



RESEARCH PROGRAM ON  
**Climate Change,  
Agriculture and  
Food Security**



# Village Midline Study **Khulna, Morrelganj, Bangladesh**

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CGIAR Research Program on Climate Change,  
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## Introduction

This report summarizes the findings from the Organizational Midline Study (OMS) carried out in The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic ten-year partnership between CGIAR and Future Earth to help the developing world overcome the threats posed by a changing climate, to achieve food security, enhance livelihoods and improve environmental management. Starting in 2010, CCAFS carried out a major baseline study at household, village and organization levels across its five target regions, namely East Africa, West Africa, South Asia, Latin America and Southeast Asia (more information about CCAFS sites is available on our website <http://ccafs.cgiar.org/where-we-work>). In 2018 and 2019, CCAFS carried out a midline study at these sites. CCAFS trained data collection teams from partner organizations to conduct the midline.

The midline effort in Bangladesh's Khulna district consisted of three components, namely a household survey, a village study and an organizational survey. For the household midline survey, the quantitative questionnaire collected data on basic indicators of welfare, information sources, livelihood/agriculture/natural resource management strategies, the needs and uses of climate and agricultural-related information and current risk management, mitigation and adaptation practices. The survey was conducted by a partner organization in one site made of 7 villages with 140 households surveyed. The partner organization also implemented the village midline study (VMS) and the organizational survey in one out of the seven villages within the same site in which the household survey had been implemented. The data collected for this midline study, as well as an end line study which will take place in roughly 5 years, will be used to monitor changes that have occurred since the baseline study was conducted. The goal is not to attribute these changes to the program but to be able to assess the kinds of changes which have occurred and whether these changes are helping people in the field site adapt to, and mitigate, climate change's impacts.

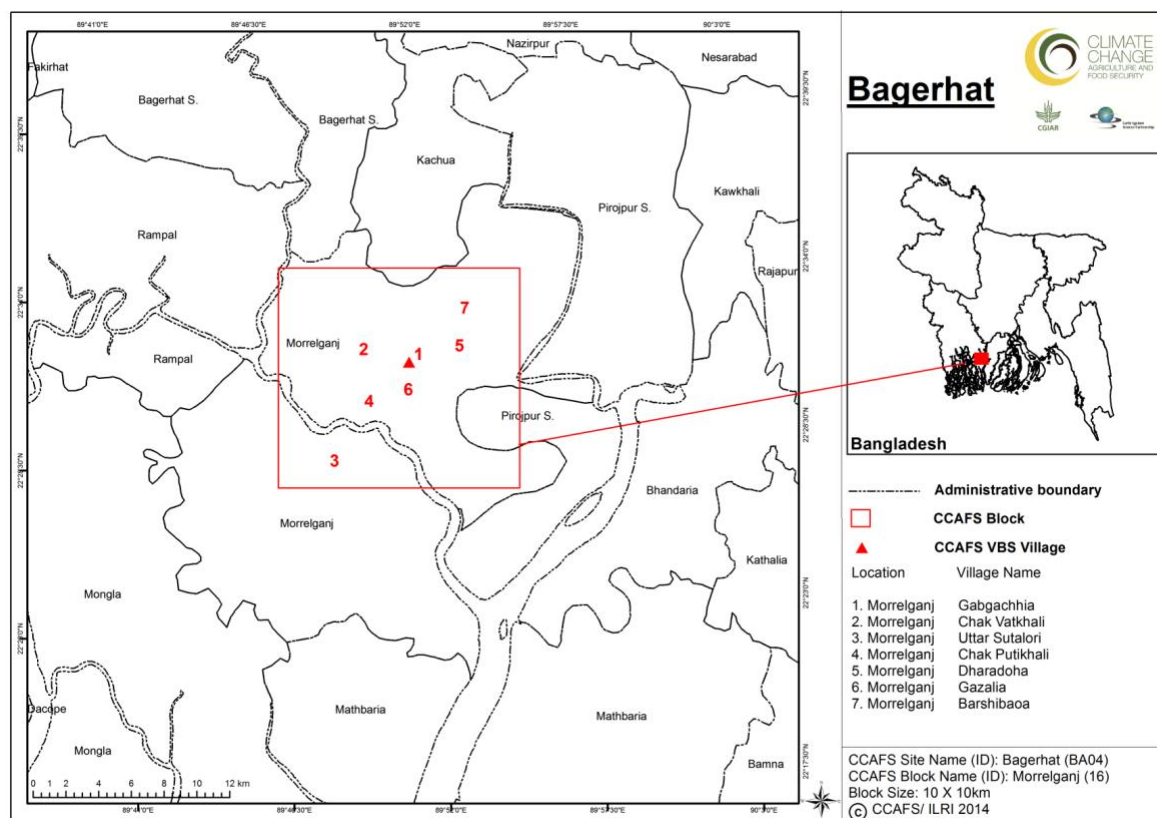
This report focuses on the village midline study (VMS) conducted in Gabgachhia village. The VMS aims to inform on changes occurred since the village baseline study (VBS) was conducted at the village level in areas such as natural resource utilization, organizational landscapes, information networks for weather and agricultural information, as well as information on mitigation efforts, which can be compared across sites and as well as with the situation reported at baseline.

The objectives of the village midline study are to:

- Provide information which can be compared with the situation reported during the VBS to allow us to monitor changes in these villages over time. In particular, changes that allow people to:
  - Manage current climate risks,
  - Adapt to long-term effects of climate change, and
  - Reduce/mitigate greenhouse gas emissions.
- Understand the enabling environment and changes occurred which mediates certain practices and behaviours and creates specific constraints and opportunities (policies, institutions, infrastructure, information and services) for communities responding to changes.
- Explore the social differentiation dynamics at play:
  - Women and men participants will be interviewed separately to be able to gather gender differentiated perspectives.
  - Focus group participants will also be selected to represent the perceptions of differentiated age groups.

The detailed tools and guidelines used and followed to conduct the village midline study across all CCAFS sites, as well as the manuals, data and analysis reports can be accessed on our website (<http://ccafs.cgiar.org>).

**Map 1. Location of the Gabgachhia village in the CCAFS site, Khulna- Morrelganj (BA0416) (Adopted from baseline report, 2014).**



This report presents the findings from the Village Midline Study (VMS) conducted between the 22<sup>nd</sup> and 26<sup>th</sup> September 2019 in the village of Gabgachhia, Morrelganj, Bagerhat of Bangladesh (Khulna site) (Map 1). The village of Gabgachhia was chosen at the time of the baseline for its relatively central location in the block in addition to fulfilling other criteria such as reasonable ease of access to the village, although the roads can be difficult to navigate in the event of heavy rains. The survey team arranged a first visit to the village to prepare for the fieldwork. The team was composed of two facilitators, two note takers and one site coordinator. Each pair comported a man and a woman. The team consulted with the village authorities to select appropriate times and locations for the meetings. A community meeting place commonly used for village meetings and belonging to a local elite within the village was selected.

The site coordinator sent out invitations to sets of participants chosen using random sampling. Each group was composed of around 15 participants, with one group of men and one of women. Three days were selected to conduct the study and, on each day, only one set of participants were expected to



participate in the study. On the first day of the study, the whole community was invited to attend an introductory session in which the team explained the study and shared with participants the findings from the village baseline study. After the introductory session, the rest of the community was released with only the invited group of 15 men and 15 women remaining to carry on with the midline study. The whole community was again invited at the end of the third day to attend a debriefing session where a summary of the midline findings was shared.

The survey used participatory methods of data collection. Throughout the data collection process, groups of male and female members of the community worked separately. The team used a satellite image of the block area selected for the study which contained sketches of resources that were identified by the baseline participants as being important to the community. The midline participants discussed among themselves to identify any additional important resources to be added to the map. Changes in the state of the previously identified resources were also identified and commented on by the group. The outputs for this activity were maps and sketches. The process of working with the community participants to identify the resources that are important to them depended entirely on their understanding and interpretation of the satellite image and the sketches.

The task the second day was to work with each group, the men's and the women's groups, to understand the organizational landscape and their activities surrounding food security issues in a normal year, in a year of crisis, and in relation to natural resource management. After putting together the midline organizational landscape, the groups also compared it to the one that was created during the baseline. The outputs were diagrams showing the organizational landscape at midline. Information on each organization was also captured on cards.

