 6 villages from Bermajur-I and 4 villages from Bermajur-II were selected for households Census.

6.5 Hingalganj Block in North 24-Parganas District

Hingalganj Block is situated in the extreme south- eastern part of North 24-Parganas District with Raymangal River on its west and south, Hasnabad Block on the north, Kalindi River on its east. This consists of 9 Gram Panchayats and 44 mouzas. It is entirely rural area.



Map-8:Hingalganj Block

Physical Features

All 9 Gram Panchayats of Hingalganj Block are located in the island separated by river Dansa from the mainland of the district. Several rivers & creeks have separated these GPs. The villages alongside the rivers are protected mostly by earthen dykes but the embankments in some of the vulnerable portions are strengthened with brick-block pitching.

- Geographical Area – 238.80 sq.km
- Agricultural area (Aman)– 13679 ha
- No. of Mouzas – 44
- No. of Gram Panchayats – 9
- No. of Households (2001) – 32791

Climate

The climate of this region is sub-tropical. The Bay of Bengal and network of creeks and rivers control the extreme climate. The tropical monsoon climate with excess humidity is prevalent for about six months in a year. High humidity prevails throughout the year but humidity goes up to 96% during rainy season. Average temperature varies from 13.7 Celsius to 38 Celsius. Average annual rainfall is 1700 mm.

Cyclones & storm events tend to occur in between May & December with the incidence being highest in May and the post – monsoon months of October & November. These cyclones normally bring high winds, heavy rainfall and strong tidal surge. These incidents damage the river embankments and made the adjacent villages inundated with saline water. The brakish water fisheries occupy some area in some of the GPS and these areas are vulnerable to tidal surge and flash flood. During cyclonic storm AILA (2009) more than 40 km of river embankments seriously damaged and the adjacent villages were inundated with sea water for days together.

The villages alongside river Ichamati, Kalindi & Gaureswar are very much vulnerable to breach of embankments, land erosion and ingress of saline water.

Land Use

The land use pattern of Hingalganj Block is given below:

Distribution of Land	**Area in Ha**
Net Area under Cultivation	14200
Area under Pasture & Orchard	125
Homestead Land	29.84
Forest Land	000
Cultivable waste land	154
Area in which more than crop grown	3000

Administrative Units

The Block Development Office is at the top of the administrative unit of the block in which the Block Development Officer is the executive head. At Panchayat Samity (PS), Savapati is the head. The Block HQ & Panchayat Samity office are located at Sandeshkhali which is isolated from the main land. The distance of Sub- Division HQ at Bashirhat is around 30 km.

Other block level administrative units are Land & Land Reforms Office, Registry Office, Agricultural Development Office, Animal Resource Development Office, Block Veterinary Office, Sanitary Office, PHE Office, Office of Inspector of Schools, Field offices of Sundarban Development Board, etc.

The District HQ at Barasat is around 70 km from the block head quarter.

Demographic Features [2011 census]:

- Total persons – 178296 Male- 91460, Female – 86836
- Total Scheduled Caste - 115807 Male (SC)- 59586, Female (SC) -56221
- Total Scheduled Tribe – 11877, Male (ST)- 5993, Female (ST) -5884
- Sex Ratio [M:F] – 1000:950
- Density of population / sq. km – 747
- Decadal growth rate wrt 2001- 14%,
- Literacy [%] : a) total – 70.0, b) male – 81.3, c) female – 58.2

Following table presents the occupation wise distribution of workforce of Hingalganj Block [2005-06]:

Total workers	70782	39.7 (pc to total population)
Cultivators	18444	26.06 (pc to total workers)
Agril. Laborers	22710	32.08 (Do)
House Hold Workers	6882	9.72 (Do)
Other Workers	22746	32.14(Do)
Main Workers	48809	27.37(pc to total population)
Marginal Workers	21973	12.32(pc to total population)
Non Workers	107513	60.30 (pc to total population)

This being a mono-cropped area, the absorbing capacity of effective workforce in agriculture is low. This is observed from the above table that only 40% of the total population is the main & marginal workers. Other workers in this block are mainly engaged in brakish water fishery activities and in transport sector. It is evident from the above information that a major portion of the workforce remain unemployed and / or under- employed. A portion of the workforce migrates to nearby districts even to outside states in search of employment.

Livelihoods Features:

Agriculture [2005-06]

Hingalganj Block has a net cultivable area of 14200 ha and according to 2011 census per capita land holding size is 0.08 ha. The land type is mainly low lying having 62% and the per cents of medium & upland are 26% & 12% respectively. Agriculture in this region depends on monsoon rains. However micro irrigation potentials created through rain water harvesting and tapping of under ground water (Shallow TWs / Medium deep TWs) in some villages, the area under a second crop stands around 22.5%. Soil is moderate to high salinity.

Classification of farming communities based on land – holding pattern of Sandeshkhali-I Block is as follows:

- Small farmers - 4200

- Marginal farmers – 19578
- Bargadars – 5019
- Patta Holders – 26534
- Agricultural Labourers - 19921

Major crops grown in the block are Paddy (Aman & Boro), potato, til, mustard & summer vegetables, coconut, etc. As the area is low lying, traditional varieties of Aman paddy (Tall varieties) are grown in the khariff season.

Fisheries [2005-06]

Fishery operation in brakish water fisheries is the second major occupation of the inhabitants of this block. There is a big market of prawn seed and Prawn in which a good number of skilled & unskilled labours are engaged. Information relating to fisheries are given below:

- Net area available for pisciculture – 1155 ha
- Net area under effective pisciculture – 1040 ha
- No. of persons engaged in this profession – 14938
- Approximate Annual Production – 2608 qntls.

In current years the brakish water fisheries are facing problems of diseases and crop failure. This in turn effects the engagement of manpower in this sector and overall economy of the block. The fishery operation in the block is in a vulnerable condition.

Animal Husbandry

Animal husbandry operation in this block can be treated as the third livelihood option but presently operating in a very poor scale. The women folk mainly belonging to the SC& ST and also to Below Poverty Line (BPL) category are engaged in animal rearing specially the Black Bengal Goat, Garole Sheep, & pigs with their inherent skill. As the cultivable lands are coming under fisheries, the grazing grounds for the cattle are decreasing which in turn effects on cattle rearing in this block also. This livelihood option becomes vulnearbale to natural disasters and post disaster diseases. Having the facility of water logging areas and water bodies, the households tend to rear ducks. During AILA (2009) death of livestock was alarming.

The coverage of veterinary and animal husbandry support services in the block are given below:

- Block Animal Health Centre – 1
- Additional Block Animal Health Centre – 1
- ADAC -1
- Veterinary Personnel – 5

Social Assets [2005-06]:

a. Academic institutions: Primary schools – 127, Middle schools – 5, High schools – 16, Higher Secondary School – 7, Special & Non – Formal Education Centres - 210

b. Financial institution/ Co-op Society : Commercial Bank- 1, Gramin Bank – 3, Co-op. Society- 42

d. Medical facilities : Health Centrtes – 4, Sub – Centres - 42, Family Welfare Centre – 44
e. Electrification: Mouzas Electrified – 44
f. Drinking Water Supply – All 44 mouzas are covered under hand –operated tube-wells and piped water supply programme for drinking water supply (sweet water aquifer – 150m(+) below ground level).

Transport & communication

Hingalganj Block is connected with the Sub-Division & District HQ through water way (crossing Dansa River) and PWD Road. One bridge over Dansa River at Hasnabad point is under construction. This will set up direct connectivity up to Lebukhali point i,e, up to north bank of Sahebkhali River. However the vehicles are now transported through barges to cross the river Dansa. This bridge will reduced the time lag and access to the District HQ at Barasat and State capital at Kolkata will be easy. The island Gram Panchayats are connected with ferry services. All weather road networks have been set up within the villages of islands. The inhabited islands are connected with water based transport through improvised diesel operated mechanized boats. Concrete jetties have been constructed at almost all the ferry ghats, market places for boarding & landing the vessels.