There were two main tasks on the third day. The first task was to work with each group to understand changes occurred in the information networks related to weather issues and farming activities since the ones reported during the baseline study. The outputs were diagrams. The second task was to bring the men's and women's groups together to discuss a vision of what the community would like their village to be in the future. The group was split up in two mixed gender groups, one assessing signs of progress made towards the vision that was created during the baseline while the other group created a new vision. The output was a map/sketch showing "the vision of the community".

The information generated from the study was captured on sketches, maps, flip charts, information cards and notes. All these were brought together in one debriefing report which forms the base of this final report. The debriefing report was prepared in the field so that it could benefit from the presence

of the site team. The photographed sketches and maps were inserted in the debriefing report. In this site analysis report, computer generated maps and diagrams derived from the field outputs replaced them.

## **Data analysis**

### **Topic 1: Community resources - participatory satellite imagery interpretation and visioning**

Community infrastructure and resources as well as the gender-differentiated access and utilization of those resources were analysed based on a process of participatory visual interpretation of high-resolution satellite imagery (Airbus SPOT 6/7 imagery). The aim was to understand how community resources and community dynamics in relation to their environment have changed since the baseline study. The participants were presented with the maps created at the time of the baseline and discussed any changes in the state of those resources in terms of quality, access or management before pointing out potential drivers of change. Later on, another activity was conducted with two mixed groups, with one developing a desirable vision of village resources and human well-being into 2030 while the other group assessed progresses made towards the future vision that was created by the baseline participants. The detailed approach to this exercise is outlined in the CCAFS Village Midline Study Implementation Manual.

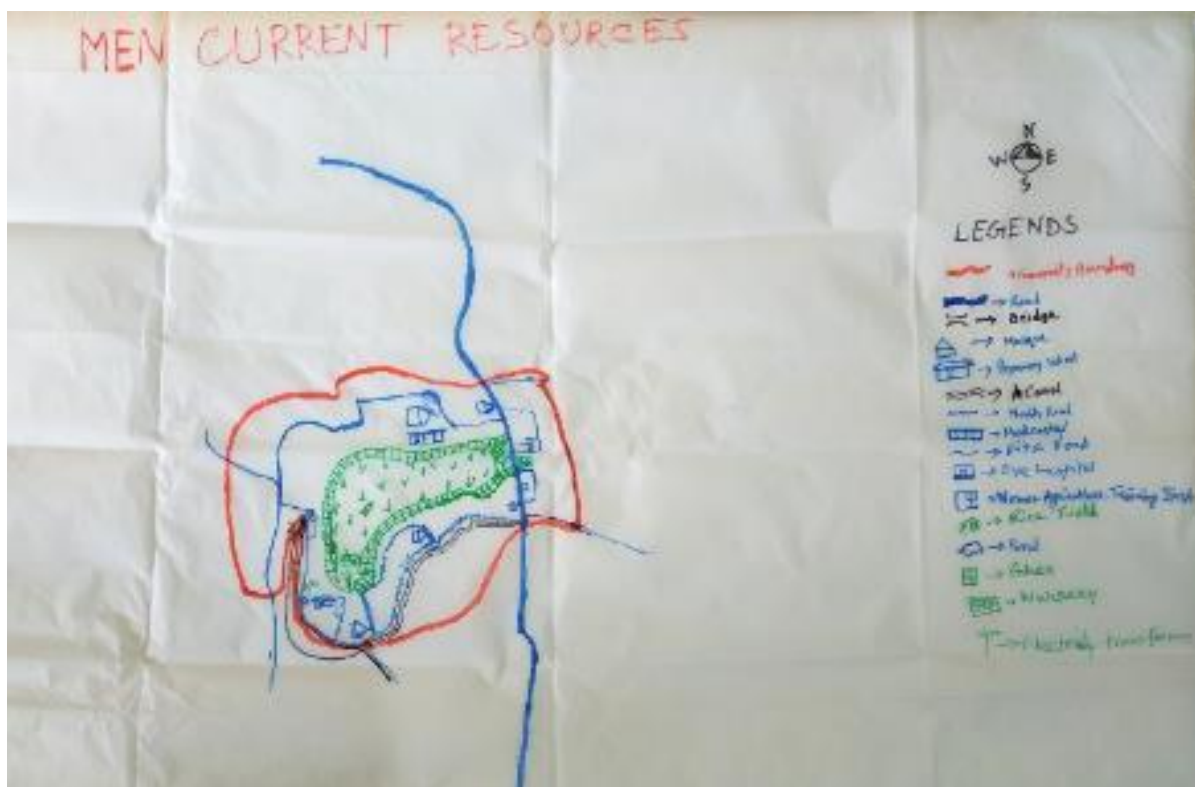
#### **A. Changes in natural resources**

Male and female participants provided the following information on changes identified in the state of the community's resources, including infrastructure. See Tables 1 and 2 as well as Maps 2 and 3 for more details.

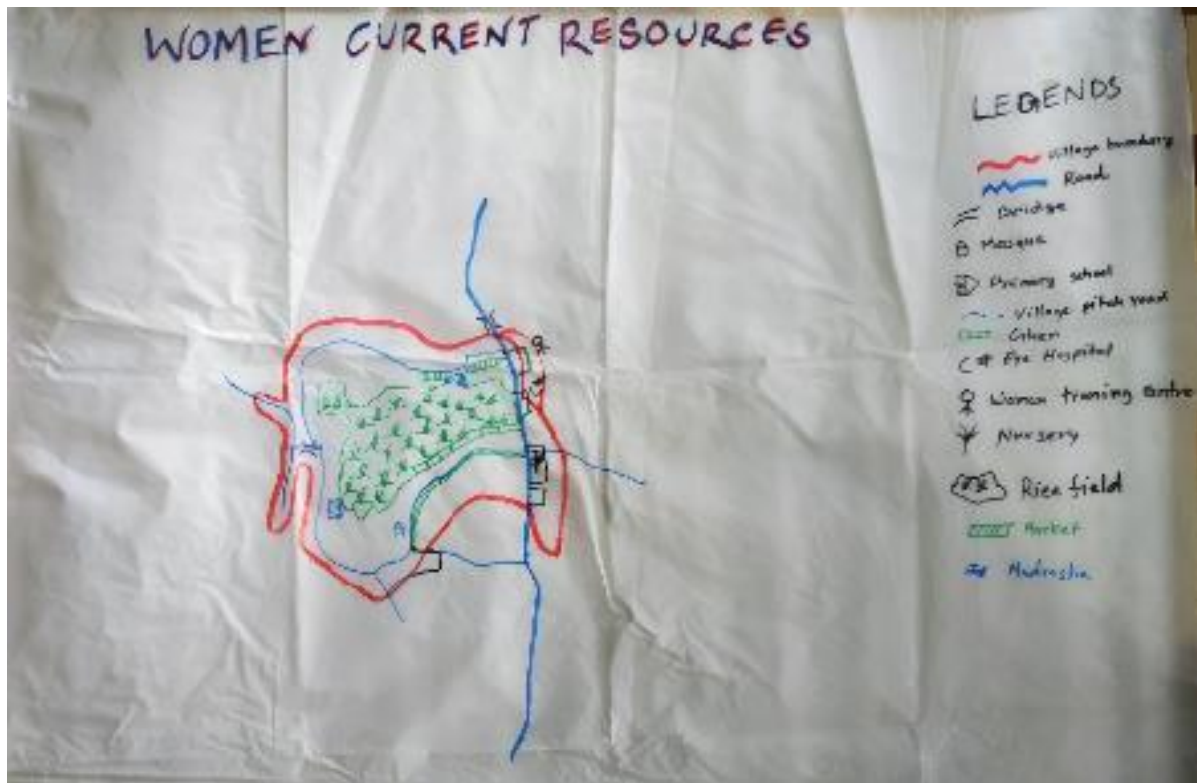
Photo 1. Community members participating in the exercise on natural resources and infrastructure in the village.