Existing transport networks of the block are given below:

- No. of Ferry Services – 8
- Bus Terminus originated from the block – 1
- Nearest Rly. Station from Block (Hasnabad) – 16 km
- Distance from District HQ – 50 km
- Bituminous Road – 21 km
- Brick Paved & Concrete Road – 50 km
- RCC Jetties – 11 No.

Local Organization:

Hingalganj Block has a good network of voluntary organizations and NGOs who are working in the fields of awareness building, implementation of rural projects, training and production units through SHGs, literacy and organizing general health awareness programmes, drinking water & sanitation programmes, disaster management programmes, etc.

Weaknesses

i) Hingalganj Block is very much prone to cyclonic storm originated from the low-pressure zone of Bay-of-Bengal. This block is surrounded and criss-crossed by big rivers like Raymangal, Barakalagachia, Chotokalagachia, Betni, Sahebkhali, Dansa, Kalindi, Ichamati etc. The earthen embankments are treated to be the life line of the villages, which are mostly vulnerable to the upsurge & flashflood especially during high tide synchronized with the high velocity wind. Breaches of river embankments, land erosion, land mass losses are the major events during pre-monsoon period to post monsoon month in each year. The devastating cyclonic storm AILA occurred on 25th May, 2009 seriously damaged the livelihoods & assets of all 6 Gram Panchayats of this block.

ii) Nearing 90% of the houses in the area are non-permanent kutcha type and thatched houses made of local materials. Norwester, hailstorm in summer months and cyclonic storm surges during monsoon months destroy thatched houses. The brakish water fisheries in this block face serious loss due to such events.

iii) This block is dominated by the Scheduled Caste & scheduled Tribe population who are economically weaker sections of the community and the most vulnerable to the natural disasters. Most of the tribal households are landless and their nutrition status is also very poor.

iv) The monclture operation of fisheries with tiger prawn is facing some disease problem in recent years which affects the fishery operation in the block.

v) Population growth also through illegal infiltration imposes pressure on the monocropped agrarian economy of the block which in turn mounts serious pressure for harnessing natural resources damaging the ecology and the rich biodiversity of the adjacent Sundraban region.

vi) The disaster/cyclone warning system is based in Block Development Office, Police Station and in some of the Gram Panchayat offices to communicate the probable incidents before hand. However the incidence of AILA occurred in 2009 proved that the weather warning system was not so well operative.

vii) Impacts of climate change especially the extreme events and sea level rise will adversely affect the low lying island areas of the block. The worst affected are the weaker sections of the people belonging to the SC & ST categories. Any change in the monsoonal pattern may adversely affect the economy of the block as a whole.

Kalitala GP

Kalitala GP is situated at the extreme south of Hingalganj Block as well as North 24 – Parganas District. This GP is surrounded by JamunaKhal River in the East, Raymangal River in the south, Ghumti River in the west and Gobindakati GP in the north.

The GP is comprised of three mouzas having a total area of 2470.21 ha (2001) of which total number of household is 3366. Basic information relating to demography etc. are given in the following table (as per 2001 census).

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
119	Parghumti	948.18	6305	3259	3046	5018	143	2690
122	Kalitala	839.32	6107	3140	2967	5122	145	2863
123	Samshernagar	682.71	4270	2154	2116	3368	364	2298
	Total:	2470.21	16682	8553	8129	13508 81%	652 4%	7851 47%

Agriculture is the mainstay of the people of this GP which counts to 75% followed by fisheries 20% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. Concentration of SC population of this GP is very high which represents 81%. Most of these people belong to economically weaker section of the community and their poverty level is very high. The ST households are mostly landless labourers work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment

Guarantee Programme provides employments to the job seekers. Different Central & State Govt. projects distribute food stuff in subsidized prices amongst these families to ensure the food security of the people belonging to these weaker sections.

It is also to be observed that total workers in this GP are only 47% of the population and the remaining portion is either unemployed or under – employed. Migration from the villages is the normal feature.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. around 15% of the area is covered with boro paddy and rabi & rabi – summer crops. The soil of the GP is moderate to high saline. A considerable area is under brakish water fisheries.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, land erosion& change in river meanders, etc. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages of this GP got flooded with saline water for days together which damaged the physical assets and livelihoods of the people along with its biodiversity. Most stretches of the river embankments alongside Roymagal River are still in vulnerable condition.

There are 11 km pucca road, 13 km brick – paved roads, and 35 km kutcha roads in the GP. 4 RCC Jetties on the ferry ghats, market centres, school ghats, etc play a very important role in boarding the commuters and to export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation within the villages. Nearest Bus terminus is at Lebukhali which is other side of river Lebukhali from where the District HQ at Barasat & Kolkata are connected with bus services. There is no cyclone shelter in this GP. The school buildings & other public & private premises are used to shelter the victims during disasters.

Kalitala GP is very much adjacent to the Sundarban Reserve Forest and STR. The Forest Watch Tower at Jhingakhali Forest is just opposite of Samshernagar mouza. Due to the close proximity of the SRF, tiger infestation in the GP is frequent which disturbs the inhabitants. Present trend of tiger infestation is increasing.

Considering the location of the GP and isolation in nature, the villages are very venerable to the natural disasters. As the large section of the people belongs to economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Bolock.

Gobindakati GP

Gobindakati GP is situated at the south of Hingalgan Block Head Quarter and in a is cluster of island having 5 GPs of the block. This GP is surrounded by Kalindi River in the East, Kalitala GP in the south, Jogeshganj in the west and Sahebkhali GP in the north.

The GP is comprised of four mouzas having a total area of 2339.09 ha (2001) of which total number of household is 3120. Basic information relating to demography etc. are given in the following table (as per 2001 census).

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
112	Kanaikati	350.46	2435	1275	1160	2363	0	920
113	Kanthalberia	181.30	1005	518	487	731	24	394
120	Sridhakati	926.33	6559	3357	3202	4746	524	3014
121	Malekhanghumti	881.00	5108	2609	2499	4700	0	2724
	Total:	2339.09	15107	7759	7348	12540 83%	528 3.5%	7052 46.7%

Net cultivable area in the GP is 2307.43 ha which is covered under rainfed aman paddy cultivation in kharif season. The coverage of area under rabi & rabi – summer crops is around 14% of the net cultivable area.

Agriculture is the mainstay of the people of this GP which counts to 75% followed by fisheries 20% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. Concentration of SC population of this GP is very high which represents 83%. Most of these people belong to economically weaker section of the community and their poverty level is high. The ST households are mostly landless labourers, who work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment Guarantee Programme provides employments to the job seekers. Different Central & State Govt. projects distribute food stuff in subsidized prices amongst these families to ensure the food security of the people belonging to these weaker sections.

It is also to be observed that total workers in this GP are only 46.7% of the population and the remaining portion is either unemployed or under – employed. Migration from the villages is the normal feature. As the area is dominated by monocropped paddy cultivation, the scope of generation of additional employment in the GP is limited. A portion of the people depends on collecting natural resources from the adjacent rivers and forest area. Such activities impose strain on the fragile ecosystem of Sundarban as a whole. Besides that a portion of workforce migrates to other districts and also to the state capital at Kolkata seeking employment.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. Around 14% of the area is covered with boro paddy and rabi & rabi – summer crops. The soil of the GP is moderate to high saline.

There are 15 Primary schools, 2 middle schools and 3 High schools in this GP. Drinking water supply is made through hand operated tube wells. No grid power electricity has been extended in the GP however more than 50% of the households are provided with solar powered energy source.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, land erosion& change in river meanders, etc. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable.

During AILA (2009), three villages situated in the eastern side of the GP got flooded with saline water for days together which damaged the physical assets and livelihoods of the people along with its biodiversity. The cultivable ands and sweet water reservoirs got contaminated with sea water and the cyclone victims faced serious problems in post AILA period. Most stretches of the river embankments are still in vulnerable condition.