Map 2. Major changes in resources compared to what was identified at baseline according to the men's group



Map 3. Major changes in resources compared to what was identified at baseline according to the women's group



**Table 1. Major changes reported in natural resources since the baseline study (2011), as perceived by the men's group (M) and by the women's group (F)**

Land cover class	Community determined land use	Location Names	Has there been a change since baseline? Yes/No	Description of the change	Reason for change	Agents of change
<b>Rivers (M)</b>	Fishing, boating, irrigation and transport	Charamola, Panguchhi, Bisskhali, Mollechar	No			
<b>Rivers (F)</b>	Fishing, boating, irrigation and transport	Panguchhi	No			
<b>Roads (M)</b>	Transport,		Yes	More paved road, better access and easier transport to different parts and places in the area.	Development work	Local Government
<b>Roads (F)</b>	Transport	The main road, Daibognyhati, and Gabachhia road	Yes	More paved road, better access to different parts.	Development work	Local Government
<b>Bridges (F)</b>	Easy access to other places	Pangachhi (Canal) and Daibognyhati	No			

Land cover class	Community determined land use	Location Names	Has there been a change since baseline? Yes/No	Description of the change	Reason for change	Agents of change
<b>Farmland (M)</b>	Paddy production. February and March are the months in which the saline conditions are the worst.		Yes	Salinity alleviated with time, use of rainwater harvesting and irrigation. Gher-farming, dyke-cropping vegetable culture has developed	Irrigation, sluice-gate operations, change in the landscape made by farmers	Local Government worked to ensure irrigation. Farmers' initiative for 'gher' development
<b>Ponds (M)</b>	Shrimp & white fish production. 60% of farmers have shrimp ponds on their land.		Yes	Salinity alleviated with time. Production of white fish has developed but not of shrimp. Some farmers use the ponds water for irrigation	Species selection	Reduced salinity level
<b>Ponds (F)</b>	Functional and present on homesteads	Farmlands in Gabgachhia's village	Yes	Used now for fish culture	Species selection	Reduced salinity level
<b>Vegetable Gardening (M)</b>	Beans, brinjal, tomato, gourd, sesame, chilli, red amaranth, cabbage, etc.	On-farm	Yes	Adoption of new varieties and hybrids	Variety selection	Farmers, Private sector

Land cover class	Community determined land use	Location Names	Has there been a change since baseline? Yes/No	Description of the change	Reason for change	Agents of change
Sugarcane (M)	Sugarcane production	Around the village	Yes	Significant reduction	Less profit to be made, sugarcane farmers started to grow banana and other fruits and vegetables	Farmers, Private sector
Aquaculture (M)	Community pond	Near the agriculture training center for women	No			
Poultry (M)	Chicken production	Households	No			
Livestock (M)	Cow, sheep and goat farming	Households	No			
Horticulture and Nurseries (M)	Mostly mango, sofeda and guava. Some coconut and betel nut	Around the households	No			
Plantation (M)	Homestead and roadside	Around the homesteads and on roadsides	No			
Forest (F)		Sundarbans	No			
Local Forest (F)	Homestead tree plantation	Around farmers' home	No			
Natural Irrigation Canal (M)	Fishing, boating, irrigation during the rainy season	Around the village	Yes	The water available has reduced and the canal is narrower	Siltation	Natural process, lack of maintenance

Land cover class	Community determined land use	Location Names	Has there been a change since baseline? Yes/No	Description of the change	Reason for change	Agents of change
Man-made Irrigation Canal (M)	For paddy farming	The deep tube wells are present near richer farmers' land as they constructed the irrigation canal themselves	No			
Pangachii Canal (F)	The canal is functional.	Gabgachhia	No			
Market (F)		Gabgachhia	Yes	More construction, development and expansion	Business development	Private initiative, Banking & financing
Schools (F)	Gabgachhia Primary School, Girls School, Daibognyhati Bisheswor secondary, and Lady Institute	Gabgachhia and Daibognyhati	No			
Mosques (F)	Religious building and guesthouse		No			



**Table 2. New elements added to the map**

Land cover class	Community determined land use	Location Names	Current state (quality)	Time to resource	Management and ownership issues	Environmental Benefits	Opportunities	Limitations
<b>Madrasha</b>	Baitul Mamur Hafezia Madrasha	Gabgachhia	Functional	1-5 minutes	Community	NA	Religious education for children	Not enough teaching staff
<b>Gher system</b>	Land/landscape modification	Gabgachhia	Farmland/fallow-land changed to enable rice and fish cultivation with inner canal and outer dykes for vegetable cultivation	2-10 minutes	Private	More O <sub>2</sub>	Rice, fish, vegetable production	Low inputs availability sometimes lack of funds
<b>Electricity line</b>	National Grid power supply	Gabgachhia	Just made available to farmers, electricity wiring lines established, not fully functional	1-5 minutes	Rural Electrification Board	Less CO <sub>2</sub> emission	Power supply, machinery operation, irrigation	Needs further development
<b>Road-side tree plantation</b>	Local government initiative	Along the main road	Plantation and maintenance	5-15 minutes	Government	More greenery, O <sub>2</sub> , thunderstorm reduction	Environment and disaster management	Care and maintenance needed

Male and female participants provided the following information on the new elements added to the map:

**Madrasha:** A new educational institution which delivers religious education for children was set up following an initiative coming from the community. The institution was named ‘Baitul Mamur Hafezia Madrasha’. The setting-up of this new institution reflects the community’s beliefs and values that this was needed in order to educate their children more on their religious beliefs. The institution can also be used as an emergency shelter in the event of extreme climatic events such as cyclones as the community does not have any ‘cyclone centre’.

**Gher system:** Farmers adopted new systems of production to enable the cultivation of rice, fish and vegetables. Farmlands were thus modified with the land becoming enclosed with raised dykes to protect from flood and the presence of inner canals where water is retained within the area to support fish production in ponds. Some high-yielding improved varieties of vegetables are cultivated on the dykes. White fishes (different varieties of fin fishes other than prawns), as well as high-value sweet water prawns, are produced in gher system.

**Electricity line:** The community now has access to the National Grid power supply for on-grid electricity. This will accelerate the community’s development and the benefits of electricity supply will be felt in many ways. The supportive infrastructures and towers to enable electricity access are ready and the participants pointed out that the supply of electricity in the line will be started very soon.

**Road-side tree plantation:** The participants shared that there is more roadside plantation compared to before. Roadside plantation are supported by the local government as the institution wants to increase greenery and improve the local environment. Some palm trees were also planted to protect the areas from frequent thunderstorms.

## **B. Gender-differentiated comparison of changes in conditions**

Both the men’s and the women’s group were very lively and vocal during the discussion. Even if women participants were more reserved in mixed groups, they were more outspoken during the non-mixed group activities. During the discussions, it was observed that men participants had better knowledge and were more informed on different aspects compared to the women’s group. However, the women’s group shared valuable knowledge and ideas regarding day to day household activities, homestead vegetable production, homestead ponds culture, poultry rearing, microfinancing and the organizations operating in the locality. The men’s group reported more on roads, transportation, irrigation, other infrastructures, off-farm income generation, information networks and government organizations. The men participants were also more vocal in sharing their views regarding basic needs in the community, such as improving income generating opportunities and responding to climate change and weather-related impacts, including disasters such as cyclones, sea level rise and flooding. Both the men’s and women’s groups identified almost the same resources, however, the men’s group identified more resources than the women’s group. The women’s group was more vocal regarding the availability of drinking water and communication with local government on this issue. Both men and women participants highlighted the need to improve education, healthcare, child and mother care, income generation and cyclone shelter facilities.

Both the men’s and the women’s groups talked about the changes in the landscape due to the conversion of land into structures called ‘Gher’ to enable gher farming in addition to the production

of vegetables. As told by the men's group, 'Gher' is constructed with a canal, within embankment (dyke) in farmlands which also makes use of fallow lands. Roadside tree plantation is increasingly visible and was reported by both groups. Both the men's and the women's groups mentioned that a new religious educational institution called 'Madrasha' was established in the village to provide Muslim religious education. The men's group also reported the newly available electricity lines, which although not fully functional yet will provide benefits to the community in the near future.

**Map 4. Overlay of changes in conditions, comparing the men's group and the women's group maps**



### C. Eye comparison of new satellite image with baseline satellite image

Both the men's and the women's groups were asked separately to share their views on the differences between the current satellite image and the old baseline satellite images. Note-takers kept notes on the differences observed by the two separate groups. Maps of 1:25000 to 1:50000 were used for a clear resolution of the current resources and the groups were able to make eye comparison between the state of current resources and the state of resources at baseline resources. The men's group was more vocal and quick to identify and locate the border area, the location of resources, institutions, farmlands, landscape changes ('gher'- the modified farmland and fallow lands with raised dykes and inner canals to produce rice, fish and vegetables on dyke of the gher), mosques, madrasha, paved roads and earthen/muddy roads, canals and other resources. The women's group also identified different resources as well as changes occurred after a briefing from the female facilitator.

**Table 3. Changes observed when comparing the satellite images according to the men's group**

Main changes observed	Reasons for the change
<p><b>Road:</b> One earthen road has become a herring-bone bricks road One herring-bone road has been changed to a paved road</p>	Development work by the local government
<p><b>Canal:</b> narrower and siltation</p>	Natural, no excavation work initiative
<p><b>Farmland:</b> Squeezed, reduced, replaced by gher structures</p>	Constructed Gher for more income. Gher is a climate resilient technology. The change was driven by farmers.
<p><b>Gher structure:</b> gher structures converted farmland and fallow land</p>	Individual farmers adopted new aquaculture/gher and vegetable crop varieties to produce rice, fish, and vegetables. Gher is a resilient technology which also generates income.
<p><b>Madrasha:</b> Newly established</p>	Established by the community to provide religious education
<p><b>Water Filter:</b> Cemented, with sand, high-capacity covering supply for around 100 people, water is supplied from a pond</p>	NGO-supported to meet demands for drinking water. Due to underground presser, villagers are now facing freshwater scarcity. They are not able to install tube wells.
<p><b>Electricity line</b></p>	Government-Rural Electrification Board supported the installation

**Table 4. Changes observed when comparing the satellite images according to the women's group**

Main changes observed	Reasons for the change
<p><b>Roads:</b> Earthen road converted to a pitch road</p>	Government initiative
<p><b>Farmland:</b> Reduced</p>	House constructions
<p><b>Water filter:</b> community water filter, made of cement, sand</p>	Installed by a local NGO. Due to underground presser, villagers are facing freshwater scarcity.
<p><b>Gher system</b></p>	Farmers are now using a new farming system to increase production & income. Climate resilient technology.

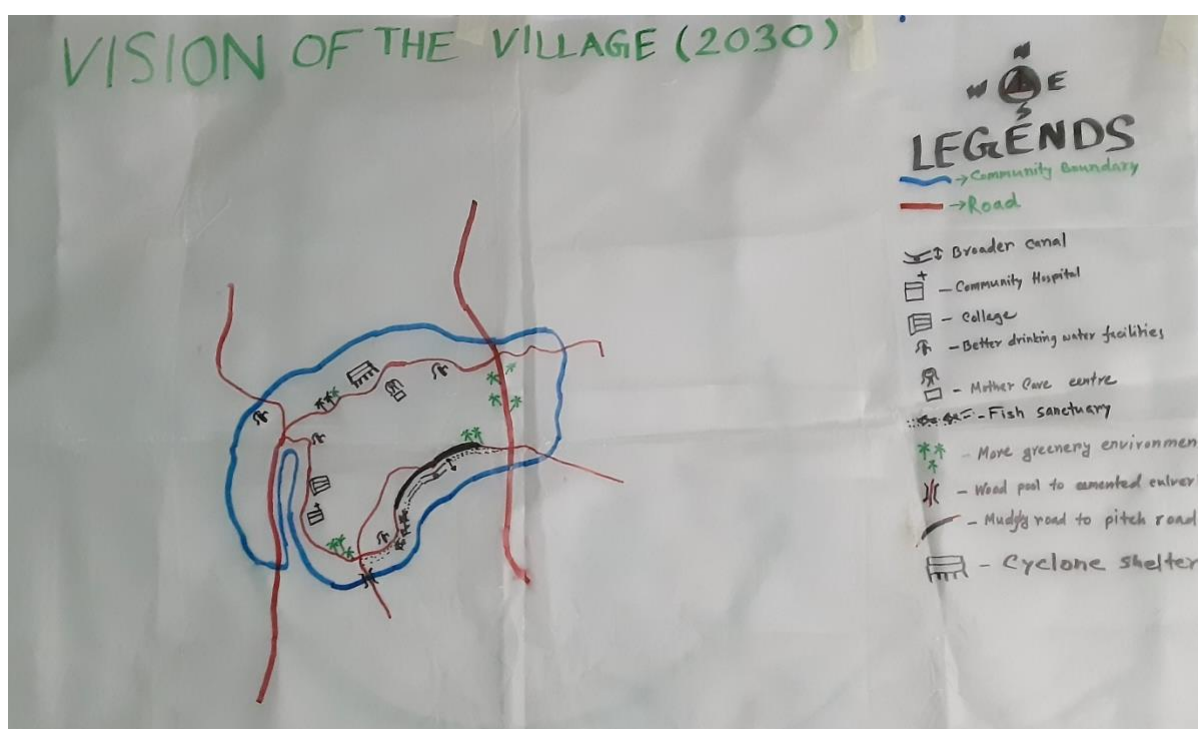
#### D. Progress towards the vision of the future as created during the baseline study

Reporting on the progresses made towards achieving the vision of the future, the mixed group made of both men and women participants shared their views that some of their expectations were partially achieved while others were far from being reached. As an example, they mentioned that while some portion of the earthen roads were now herring-bone under bricks soling with some other parts being now paved and well-constructed, important inner roads in the community still remained earthen and muddy. Moreover, as reported during the midline, the Eye Hospital is not functioning and health care services and better education facilities have not been developed as expected in the vision developed by the participants during the baseline study.

#### E. New vision of the future

During the mixed group session, both men and women participants were actively sharing their views for a new vision of the future for the community. They mainly focused and emphasized the needs for better infrastructure, more agro-forestry, the establishment of a fish sanctuary, full functional electricity supply, canal excavation, education and health facilities, a cyclone shelter facility and better drinking water facilities for all community members.

Map 5. Future map of the community



**Table 5. Update on the vision of the future that was created by the baseline study group (2010)**

Feature or resource discussed during the baseline study	Describe any progress in moving toward achieving this goal	What has helped in making progress (if any)	What has hindered progress (if any)	Who has helped and how
<b>Improved Agro-forestry system</b>	Only a few roadside tree plantations are noticeable	Some initiatives were taken by the local government with the supply of tree saplings. There were also some initiatives from individual farmers to plant trees.	Support from the local government remained insufficient, low financing	Government- Initiatives, extension service through the supply of tree saplings Individual farmers- agro-farming
<b>Nursery and IPM club</b>	Nursery developed, IPM club not established in the village	Private business initiatives	-	Private initiatives
<b>Cyclone Shelters</b>	Not established in this village	NA	No initiative was taken by the Govt. No budget	
<b>Re-excavation of Canals</b>	Not excavated	NA	No initiative was taken by the Govt. No budget	
<b>Water Purification Plant</b>	Water filter established, need more, no plant established	NGO	Maintenance	The water filter was supported by a local NGO which organized the construction
<b>Electricity Facility</b>	Electricity line established, waiting for it to receive electricity	Government-Rural Electrification Board supported	Allocation, maintenance	Government- decision making, support Rural Electrification Board- instalment, support and maintenance service
<b>Agriculture Training Center</b>	Fully functioning	Government and donor support	Remote area	Government initiative
<b>Road</b>	Some portion of road are now under herring-bone bricks soling and some under paved. Some remained earthen	Local Government department	Lack of coordination and decision by related authorities	Union Parishad, Local Government Engineering Department- construction and maintenance