There are 13 km pucca rd, 15 km brick – paved roads, and 31 km kutcha roads in the GP. RCC Jetties on the ferry ghats, market centres, school ghats, etc play a very important role in boarding the commuters and to export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation within the villages. Nearest Bus terminus is at Lebukhali which is other side of Sahebkhali River from where the District HQ at Barasat & Kolkata are connected with bus services. The nearest town is Hasnabad which is 50 km away from the GP. There are two cyclone shelters in this GP. The school buildings & other public & private premises are used to shelter the victims during disasters.

Gobindakati GP is around 15 km from the SRF area. Bangaldesh is just at the other of Kalindi River.

Considering the location of the GP, the villages are very venerable to the natural disasters. As the large section of the people belongs to economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Bolock.

Bishpur GP

Bishpur GP is situated at the north of Hingalgan Block Head Quarter and in the same island. This GP is surrounded by Hingalganj GP in the east, Rupamari GP in the south, Dansa River in the west and Hasabad Block in the north.

The GP is comprised of 7 mouzas having a total area of 2710.5 9ha (2001) of which total number of household is 3681. Basic information relating to demography etc. are given in the following table (as per 2001 census).

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
80	Durgapur Baylani	834.87	2791	1457	1334	1995	302	877
81	Dharmaberia	414.40	2180	1137	1043	1593	97	675
82	Bishpur	751.50	5579	2796	2783	1482	589	1733
84	Paschim Khejurberia	198.30	1175	610	565	499	92	417
85	Purbagheri	170.37	1405	730	675	517	98	567
86	Kankria	180.49	710	367	343	260	64	274
87	Dhanikhali	160.66	1122	605	517	788	174	390
	Total:	2710.59	18034	9253	8781	7882 43.7%	2416 13.4%	5943 33%

Net cultivable area in the GP is 2696.53 ha which is covered under rain fed aman paddy cultivation in kharif season. The coverage of area under rabi & rabi – summer crops is around 21% of the net cultivable area. Major irrigation sources are the STWs & MTWs which prvide irrigation for boro paddy cultivation.

Agriculture is the mainstay of the people of this GP which counts to 80% followed by fisheries 15% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. Concentration of SC & ST population of this GP is very high which represents 57% which higher than the State average. Most of these people belong to economically weaker section of the community and their poverty level is high. The ST households are mostly landless labourers, who work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment Guarantee Programme provides employments to the job seekers. Different Central & State Govt. projects distribute food stuff in subsidized prices amongst these families to ensure the food security of the people belonging to these weaker sections.

It is also to be observed that total workers in this GP are only 33% of the population and the remaining portion is either unemployed or under – employed. Migration from the villages is the normal feature. A portion of the people depends on collecting natural resources from the adjacent rivers. Besides that a portion of workforce migrates to nearby town at Hasnabad which is 20 km away from the GP. Some others migrate to outside districts and also to the state capital at Kolkata seeking employment.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. around 21% of the area is covered with boro paddy and rabi & rabi – summer crops. The soil of the GP is moderate saline.

There are 12 Primary schools, 2 High schools in this GP. Drinking water supply is made through hand operated tube wells and one piped water supply scheme. The villages of the GP are connected with grid power electricity. Some of the households use solar powered energy source.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, etc. Land erosion& change in river meanders are special problems of the GP. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages situated in the eastern side of the GP got flooded with saline water for days together which damaged the physical assets and livelihoods of the people. The cultivable ands and sweet water reservoirs got contaminated with saline water and the cyclone victims faced serious problems in post AILA period. Most stretches of the river embankments are still in vulnerable condition.

There are 5 km pucca rd, 17 km brick – paved roads, and 25 km kutcha roads in the GP. RCC Jetties on the ferry ghats, market centres, school ghats, etc play a very important role in boarding the commuters and to export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation in the GP. Nearest Bus terminus is at Hasnabad which is other side of Dansa River from where the District HQ at Barasat & Kolkata are connected with bus services. The Rail Head is also at Hasnabad. The narest town is Hasnabad which is 20 km away from the GP. There are two cyclone shelters in this GP. The school buildings & other public & private premises are used to shelter the victims during disasters.

Bishpur GP is around 35 km from the SRF area. Bangaldesh is just at the other of Kalindi River.

Considering the location of the GP, the villages are very venerable to the natural disasters. As the large section of the people belongs to economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Bolock.

Rupamari GP

Rupamari GP is situated at the south –west side of Hingalganj Block Head Quarter and in the same island. This GP is surrounded by Hingalganj & Gaureswar River in the east, Bishpur GP in the north, Dansa River in the west and Dulduli GP in the south.

The GP is comprised of 5 mouzas having a total area of 265.83 ha (2001) of which total number of household is 2648. Basic information relating to demography etc. are given in the following table (as per 2001 census).

JL No.	Mouza	Area (Ha)	Population	Male	Female	T-(SC)	T-(ST)	Total Workers
83	Purba Khejurberia	417.26	2615	1340	1275	2114	23	945
88	Bainara	338.72	1720	869	851	1276	279	637
89	Kumirmari	352.48	1550	812	738	904	218	465
90	Rupamari	718.32	4151	2169	1982	1838	1554	1529
91	Banstala	439.05	2791	1457	1334	1995	302	877
	Total:	2265.83	12827	6647	6180	8127 63.3%	2376 18.5%	4453 35%

Net cultivable area in the GP is 2255.83 ha which is covered under rainfed aman paddy cultivation in kharif season. The coverage of area under rabi & rabi – summer crops is around 17% of the net cultivable area. Major irrigation sources are the STWs & MTWs which provide irrigation for boro paddy and other cultivation during dry season.

Agriculture is the mainstay of the people of this GP which counts to 80% followed by fisheries 15% and the rest 5% earn their livelihoods as service providers, small businessmen, van pullers, crab catchers, honey collectors, and services, etc. Concentration of SC & ST population of this GP is very high which represent 63.3% and 18.5% respectively. Most of these people belong to economically weaker section of the community and their poverty level is high. The ST households are mostly landless labourers, who work in the agriculture & fishery sector. However Mahatma Gandhi National Rural Employment Guarantee Programme provides employments to the job seekers. Different Central & State Govt. projects distribute food stuff in subsidized prices amongst these families to ensure the food security of the people belonging to these weaker sections.

It is also to be observed that total workers in this GP are only 35% of the population and the remaining portion is either unemployed or under – employed. Migration from the villages is the normal feature. A portion of the people depends on collecting natural resources from the adjacent rivers. Besides that a portion of workforce migrates to nearby town at Hasnabad which is20 km from the GP. Some others migrate to outside districts and also to the state capital at Kolkata seeking employment.

The major land type of the GP is low & medium and is suited to tall verities *aman* paddy cultivation during kharif season for high water stagnation in the fields. around 17% of the area is covered with boro paddy and rabi & rabi – summer crops. The soil of the GP is moderate saline.

There are 11 Primary schools, 2 High schools in this GP. Drinking water supply is made through hand operated tube wells. The villages of the GP are connected with grid power electricity. Some of the households use solar powered energy source.

The major climatic disasters in this region is cyclonic storms, flash flood, etc which cause in breach of river embankments, intrusion of saline water in the inhabited areas, etc. Land erosion& change in river meanders are special problems of the GP. The GP faces such events in almost each year for which the lives & assets of the people are considered to be very much vulnerable. During AILA (2009), the villages situated in the eastern side of the GP got flooded with saline water and some kuchha houses collapsed, cultivable lands and sweet water reservoirs of a portion of the GP got contaminated with saline water. Most stretches of the river embankments are still in vulnerable condition.

There are 7 km pucca rd, 15 km brick – paved roads, and 31 km kutcha roads in the GP. RCC Jetties on the ferry ghats, market centres, school ghats, etc play a very important role in boarding the commuters and to export & import of produces. Motorised and man-pulled rickshaw vans are the means of transportation in the GP. Nearest Bus terminus is at Hasnabad which is other side of Dansa River from where the District HQ at Barasat & Kolkata are connected with bus services. The Rail Head is also at Hasnabad. The nearest town is Hasnabad which is 20 km away from the GP. There is two cyclone shelters in this GP. The school buildings & other public & private premises are used to shelter the victims during disasters. Rupamari GP is around 31 km from the SRF area.