**Table 6. New vision of the future**

Feature or resource discussed	Preferred condition for 2030	Opportunities	Constraints	Organizations to be involved
Community Hospital	Fully-functional and better health services	The community will get easy access and receive better health service without moving to distant centres.	Government/Private decision making, funding, construction	Government/private
College	Better education for both boys and girls	More students will get easy access to higher education in a nearby location	Lack of fund/initiatives	Government/private
Better Drinking Water Facilities	More water filters established	The community will get enough freshwater for drinking purposes and will not have to go to distant locations to collect water	Lack of funding, initiatives by the local government	Government and NGOs
Mother Care Centre	Mother care centers established with the necessary equipment and supportive facilities	More mothers and children will get timely and appropriate treatment.	Lack of awareness, funds and initiatives	Government and NGOs/private sector
Fish Sanctuary	For indigenous fish spawning, increase biodiversity and production	The community will have access to more nutritious food. It would also help with conserving biodiversity.	Lack of awareness/initiatives	Government and NGOs
Greenery Environment	More greenery and a better Environment	Better and sufficient fodder, fruits and food for daily consumption and to generate income. More vegetation within the village would also make the surrounding area cleaner and provide shade.	Lack of awareness/initiatives	Government and NGOs
Wooden pool	Wooden pool replaced by cemented culvert	Better flow	Communication gap with respective authority	Government
Village road	Change the muddy roads to paved roads	Eliminate travel problems during the rainy season	Lack of planning/support	Government
Cyclone Shelter	Cemented cyclone shelters	The community will have shelter in the events of a cyclone, flood, storm or disasters.	Lack of funding/planning	Government
Canal	Broader canal	This would facilitate irrigation and local navigation and help to increase fish production	Lack of funding/planning	Government

## **Topic 2: Organizational landscapes**

This activity aimed to generate more details on the existing organizational capacities helping to address food security and resources management related issues. The findings can inform CCAFS on the level of preparedness in the village and the existing capacities to respond to the challenges envisaged as a consequence of climate change as well as to other future challenges.

This section presents the different formal and informal organizations involved in the community in general terms, as well as those engaging in food security and natural resources management (NRM) related activities. More information is provided on the types of activities that the organizations are engaged in, who their members are, whether the organizations are seen as useful to the community, etc.

### **A. Basic spheres of operation**

Participants were asked to draw three large concentric circles on the ground. The inner circle would represent the community, the middle circle the locality and the outer circle beyond the locality.

Participants were then asked to name organizations working in the area, whose names were written on cards, and placed in the appropriate circle. The group thus placed in the inner circle the cards of organizations working directly in the community, in the middle circle the cards of organizations operating in the locality, and in the outer circle those that operated beyond the locality. See Photo 2 for an example of the activity as carried out with the study participants. The results are shown in the diagrams below.

Based on this structure, the men identified 43 organizations in the village while the women identified 30. There were initially 44 organizations listed by the men's group but the 44<sup>th</sup> organization listed (Association for Social Advancement) was found to be a duplicate name of the organization, ASA, and upon discussion, the error was corrected and these two entries were merged in the list.

During the exercise, it became clear that the men's and women's groups were holding very different views regarding the organizational landscape. The difference in perception between both groups is reflected in the numbers of organizations mentioned and discussed by each group.

In Tables 7 and 8, more detailed information is provided on the five most important organizations as they were ranked by the men's and the women's groups.

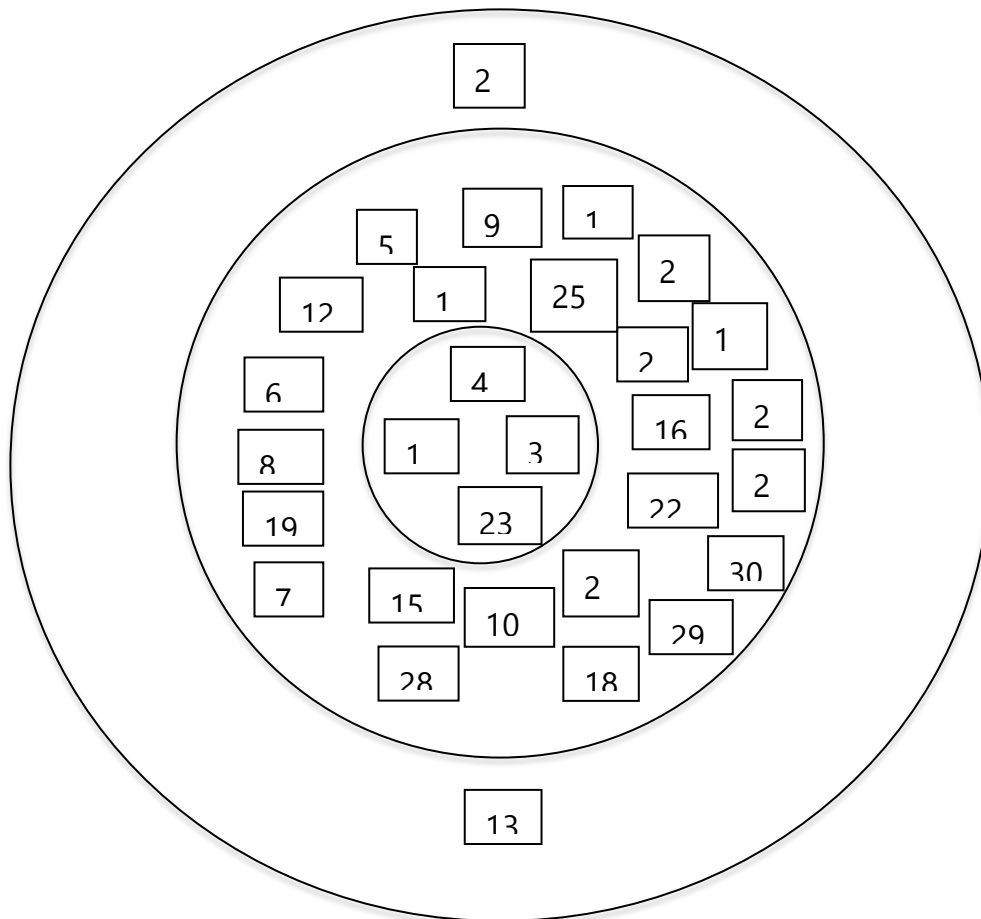


Photo 2. The organizational landscape activity in progress





**Figure 2. Organizational landscape of the women’s group**



**Organizations:**

1. Mosque; 2. Government Hospital; 3. Baitul Mamur Hafezia Madrasha; 4. Gabgachhia Primary School; 5. Khalilur Rahman College; 6. WorldFish; 7. Agriculture Department; 8. Sonali Bank; 9. Daibaggahati Union Parishad; 10. Islami Bank; 11. Forest Department; 12. Community Clinic, Bedkashi; 13. Bagerhat Court; 14. BRAC; 15. Bangladesh Krishi Bank; 16. Police Station; 17. Post Office; 18. Youth Development Centre 19. Livestock Department; 20. Local Govt. Engineering Department; 21. Social Welfare Office; 22. Grameen Bank; 23. Women Agri Training Institute; 24. Fishery Department; 25. RIC; 26.UDDIPAN; 27. Bangladesh Water Development Board; 28.Cyclone Center; 29. ASA; 30. Fish Processing Zone

The groups were also asked to list any organization that recently started working in the community and which was not cited during the baseline. Any organization that was listed at the time of the baseline but not mentioned during the midline was discussed separately. The explanations were noted. They were some differences in the ranking and listing of organizations between the men’s group and the women’s group. Some organizations which were mentioned by the men’s group were missed by the women’s group. One organization mentioned by the women’s group was missed by the men’s group. Some organizations were listed by both groups.