Considering the location of the GP, the villages are very venerable to the natural disasters. As the large section of the people belongs to economically weaker section, the community as a whole is vulnerable. Lack of employment opportunity in the villages, the workforce is compelled to migrate causing several social nuisances. The child trafficking especially girl child trafficking becomes a serious social problem of the region.

Many NGOs, LBOs & CBOs are working in the Bolock.

Hingalganj GP

Hingalganj Gram Panchayat under Hingalganj Panchayat Samity of North 24-Parganas District has housed the blockhead quarter. This GP is surrounded by Gaureswar River in the west, Hasnabad PS in the north, Ichamati Riverin the east, Sandelerbil GP in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to land erosion and breach of embankments. Other natural disasters like cyclonic storm induced flash flood, tidal surge and breach, land mass loss & land erosion, etc are also very much concern of this GP. This GP is within 39 km of Sundarban Tiger Reserve area.

Hingalganj GP is comprised of two Revenue Mouzas namely Mamudpur (JL. No. – 96) and Hingalganj (JL. No. -97) having a total geographical area of 16.57 skm. Total population of the GP is 18,185 (2011). Total number of household is 3490 who are basically cultivators and belong to marginal, sub-marginal farmers, *Bargadar & Pattaholder* categories. Households belong to Below Poverty Line (BPL) are around 38% (not yet finalized). Percentage of population belong to Scheduled Castes & Scheduled Tribes are (15.7%) & less than 1% respectively. Number of total workers in this GP is 6765 (around 37%).

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining (15%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1. m) during kharif season. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The hah lands ae covered with HYV Paddy in khariff season's cultivation. The cultivation in rabi season is limited due to scarcity in irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, pulses & til, summer vegetables etc supported with irrigation from medium deep tube-wells.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 35%) is migrated to nearby districts, Kolkata and other states in search of employment. Livelihoods of the people are centred round agriculture and fisheries. Most of the owner cultivators belong to marginal & sub-marginal farmers and *Bargadars & Pattaholders* owning land holding less than 1 ha. Nearing 40% of the hhs are engaged in fisheries, small business, service & transport sector.

Hingalganj GP has one Under Graduate College, one Higher Secondary, two Secondary, and 12 primary schools and two Madrasa. According to 2011 census literacy rate is 65%. The people of this GP are to depend on the Primary Health Centre located at Hingalganj and hospital at Taki. Some private health clinics & dispensaries are also operating in adjacent areas mainly run by the NGOs. The 11 ICDS centres are working for women & child health care. Apart from hand operated tube wells there is piped water supply scheme for supply of drinking water in this GP.

In this GP, there are 11 km black – top road, 12 km double soling brick paved road, and 16 km kutcha road. These are connected with ferry ghats, schools, local makets, GP Office and the offices at Block Head Quarters. This GP is 40 km away from Sub-Division Town at Bashirhat. One Double lane bridge is under construction over Dansa River which will set up direct linkage of this GP with District HQ and State Capital at Kolkata through State Highway. At present the barges are transporting vehicles in crossing the river Dansa to reach Hingalganj. Private buses, Auto Rickshaw, and Motorized vans are the means of transports plying in the area. There is one cyclone / flood shelter in this GP however during disasters the affected people take shelter in the school& College premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 50 % of the houses collapsed mainly due to strong wind and saline flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, subsequent breach of river embankments. Breach of river embankments along side Ichhamati and Gaureswar Rivers is major a major concern of the GP as these embankments are very much vulnerable to the natural disasters. Land erosion & change in meanders are also eating away the cultivable lands and other assets of the villagers and making the GP vulnerable to natural consequences.

Different NGOS, LBOs and voluntary organizations are working in this GP.

Sandelerbil GP

Sandelerbil Gram Panchayat under Hingalganj Panchayat Samity of North 24-Parganas District is in close proximity to the block head uarter. This GP is surrounded by Gaureswar River in the west, Hingalganj GP in the north, Ichamati Riverin the east, Dulduli GP in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to land erosion and breach of embankments. Other natural disasters like cyclonic storm induced flash flood, tidal surge and breach, land mass loss & land erosion, etc are also very much concern of this GP. This GP is within 35 km of Sundarban Tiger Reserve area.

Sandelerbil GP is comprised of six Revenue Mouzas namely Amberia (JL. No. – 94), Sandelerbil (JL. No. -95), Bankra (JL- 98), Bankradebor (99), Singerkati (100), Khosbas (101) having a total geographical area of 26.72 skm. Total population of the GP is 23,747 (2011). Total number of household is 4602 who are basically cultivators and belong to marginal, sub-marginal farmers, Bargadar & Pattaholder categories. Households belong to Below Poverty Line (BPL) are around 38% (not yet finalized). Percentage of population belongs to Scheduled Castes & Scheduled Tribes are 51% & 4.6% respectively. Number of total workers in this GP is 9306 (around 39%).

The lands of this GP possess medium to high salinity condition during dry season and becomes unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal.

The major land type of this GP is low land (around 60% of net cultivable area) followed by medium high land (25%) and remaining (15%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1. m) during kharif season. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The high lands are covered with HYV Paddy in khariff season's cultivation. The cultivation in rabi season is limited due to scarcity in irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, pulses & til, summer vegetables etc supported with irrigation from sweet water reservoirs and medium deep tube-wells.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 35%) is migrated to nearby districts, Kolkata and other states in search of employment. Livelihoods of the people are centred round agriculture and fisheries. Most of the owner cultivators belong to marginal & sub-marginal farmers and *Bargadars & Pattaholders* owning land holding less than 1 ha. Nearing 35% of the hhs are engaged in fisheries, small business, service & transport sector.

Sandelerbil GP has two Higher Secondary, one Secondary, and 13 primary schools. According to 2011 census literacy rate is 61 %. The people of this GP are to depend on the Primary Health Centre located at Hingalganj and hospital at Taki. Some private health clinics & dispensaries are also operating in adjacent areas mainly run by the NGOs. The ICDS centres are working for women & child health care. Apart from hand operated tube wells there is piped water supply scheme for supply of drinking water in this GP.

In this GP, there are 14 km black – top road, 15 km double soling brick paved road, and 21 km kutcha road. These are connected with ferry ghats, schools, local makets, GP Office and the offices at Block Head Quarters. This GP is 45 km away rom Sub-Division Town at Bashirhat. Private buses, Auto Rickshaw, and Motorized vans are the means of transports plying in the area. There is one cyclone / flood shelter in this GP however

during disasters the affected people take shelter in the school premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 50 % of the houses collapsed mainly due to strong wind and saline flash flood.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, subsequent breach of river embankments. Breach of river embankments along side Ichhamati and Gaureswar Rivers is a major concern of the GP as these embankments are very much vulnerable to the natural disasters. Land erosion & change in meanders are also eating away the cultivable lands and other assets of the villagers and making the GP vulnerable to natural consequences. Probable impacts of climate change may inundate the low lying areas located alongside these rivers.

Some active NGOs, LBOs and voluntary organizations are working for socio-economic development of this region.

Dulduli GP

Dulduli Gram Panchayat under Hingalganj Panchayat Samity of North 24-Parganas District is in the southern side of the block head quarter. This GP is surrounded by Sahebkhali River in the west, Sandelerbil GP in the north, Ichhamatii & Kalindi River in the east, Sahebkhali GP in the south. The villages along the rivers are protected by the earthen dykes and some portions are strengthened by brick pitching. The villages are mostly vulnerable to land erosion and breach of embankments. Other natural disasters like cyclonic storm induced flash flood, tidal surge and breach, land erosion, etc are also very much concern of this GP. This GP is within 26 km of Sundarban Tiger Reserve area. The nearest Wildlife Watch Tower is located at Jhingakhali Forest.