**Table 7. Information on the first five organizations listed by the men's group**

Organization name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	For community groups		
						Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
Mosque	Religious purpose, prayer, shelter during cyclones	5-6	Restricted to men	Indigenous	Community	Both	Longer	Informal
Local Govt. Engineering Department	Construction of roads, culverts, bridge, tree plantation	N/A	Open	State	Community and beyond local	External	Longer	Formal
Baitul Mamur Hafezia Madrasha	Religious education	10-12	Open	Indigenous	Community and local	Both	1-5 years	Informal
Gabgachhia Primary School	Used for teaching, social judgement and voting purposes	10 males and 3 females	Open	State	Community and local	External	Longer	Formal
Sonali Bank	Banking authority, financing/credit	N/A	Open	State	Local	External	Longer	Formal

**Table 8. Information on the first five organizations ranked by the women**

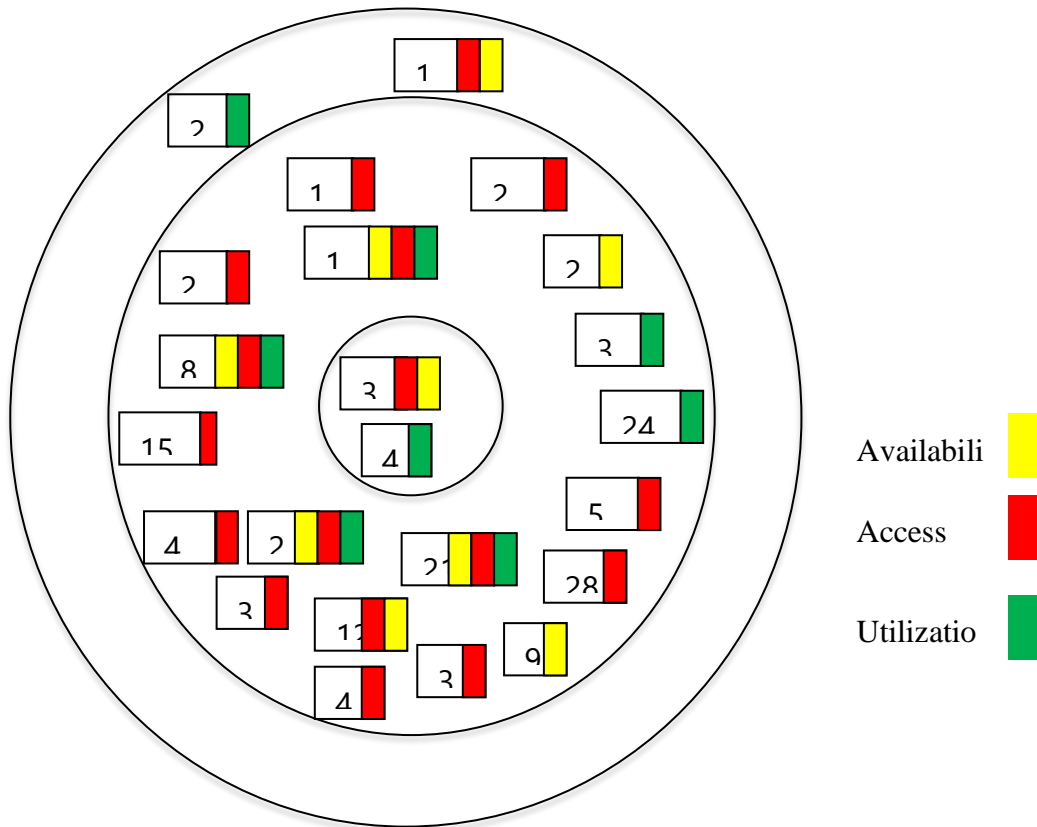
Organization name	Main activities	Number of members (estimate)	Access (open or restricted to...)	Origin (indigenous, state, NGO, project)	Sphere of operation: community, local, beyond local	Sources of funding (members, external, both)	Existed how long (less than 1 yr, 1-5, longer)	Formal or informal
Mosque	Religious, prayers	10-12	Restricted to men	Indigenous	Community	Both	Longer	Informal
Govt. Hospital	Health service, treatment, medication	N/A	Open	State	Community and local	External	Longer	Formal
Baitul Mamur Hafezia Madrasha	Religious education	10-15	Open	Indigenous	Community and local	Both	1-5 years	Informal
Gabgachhia Primary School	Teaching, social meeting	10-12	Open	State	Community and local	External	Longer	Formal
Khalilur Rahman College	Education	20	Open	Indigenous	Community and local	External	Longer	Formal

## **B. Organizational landscape of food security**

The goal of this exercise was to get a better understanding of how the organizational landscape supports the food security of the community. Food security is mostly measured at the household level. Nonetheless, community-level organizations and interactions influence the food security of different groups within the community differently. Male and female participants were asked to discuss the concepts of food availability, access and utilization, and then to review each organization they had previously identified by asking which of them had activities that fell under these categories.

For this exercise as well, the groups were asked about any organization that recently started operations and was cited during the midline but was not mentioned in the baseline study. Any organization that was mentioned at the time of the baseline but was not cited during the midline was also discussed separately. The explanations were noted. Regarding food security, the men's and the women's group had different views.

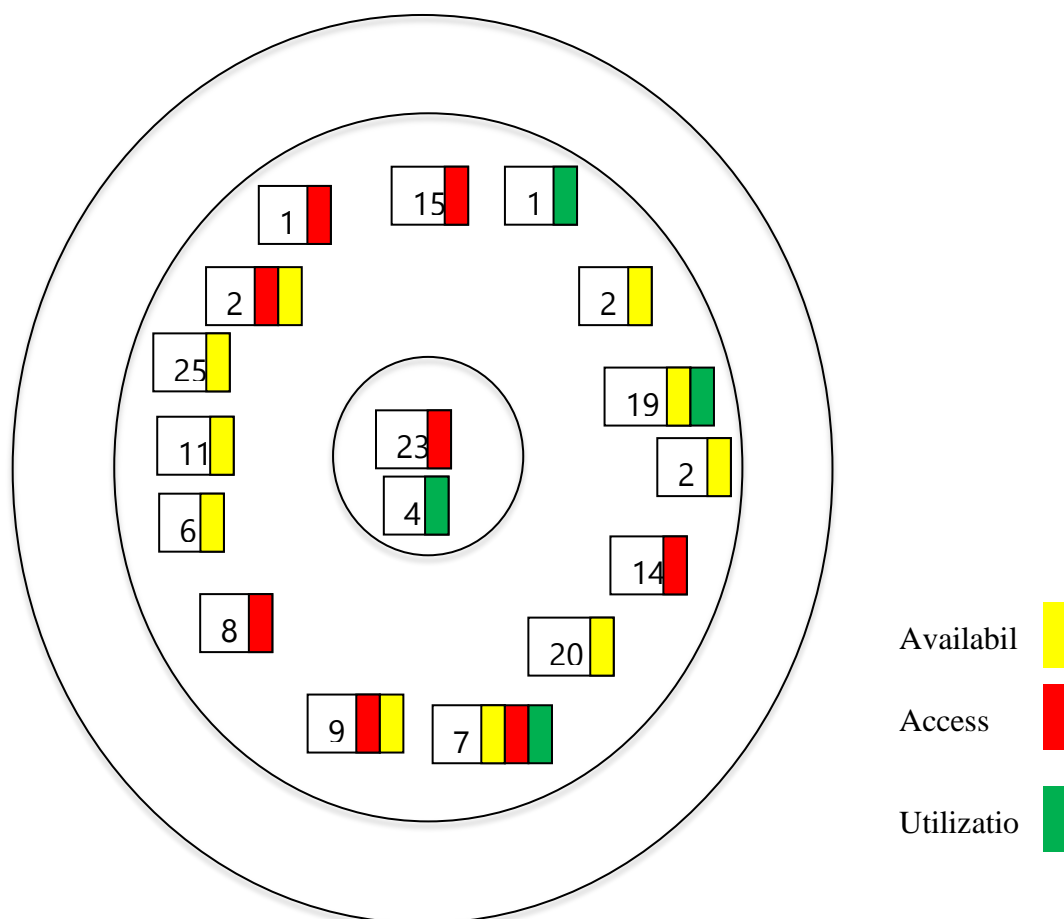
Figure 3. Organizational landscape of food security according to themen's group



Organizations:

Mosque; 2. Local Govt. Engineering Department; 4. Gabgachhia Primary School; 5. Sonali Bank; 8. Agriculture Department; 9. WorldFish; 10. Livestock Department; 11. Forest Department; 12. BRAC; 13. Social Welfare Office; 15. Relief Facility, Daibaggahati; 20. Fishery Department; 21. Union Parishad; 22. Bagerhat District Hospital; 24. Community Clinic, Bedkashi; 25. Association for Social Advancement (ASA); 27. Islami Bank; 28. Relief and Disaster Management Centre; 31. Grameen Bank; 32. Upazilla Health Complex; 34. UDDIPAN; 38. Women Agri Training Institute; 42. Bangladesh Krishi Bank; 43. RIC

Figure 4. Organizational landscape of food security according to the women’s group



Organizations:

6. WorldFish; 7. Agriculture Department; 8. Sonali Bank; 10. Islami Bank; 11. Forest Department; 12. Community Clinic, Bedkashi; 14. BRAC; 15. Bangladesh Krishi Bank; 19. Livestock Department; 20. Local Govt. Engineering Department; 21. Social Welfare Office; 23. Women Agri Training Institute; 24. Fishery Department; 25. RIC; 29. ASA

Several of the organizations identified by the participants were said to be involved in food production, supply or food security. Both the men’s and the women’s groups mentioned the involvement of the following organizations in contributing to food security: Agriculture Department, Sonali Bank, Islami Bank, WorldFish, Forest Department, Community Clinic-Bedkashi, Bangladesh Rural Advancement Committee (BRAC), Bangladesh Krishi Bank, Livestock Department, Local Govt. Engineering Department, Social Welfare Office, Women Agri Training Institute, Fishery Department, RIC and Association for Social Advancement (ASA). Only the men participants mentioned additional organizations contributing to their food security: Gabgachhia Primary School, Relief Facility, Daibaggahati, Union Parishad, Bagerhat District Hospital, Relief and Disaster Management Centre, Grameen Bank, Upazilla Health Complex and UDDIPAN. This was based on relevance to their daily



lives and association memberships. Almost all the organizations' linkages found were with the Union Parishad which is the lead organization composed of elected representatives. The Union Parishad is the local government organization with the legal authority to coordinate all the development activities of the government and of non-governmental organizations (NGOs) at the community level. Generally, development organizations, NGOs and different stakeholders are in contact with and coordinate their development activities with the Union Parishad, particularly in times of crisis and disasters.

A summary of the major organizations involved in food security and the linkages developed with other organizations is provided below.

- Gabgachhia Primary School: Supports improved nutrition in the community by providing free biscuits to students. Linkages: Ministry of Education, Union Parishad and the community.
- Union Parishad: Supports food security by being involved in all production, distribution and exchange activities and supporting food access and availability. Moreover, the Union Parishad is responsible for providing Govt.-initiated food distributions or other supports. The Union Parishad also coordinates activities and manages government funds at the local government level. It also provides food and medicine during disasters. Linkages: All development related work in the village, including funding for these.
- Agriculture Training Center for Women (Lady Institute): The center organizes trainings for food production and improved utilization of technology. It also provides loans, vocational training and education on health, personal hygiene and nutrition related topics. Linkages: Community and Departments of Agriculture, Livestock and Fisheries.
- Department of Agriculture: Involved in food production, exchange, preferences, improved utilization and training. Provides extension services for agricultural activities. The local office offers trainings, seeds and fertilizers, as well as subsidies on inputs, especially in crises periods and as part of disasters rehabilitation efforts. Linkages: Government and farming communities and funding.
- Department of Livestock: Involved in food production, exchange, preferences, improved utilization and training. The local office provides improved breeds, information, vaccines and medicine to support livestock production and income generation, especially as part of disasters rehabilitation efforts. Linkages: Government and farming communities.
- Department of Fisheries: Involved in food production, exchange, preferences, improved utilization and training. The local office provides free fingerlings, trainings on income generation

through fish farming, loans for aquaculture, and advice and support services on fish diseases.

Linkages: Government and farming communities.

- Grameen Bank: Involved in food production, availability, affordability and allocation through the provision of loans and trainings on better loan usage with limited resources for social development.
- WorldFish: Involved in food production, exchange, preferences and improved utilization, training and follow-up. Linkages: Farming community.
- BRAC: Technical support for improved crop production and livestock management. This organization also provides business and agriculture loans, free livestock and poultry to vulnerable people and trainings on agriculture, health and sanitation related topics. It also provides food support during disasters. Linkages: Community and funding.
- Other Banks and financing organizations: The Krishi (Agriculture) Bank, Islami Bank, Sonali Bank and ASA also provide loans and trainings on loan usage. Linkages: Funding.

**Table 9. Organizations that did not appear in the food security landscape during the midline study but were mentioned in the baseline study**

Women	
Name of organization	Why were they not included in the midline organizational landscape
Grameen Bank	Reduced activity in the village, overlooked
CODEC	Overlooked
Fish processing zone	Inactive
Livestock Health Centre	Disappeared
Men	
Name of organization	Why were they not included in the midline organizational landscape
Mosque	Used for religious prayers. This institution is no longer being used for any food/relief distribution
Dhaka Chittagong Garment Factory	Shifted/disappeared

**Table 10. Organizations that appeared in the food security landscape during the midline but not during the baseline**

Women	
Name of organization	Why did they not appear in the baseline study
Govt. Hospital	Overlooked
WorldFish	Overlooked
Forest Department	Overlooked
Community Clinic, Bedkashi	Overlooked
Local Govt. Engineering Department	Overlooked
Social Welfare Office	Overlooked
RIC	New activities in this locality
Men	
Name of organization	Why did they not appear in the baseline study
Sonali Bank	Overlooked
WorldFish	Overlooked
Forest Department	Overlooked
BRAC	Overlooked
Social Welfare Office	Overlooked
Relief Facility, Daibaggahati	Overlooked
Bagerhat District Hospital	Overlooked
Community Clinic, Bedkashi	Overlooked
Association of Social Advancement (ASA)	Overlooked
Islami Bank	Overlooked
Relief and Disaster Management Centre	Overlooked
Upazilla Health Complex	Overlooked
UDDIPAN	Overlooked, activities decreased
Bangladesh Krishi Bank	Overlooked
RIC	New activities in this locality

**Organizational landscape in situations of food crises:**

It was noted from the group discussions that several organizations helped people to cope in times of food crises. The participants were asked to identify a time when there was a food crisis in the community before identifying the organizations that were involved in providing services and support during the crisis. Groups identified numerous famines and disasters that had impacted the community. The biggest cyclones which occurred in the community were identified as Sidr in 2007 and Aila in 2009. Flooding was a major problem in 1988 and 1998. In disaster periods, food, resources and

financial assistance often came in from the Government as well as from local and international organizations. Organizations were cited as often working together on relief operations during crises. It was also reported that community members took loans from relatives, friends and NGOs as well as relied on relief to cope during the disasters. The participants opined that food crises were directly related to severe and extreme climatic events/ disasters and during these crises, relief and other supportive activities helped to overcome the situation.

The groups mentioned that the Government Departments, BRAC, ASA and the Lady Institute provided food, clothes, drinking water, medicine and financial support for home construction and other support services to rehabilitate agricultural, fisheries and livestock production. BRAC, CODEC and the Grameen Bank were involved in disaster preparedness and awareness. CODEC provided tree saplings, poultry, livestock and machinery to the victims and the Grameen Bank also provided some financial support, especially for home construction. The Union Parishad distributed and allocated relief materials and food items. Other organizational activities during disasters included the provision of loans by different Banks and NGOs and the provision of inputs and technology by the Departments of Agriculture Extension and Fisheries.

### **C. Organizational landscape of natural resource management**

In this section, the organizational landscape in relation to natural resource management (NRM) is discussed. Specifically, this section details on the organizations which were actively working to protect the environment or manage natural resources. The process entailed asking the groups to identify the organizations involved in the management of natural resources in the community; develop a list of natural resources important to the livelihoods of the community; and finally, make the group decide on a symbol for each type of natural resource listed.

The men's and women's group identified a total of 7 organizations supporting NRM, with both groups listing several of the same organizations. The organizations mentioned in this exercise were Forest Department, Local Government Engineering Department, Fishery Department, Bangladesh Water Development Board, Agriculture Department, Union Parishad and Krishi Bank. These NRM organizational landscapes are shown in Figures 5 and 6.