Dulduli GP is comprised of 8 Revenue Mouzas namely Bhandarkhali (JL. No. – 92), Kothabari (JL. No. -93), Chotosahebkhali (JL- 102), Swarapkati (JL -103), Ketarchak (JL-104), Lebukhali (JL- 105), Putiamathbari (JL – 106), Dulduli (JL – 07) having a total geographical area of 29.13 skm. The villages in this GP are intersected by rivers and are scattered in three islands. Non – integration of the GP is a problem. Total population of the GP is 19,953 (2011). Total number of household is 3866 who are basically cultivators and belong to marginal, sub-marginal farmers, Bargadar & Pattaholder categories. Households belong to Below Poverty Line (BPL) are around 39% (not yet finalized). Percentage of population belongs to Scheduled Castes & Scheduled Tribes are 78 % & 10% respectively. In totality it comes to 88% which is very. Number of total workers in this GP is 8094 (around 40 %).

The lands of this GP possess medium to high salinity condition during dry season and becomes mostly unsuitable for crop cultivation. But in the rainy season soil salinity comes down through dilution and becomes favourable for cultivation of Aman paddy in the water – logged condition. The soil Ph is mostly normal.

The major land type of this GP is low land (around 65% of net cultivable area) followed by medium high land (20%) and remaining (15%) is high land. As the major portion of the land type is low, water stagnation in the fields is high (ranging from 0.5 to 1. m) during kharif season. The cultivable lands are mostly monocropped with rainfed traditional & tall variety Aman paddy. The high lands are covered with HYV Paddy in khariff season's cultivation. The cultivation in rabi season is limited due to scarcity in irrigation. Major crops under Rabi season cultivation are boro paddy, winter vegetables, pulses & til, summer vegetables etc supported with irrigation from sweet water reservoirs.

Being a monocropped area, the scope of generating additional employment to the effective work force is limited. A portion of work force (more than 35%) is migrated to nearby districts, Kolkata and other states in search of employment. Livelihoods of the people are centred round agriculture, fisheries, wild shrimp seed collection, honey collection, crab catching, etc. Most of the owner cultivators belong to marginal & sub-marginal farmers and *Bargadars & Pattaholders* owning land holding less than 1 ha. Nearing 35% of the hhs are engaged in fisheries, small business, service & transport sector.

Dulduli GP has one Higher Secondary, two Secondary, and 14 primary schools. According to 2011 census literacy rate is 65%. The people of this GP are to depend on the Primary Health Centre located at Hingalganj and at Sandeshkhali. Some private health clinics & dispensaries are also operating in adjacent areas mainly run by the NGOs. The ICDS centres are working for women & child health care. Hand operated tube wells are the main source of drinking water supply in this GP. There are problems in the sweet water aquifer below ground level in some pockets of this GP. Model schemes for supplying drinking water from tank based sweet water reservoirs have been explored but not popularized yet.

In this GP, there are 12 km black – top road, 18 km double soling brick paved road, and 21 km kutcha road. These are connected with ferry ghats, schools, local makets, and GP Office. This GP is 55 km away from Sub-Division Town at Bashirhat. Auto Rickshaw, and Motorized vans are the means of transports plying in the area. There is one cyclone / flood shelter in this GP however during disasters the affected people take shelter in the school& College premises and in other public buildings. The houses are mostly kutcha & semi-kutcha type built with local materials which are very much vulnerable to cyclonic storms and flash flood. During AILA occurred on 25th May, 2009 more than 50 % of the houses collapsed mainly due to strong wind and saline flash flood. Most of the villages were under saline water submergence for days together after the occurrence of AILA, which made the lands unsuitable for cultivation in two consecutive kharif seasons and put the cyclone victim families in great distress.

The major climatic disasters faced by this GP are cyclonic storms; storm induced tidal surge, flash flood, subsequent breach of river embankments. Breach of river embankments along side Ichhamati, Kalindi and Sahebkhali Rivers is a major concern of the GP as these embankments are very much vulnerable to the natural disasters. Land erosion & change in meanders are also eating away the cultivable lands and other assets of the villagers and making the GP vulnerable to natural consequences. Probable impacts of climate change may inundate the low lying areas located alongside these rivers and make the inhabitants environmental refugees.

Some active NGOs, LBOs and voluntary organizations are working for socio-economic development of this region.

6.51 Decision Taken

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from Sunderbans and the percentage of dependent people on Sunderbans – Hingalganj, Sandelerbill and Dulduli GPs are selected for village profile. The village profile survey has been conducted by the field supervisors in the respective project area. A team under the guidance of field supervisor, has collected information and prepared disaster risk mapping of each selected village by interviewing and FGD, depending on findings, villages are selected as part of a cluster to be served by the target beneficiaries by project implementation work.

6.52 Next Step

Based on the information collected from village profiling and careful analysis of disaster risk maps, 2 villages from Hingalganj, 5 villages from Sandelerbill and 4 from Dulduli were selected for households Census.

VII. CONCLUSIONS

In Bangladesh part, the project is being implemented in Khulna, Bagerhat and Satkhira Districts. Considering the project objective, 3 upazills (one each from each Districts) are selected fot this purpose. Paikgacha upazilla of Khulan, Morrelganj upazilla of Bagerhat and Shyamnagar Upazilla of Satkhira districts were selected.

After analyzing information and careful analysis of primary and secondary data, dependency and closeness from SIZ, and percentage of dependent people on Sundarban unions (UPs) were selected from those previously selected 3 Upazillas for village profiling. Then after collecting Information and preparing risk mapping for each villages, villages are identified within those Ups as part of a cluster to be served (the target beneficiaries) by project implementation work.

Thus in Morelganj Upazilla- villages under Nishanbaria, Khuolia and Baraikhali UPs are selected for conducting census after completion of reconnaissance procedures. 5 villages in Nishanbaria, 5 villages in Khuolia and 5 villages in Baraikhali were selected for Households Census. Thus a cluster will be chosen consisting villages from Nishanbaria, Khuolia and Baraikahali. This will provide opportunity to work in a cluster which is within 0-10 km of SIZ.

Similarly from Paikgacha Upazilla, 5 villages in Garuikhali, 5 villages in Soladana and 5 villages in Laskar were selected for Census that provides the opportunity to work in a cluster which is within 5-10 km of SIZ. Again, in Shyamnagar Upazilla, 5 villages in Munshiganj, 5 villages in Ramjannagar and 5 villages in Koikhali were selected for Census which falls within within 0-5 km of SIZ.

In Indian part, the project is being implemented in South and North 24 Parganas districts. From the selected districts, 5 blocks were selected for project implementation work, Patharprotma and Basanti Blocks from South 24 Parganas and Sandeshkhali I &II and Hingleganj Blocks from North Parganas district. In Patharprotima Block, 5 villages in Ramganga GP, 6 villages in G Plot and 3 villages in Brajaballabpur were selected for households Census after collecting information from village profiling and careful analysis of disaster risk maps. In the same way, at Basanti Block, 1 village from Basanti, 3 villages from Uttar Mokamberia, 4 villages from Bharatgarh, 1 village from Masjidbati and 2 villages from Jotishpur were selected for households Census. Similarly, from Sondeshkhali I block, 1 village from hatgachi was selected for households Census and from Sandeshkhali II, 6 villages from Bermajur-I and 4 villages from Bermajur-II were selected for households Census. At last, 2 villages from Hingalganj, 5 villages from Sandelerbill and 4 from Dulduli were selected from Hingleganj Blocks.

Annexure -1

RECON Picture

Meeting at UP

Meeting at UP (2)

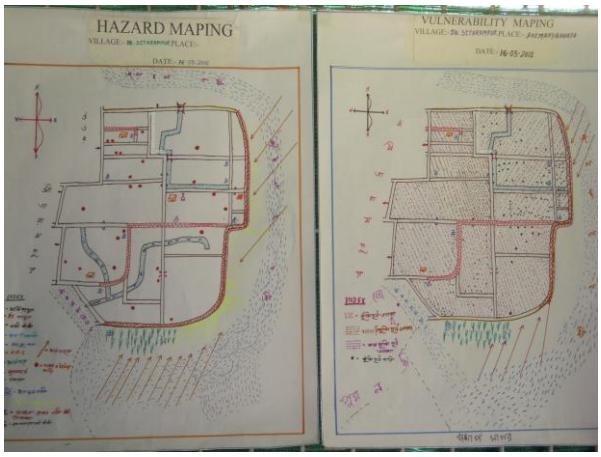
Meeting at Upazilla

Meeting with DAE

Meeting with GP (India)

Recon Training

Village Profiling



Vulnerability Maps

Annexure -2 A

Reconnaissance at a glance in Bangladesh Part of Sundarban under CCRDER Project

For the implementation of the CCDRER project, Reconnaissance and Village Profile tools are being used to identify the project areas and its target beneficiaries for final operation of the project. Participatory approach with different stakeholders was exercised for reconnaissance and village profiling to identify needs and to develop the needs based pragmatic action plan. The above mentioned approaches have done step by step to identify the appropriate site (upazila) and location (union & village) and then right persons (beneficiary) for implanting project intervention to achieve the objectives as well as project goal.

During survey we have focused to follow these criterions

1. Distance from Sundarban
2. Dependence on Sundarben and natural resources
3. Salinity level
4. Social vulnerability of the community
5. Physical vulnerability of the community
6. Livelihoods of the community peoples
7. Organizational arrangement
8. Community and LGIs interest to participate in the project

Activity	Target	Methods & Tools	Study Area	Proposed area for next step	Remarks
Pre-reconnaissance	Site selection specially Upazila selection	Secondary information	Three districts Bagerhat, Satkhira and Khulna	Morrelgonj of Bagerhat, Shyamnagarh of Satkhira and Paikgacha of Khulna district	Done
Reconnaissance	Unions selection under selected upazilas	FGD, Checklist Transact walk	**Morrelgonj Upazila** **Union**-Nishanbaria, Khoulia, Baraikhali, Guidhara, Baharbunia, Panchakaran, Daiboggahati and Morrelgonj **Paikgacha Upazila** **Union:** Garuikhali, Chadkhali, Laskar, Soladana and Godaipur. **Shyamnagrh Upazila** **Union:** Mushiganj, Issaripur, Ramjannagarh and Kaikhali	**Morrelgonj Upazila** **Union**-Nishanbaria, Khoulia, Baraikhali and Morrelgonj **Paikgacha Upazila** **Union:** Garuikhali, Laskar and Soladana **Shyamnagrh Upazila** **Union:** Mushiganj, Ramjannagarh, Issaripur and Kaikhali	Done

Activity	Target	Methods & Tools	Study Area	Proposed area for next step	Remarks
Village Profile and Hazards mapping	Climate change vulnerable Village selection	FGDs for mapping and Questionnaire survey	**Cluster selection (villages) from proposed unions under selected Upazila** **Morrelgonj** **Nishanbaria:** Amrobunia, Gulishakhali, PC Baraikhali, Jamirtola, Hortokitola, Guidhara, Dhansagor, Guatola, Nishanbaria, Hoglapati, Vasanda and Omaguri **Baraikhali:** Tetulbaria, Goyalbaria, Tafalbaria, Pailatola, Vasanda, Dokkin Sutalori and Gabtola **Khoulia:** Khoulia, Sonnashi, Chotopori, KC Chalitabunia, Baropori, Purbo Chipabaraikhali, Dhanshagor, Poshborunia and Chaltabunia **Morrelgonj:** Poshsim Soralia **Paikgacha Upazila** **Garuikhali** : Patrabunia, Bogurarchak, Uttarbainbaria, Dokkinbainbaria, Posimbainbaria, Uttar Amirpur, Dokkin Kumkhali, Garuikhali, Kanakhali, Fokirabad, Huglarchak, Santa and Bashakhali **Laskar :** Boro Takurbari, Choto Takurbari, Khariakhaler posimpar, Khariakaler purbopar, Poshsim varengarchak, Purbo Varengarchak and Damshakhali **Soladana:** Vakotmari, Narkeltola, Patkelpota, Patnikhali, Khatuamari, Sonakhali, Poshsim Vakotmari, Charbandha, Betbunia, **Shyamnagrh Upazila** **Munshiganj** : Mirgong, Central Kalinagarh, Dokkin Kadomtola, Kultoli, Baro Vetkhali, Choto Vetkhali, Purbo Kalinagarh, Uttar Kadomtola, Dhankhali, Singhortoli, Parshikhali, Hetalkhali, Mothurapur, Gelekhali, Chunkuri and Gatindranagarh **Ramjannagarh**: Golakhali, Kalinchi, Tangrakhali, Vetkhali, Sora, Taranipur, Patrakhola, Ramgannagarh, and Manikkhali **Kaikhali :** Boishkhali, Joyakhali, Kaikhali, Purbo Kaikhali, Vetkhali, Shailkhali, Jadobpur, Katamari, Paranpur and Subkhali **Issaripur:** Dhumghat Motorchak, Dhumghat Keoratoli	**Cluster selection (villages) from proposed unions under selected Upazila** **Morrelgonj, Site-1:** **Nishanbaria union, Cluster 1:** Amrobunia, Gulishakhali, PC Baraikhali, Jamirtola, Hortokitola and Guidharai **Baraikhali union, Cluster-2:** Tafalbaria, Pailatola, Vasanda, Dokkin Sutalori and Gabtola **Khoulia union, *Cluster-3*:** Chotopori, KC Chalitabunia, Purbo Chipabaraikhali, Dhanshagor, Poshborunia and Chaltabunia **Paikgacha Upazila, Site-2** **Garuikhali union, Cluster-4**: Dokkinbainbaria, Dokkin Kumkhali, Garuikhali, Fokirabad, Santa and Bashakhali **Laskar union, Cluster-5:** Boro & Choto Takurbari, Khariakhaler posimpar, Poshsim varengarchak, Purbo Varengarchak and Damshakhali **Soladana union, Cluster-6:** Vakotmari, Patkelpota, Khatuamari, Sonakhali and Betbunia, **Shyamnagrh Upazila, Site-3;** **Munshiganj union, Cluster-7**: Dokkin Kadomtola, Kultoli, Choto Vetkhali, Dhankhali, and Singhortoli **Ramjannagarh union, Cluster-8**:Golakhali, Kalinchi, Tangrakhali, Vetkhali and Manikkhali **Kaikhali union, Cluster-9 :** Boishkhali, Joyakhali, Kaikhali, Purbo Kaikhali and Jadobpur.	Done

Annexure-2 B

Reconnaissance in Indian part of Sundarban under CCRDER Project at a glance

Under guidance from BCAS, DRCSC works through the CBOs or local organization therefore, held a meeting with four organization from different parts of Sundarbans. The objective of the project was explained to them and a primary village selection format was distributed for conducting reconnaissance at Block level for selection of Panchayets and villages and location of its target beneficiaries.

Participatory approaches have been taken to exercise reconnaissance and village profile to identify vulnerable villages as well as communities. During reconnaissance focus was given to these criterions

1. Distance from Sundarbans
2. Dependence on Sundarbansand natural resources
3. Salinity level
4. Distance from river
5. Disaster proneness
6. Access to primary amenities
7. Physical vulnerability of the community
8. Livelihoods of the community peoples
9. Organizational arrangement
10. Seasonal migration

Activity	Target	Methods & Tools	Study Area	Proposed area for next step	Remarks
Pre-reconnaissance	Site selection specially block selection	Secondary information	**Two districts:** North 24 Parganas and South 24 parganas.	**Two districts:** North 24 Parganas and South 24 parganas.	Done
Reconnaissance	GP selection under selected Block	FGD, Checklist Transect wall	**District :** South 24 Parganas **Block :** Patharpratima **GramPanchayet:** Ramganga, G-Plot, Brajaballabpur. **Block :** Basanti **GramPanchayet:** Basanti, North mokamberia, Bharatgarh, Masjidbati, Jotishpur. **District:** North 24 Parganas **Block:** Hingalganj **GramPanchayet**: Hingalganj, Sandelerbill, Dulduli **Block**: Sandeshkhali 1 **GramPanchayet**: Hatgachi **Block:** Sandeshkhali 2 **Grampanchayet:** Bermajur 1, Bermajur 2	**District :** South 24 Parganas **Block :** Patharpratima **GramPanchayet:** Ramganga, G-Plot, Brajaballabpur. **Block :** Basanti **GramPanchayet:** Basanti, North mokamberia, Bharatgarh, Masjidbati, Jotishpur. **District:** North 24 Parganas **Block:** Hingalganj **GramPanchayet**: Hingalganj, Sandelerbill, Dulduli **Block**: Sandeshkhali 1 **GramPanchayet**: Hatgachi **Block:** Sandeshkhali 2 **Grampanchayet:** Bermajur 1, Bermajur 2	Done

Village Profile and Hazards mapping	Climate change vulnerable Village selection	FGDs for mapping and Questionnaire survey	**Cluster selection (villages) from proposed GPs under selected Blocks** **Block :** Patharpratima **GramPanchayet:**Ramganga, **Village:** Indraprastha, Dakshin Shibpur, Sagarmadhabpur, Dakshin Gayadham, Ramganga. **GramPanchayet:** G-Plot **Village:** Satyadaspur, Krishnadaspur, Sitarampur, Gobardhanpur, Indrapur, Buraburirtat. **GramPanchayet:** Brajaballabpur. **Village:** Brajaballabpur, Kshetramohanpur, Gobindapurabad. **Block:** Basanti **GramPanchayet:** Basanti **Village:** Sajinatala **GramPanchayet:** North mokamberia **Village:** Bablapara, Charanakhali, Harbhangi **GramPanchayet:** Bharatgarh **Village:** Mahashpur, Anandabad 5, Anandabad 4, Garanbose1. **GramPanchayet:** Masjidbati **Village:** Gadkhali **GramPanchayet:** Jotishpur **Village:** Fisherypara, East hatkhola. **Block:** Hingalganj **GramPanchayet:** Hingalganj **Village:** Kularmath, Mamudpur. **GramPanchayet:** Sandelerbill **Village:** Dalalabad, Kanaknagar, Kanchanpur, Sandelerbill14, Sandelerbill11. **GramPanchayet:** Dulduli **Village:** Nebukhali, Ketarchak, Swarupkathi, Kothabari **Block:** Sandeshkhali 1 **GramPanchayet:** Hatgachi **Village:** Shimulathi **Block:** Sandeshkhali 2 **GramPanchayet:** Bermajur 1 **Village:** Daroankhali, Halderpara, Aitpara, Polpara, Bermajur natun para, Dambalpara. **GramPanchayet:** Bermajur2 **Village:** Ajgara, East Jhupkhali, West Jhupkhali.	**HHs census findings will be used to find out program participants/ beneficiary** **Site : 1 (ISWS)** **Ramganga, *(Cluster 1)*** **G-Plot *(Cluster 2)*** **Brajaballabpur. *(Cluster 3)*** **Site : 2 (CMS)** **Northmokamberia *(Cluster 4)*** **Bharatgarh *(Cluster 5)*** **Jotishpur *(Cluster 6)*** **Site : 3 (Swanirvar)** **Hingalganj *(Cluster 7)*** **Sandelerbill *(Cluster 8)*** **Dulduli *(Cluster 9)*** **Site : 4 (DBNS)** **Bermajur 1 *(Cluster 10)*** **Bermajur2 *(Cluster 11)***	Do

Annexure-3 A

BCAS for CCDRER Project

Reconnaissance Checklist for Union Selection

Union Name---------- Total Village----------; Distance from Sunderban----------
Population: Total HHs----------; Total population----------; Male----------; Female----------

Literacy rate
Illiterate----------; Can sign only---------; primary----------; Secondary----------; Higher Secondary----------

A) Physical Vulnerability

What types of disasters occurred in this union?
(Salinity, Flood, Cyclone, Tidal surge, Drought, Heavy rainfall, River Erosion etc.)

How many cyclone shelters in your union and those are sufficient or not?

B) Social Vulnerability

Social class
Very rich----------; Rich---------; Medium----------; Poor----------; Very poor----------

What types of peoples are more vulnerable due to disaster and why?

Poverty

Food security

Migration
During disaster----------; After disaster----------; Before disaster----------

C) Livelihood

Major livelihood patterns
Agriculture----------; Fishers----------; Fish farmer----------;Agril. Labour---------; Skill labour-------; Small Business----------; Service----------; Crab fattening----------; Rickshaw/van puller----------; Mawali----------; Bawali----------
Community peoples access to natural resources (water, fisheries, forestry etc.)

D) Organizational arrangement

Which organizations are working
Community linkage during disaster period

Communication facilities

E) Community and LGIs Interest to participate in the project

Annexure-3 B

রেপিড রুরাল এ্যাপ্রাইজাল
গ্রামের তথ্য সংগ্রহ/জরীপ নির্দেশনা তালিকা

গ্রাম/মৌজার নাম : ..... ইউনিয়ন : .....

উপজেলা : ..... জেলা: .....

১) ভৌগোলিক অবস্থা :

ক) অবস্থান (পার্শ্ববর্তী গ্রাম)

উত্তর দিকে ..... দক্ষিণ দিকে ..... পূর্ব দিকে.....
পশ্চিম দিকে .....

যোগাযোগের ধরন:
পাকা রাস্া ..... ইটবিছানো রাস্া ..... কাচা রাস্া .....
উপজেলা থেকে দূরত্ব; অবস্থান; ও ধরণ .....
দূরত্ব বা নৈকট্য (কিলোমিটার): সুন্দরবন থেকে --------- ; সমুদ্র থেকে ---------- ; নদী থেকে ---------

খ) ভূমির ধরন (%)

খুব উঁচু ভূমি (০ = ৩০ সেমি) .....; উঁচু ভূমি (৩০-৯০ সেমি) .....;
মধ্যম উঁচু ভূমি (৯০-১৮০ সেমি) .....; নীচু ভূমি (১৮০-৩০০ সেমি) .....;
খুব নীচু ভূমি (>৩০০ সেমি) .....;

গ) ভূমির ব্যবহার (%)

বসতবাড়ী/বসতি.....; কৃষি জমি .....; চিংড়ি ও কৃষি .....;
পুকুর .....; মৎস্য চাষ .....; চিংড়ি ঘের.....;
পতিত জমি .....; বনভূমি .....; বাগান .....;
রাস্া .....; নদী .....; খাল .....;
প্রতিষ্ঠান (শিক্ষা এবং ধর্মীয়) .....; অন্যান্য .....;

ঘ) প্রধান শস্য ও ফল

দানা শস্য .....
সব্জি.....
ডাল.....
তৈল বীজ .....
মসলা.....
ফল.....
অন্যান্য.....

২) আর্থ-সামাজিক অবস্থা

ক) পরিবার সংখ্যা .....;মোট জনসংখ্যা .....;
পুরুষ .....; মহিলা .....;

খ) শিক্ষাগত অবস্থা (%)

অশিক্ষিত .....; শুধু স্বাক্ষর করতে পারে .....; শিক্ষিত .....;

গ) ধর্মীয় অবস্থা (%)

মুসলিম .....; হিন্দু .....; খ্রীস্টান .....; বৌদ্ধ .....; অন্যান্য .....;

ঘ) পেশা (%)

কৃষি .....; মৎস্যজীবি .....; চিংড়ি চাষি .....; নার্সারী (চারা) .....;
নার্সারী (মাছের পোনা) .....; ক্ষুদ্র ব্যবসা .....; দিনমজুর.....;
দক্ষ শ্রমিক .....; মাছ ব্যবসায়ী.....; মাঝি (ইঞ্জিন চালিত/স্থানীয়) .....;
রিক্সা/ভ্যান চালক .....; গাড়ী চালক.....; চাকুরী .....;
মাওয়ালী.....; বাওয়ালী .....; কাঁকড়া চাষ.....;
পোনা আহরণকারী .....; অন্যান্য .....

ঙ) সামাজিক ও অর্থনৈতিক বিভাজন (%)

অর্থনৈতিক অবস্থা

ধনী .....; মধ্যবিত্ত .....; গরীব .....; খুব গরীব .....;

চ) খাদ্য নিরাপত্তা (মাসিক ভিত্তিক তথ্য)

উৎপাদন (উৎবৃত্ত/ঘাটতি) .....; সরবরাহ .....; ক্রয় ক্ষমতা .....;
খাদ্য নিরাপদ খানা (%).....; খাদ্যাভাব খানা (%).....;

ছ) জমির মালিকানা (%)

বড় খামার (> ৭৫০ শতক.) .....; মধ্যম খামার (২৫০-৭৫০ শতক) .....; ক্ষুদ্র খামার (১৫০-২৪৯ শতক) .....; প্রান্তিক (৫০-১৪৯ শতক) .....; ভূমিহীন (০-৪৯ শতক) .....;

জ) স্বাস্থ্য, পানি এবং পয়ঃনিষ্কাশন (%)

স্বাস্থ্য (%)

রোগ মুক্ত খানা ..... (%); রোগাক্রান্ত খানা ..... (%); অক্ষম খানা ..... (%);
বাহক বাহিত রোগ .....
পানি বাহিত রোগ .....
মৌসুম ভিত্তিক রোগ .....
অন্যান্য রোগ .....;

খাবার পানি (%)

নলকূপ .....; গভীর/অগভীর (নলকূপ) .....; পুকুর .....; খাল/নদী .....;
বৃষ্টির পানি .....; পিএসএফ .....

পয়ঃনিষ্কাশন অবস্থা (%)
স্বাস্থ্যসম্মত পায়খানা .....; অস্বাস্থ্যসম্মত পায়খানা .....; উন্মুক্ত পায়খানা .....;

৩) জলবায়ু পরিবর্তন ও প্রাকৃতিক দুর্যোগ জনিত বিপদাপন্নতা

ক) ঘূর্ণিঝড় (গত ২০ বছরে)
সংখ্যা ও সন .....; ক্ষতির মাত্রা/তীব্রতা ও ধরণ .....;
ফলাফল (মানুষ, ঘরবাড়ি/অবকাঠামো, বসতবাড়ীর সম্পদ, কৃষি, মৎস্য, গবাদিপশু, নিরাপদ পানি, গাছ-পালা, ইত্যাদি ক্ষেত্রে ক্ষতি) .....;

খ) জলোচ্ছ্বাস (গত ২০ বছরে)
সংখ্যা ও সন .....; ক্ষতির মাত্রা/তীব্রতা ও ধরণ .....;
ফলাফল (মানুষ, ঘরবাড়ি/অবকাঠামো, বসতবাড়ীর সম্পদ, কৃষি, মৎস্য, গবাদিপশু, নিরাপদ পানি, গাছ-পালা, ইত্যাদি ক্ষেত্রে ক্ষতি) .....;

খাবার পানিতে প্রভাব
বেশী.....; মাঝারি .....; কম .....;

কৃষিতে প্রভাব
বেশী.....; মাঝারি .....; কম .....;

মৎস্য সম্পদের উপর প্রভাব
বেশী.....; মাঝারি .....; কম .....;

গ) বন্যা (গত ২০ বছরে)
সংখ্যা ও সন .....; ক্ষতির মাত্রা/তীব্রতা ও ধরণ .....;
ফলাফল (মানুষ, ঘরবাড়ি/অবকাঠামো, বসতবাড়ীর সম্পদ, কৃষি, মৎস্য, গবাদিপশু, নিরাপদ পানি, গাছ-পালা, ইত্যাদি ক্ষেত্রে ক্ষতি) .....;

ঘ) লবণাক্ততার ধারা
অধিক লবণাক্ততা .....; মাঝারি লবণাক্ততা .....; নিম্ন লবণাক্ততা .....;

দ্রুত বর্ধনশীল, সাধারণ বর্ধনশীল, ধীর বর্ধনশীল, বাড়েনা, কমেছে।

ঙ) খণ্ডকালীন খরা (গত ২০ বছরে)
সংখ্যা ও সন .....; ক্ষতির মাত্রা/তীবতা ও ধরণ .....;
ফলাফল (মানুষ, ঘরবাড়ি/অবকাঠামো, বসতবাড়ীর সম্পদ, কৃষি, মৎস্য, গবাদিপশু, নিরাপদ পানি, গাছ-পালা, ইত্যাদি ক্ষেত্রে ক্ষতি) .....;

চ) বৃষ্টিপাতের অসংলগ্নতা
পরিবর্তিত সময় .....; পরিবর্তনের ধরন .....;
ফলাফল (স্বাস্থ্য, কৃষি, মৎস্য, খাবার পানি ইত্যাদি) .....;

৪) গ্রামের জীববৈচিত্র্য

বনজ সম্পদ	বর্তমান অবস্থা	পূর্বাবস্থা	বাড়ছে	কমছে	হুমকির সন্মুখীন	বিলুপ্ত
কাঠ						
উল						
ঔষধী গাছ						
সব্জি						
সামুদ্রিক/জলজ আগাছা/উদ্ভিদ						
প্রানিজ সম্পদ						
মাছ						
উভচর						
সরীসৃপ						
স্তন্যপায়ী						
পাখী						
পরিজায়ী পাখী						

৫) প্রতিষ্ঠানসমূহ :

ক) সামাজিক সংগঠন (ক্লাব, আইপিএম ক্লাব, কৃষক মাঠ স্কুল, আইপ্যাক দল/গ্রুপ/সমিতি, কৃষক দল, সমবায়, ইউনিয়ন পরিষদ, সিবিও ইত্যাদি)

খ) সামাজিক প্রতিষ্ঠান (মসজিদ, মন্দির, স্কুল, কলেজ, মাদ্রাসা, ঈদগাহ্, কবরস্থান ইত্যাদি) ও সংখ্যা

গ) সেবাদানকারী প্রতিষ্ঠান (কৃষি অফিস, স্বাস্থ্য অফিস, হাসপাতাল, দুর্যোগ প্রতিরোধ, পূর্ব সতর্কতা ব্যবস্থা, পশুসম্পদ, পরিবার পরিকল্পনা, বেসরকারী প্রতিষ্ঠান ইত্যাদি)

৬) অন্যান্য :

ক) এ গ্রামে সাইক্লোন সেল্টার আছে কি না ? না থাকলে গ্রাম হতে সাইক্লোন সেল্টার-এর দূরত্ব কত ? এটি অত্র এলাকার কত % লোককে আশ্রয় দিতে পারে ? এবং যোগাযোগ ব্যবস্থা ?

খ) গ্রামে বিদ্যুৎ আছে কিনা ? কত % খানায় বিদ্যুৎ ব্যবহার করছে এবং কত % খানায় সৌর বিদ্যুৎ ব্যবহার করছে ? এবং কত % খানায় উভয় সুবিধা আছে ?

গ) এই গ্রামে বায়োগ্যাস প্লান্ট আছে কিনা ?

ঘ) সুন্দরবনের উপর নির্ভলশীল পরিবারের সংখ্যা----------টি এবং ----------%

স্বাক্ষাৎকার গ্রহনকারীর নাম ..... টিম সুপারভাইজারের নাম:----------
তারিখ : .....
স্বাক্ষাৎকার প্রদানকারীর নাম ..... মোবাইল (যদি থাকে) ----------

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