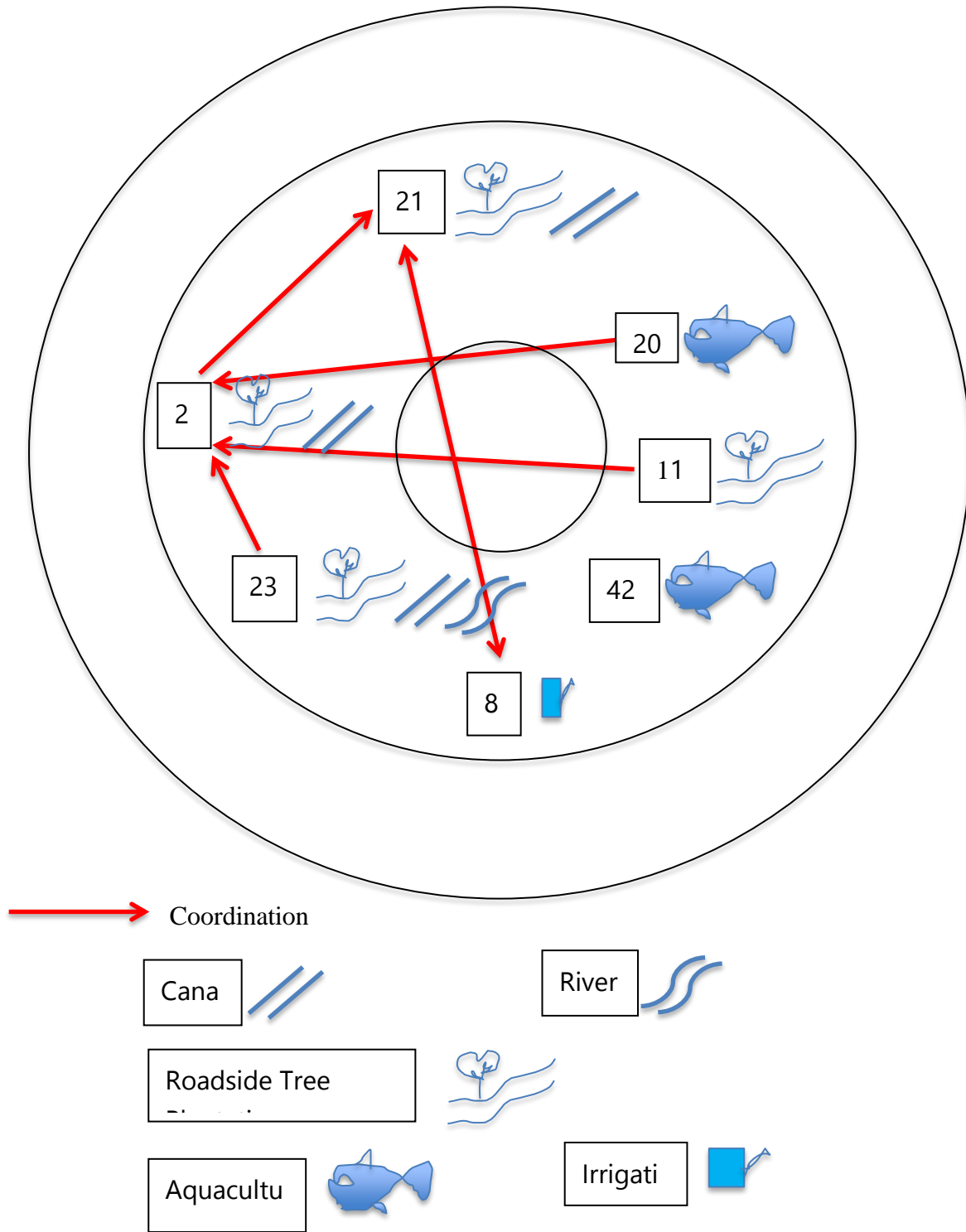
The Bangladesh Water Development Board (BWDB) and the Forest Department were cited as the most active organizations working directly on NRM issues. The BWDB is focused on constructing dams, embankments, and sluice gates to control flooding as well as water, and is also involved in the

development and plantation of tree nurseries. The Forest Department focuses on forest protection and management, agroforestry, biodiversity and conservation training, and quality sapling production, nursery development and social forestry. The Union Parishad also supports all NRM related development activities, including canal and rural road construction.

Krishi Bank offers some NRM related services such as trainings on aquaculture and agroforestry as well as providing loans for income generation and tree saplings. The BWDB, LGED and the Forest Department are reported to work closely together, however the participants mentioned that other organizations had few linkages and work mostly independently on different aspects of NRM.

For this exercise as well, the groups were asked about any organization that was mentioned during the midline study but was not cited at the time of baseline. Any organization that was mentioned in the baseline but not discussed during the midline study was discussed separately. The explanations were noted, see Table 11 & 12.

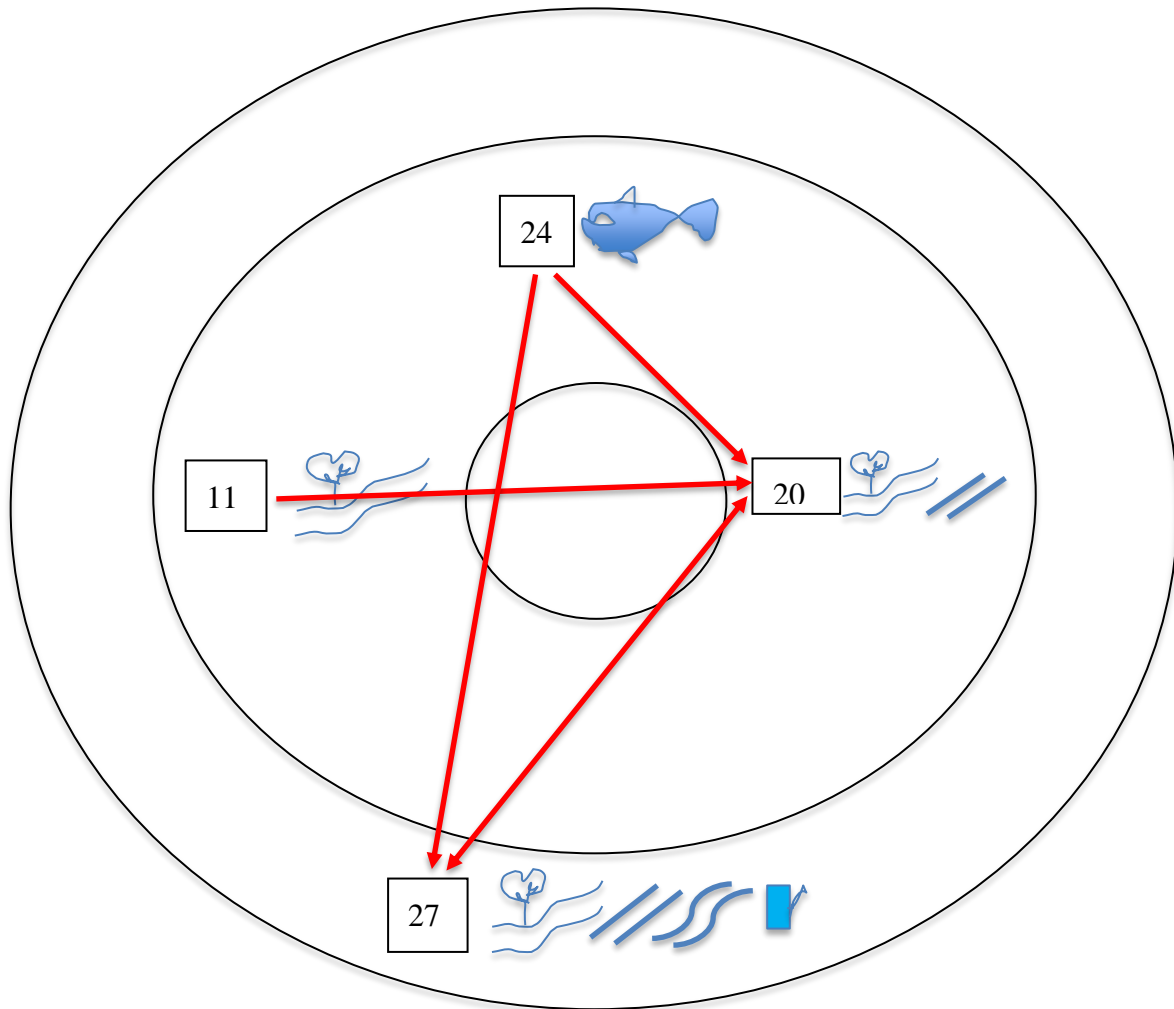
Figure 5. Organizational landscape of natural resource management according to the men's group



Organizations:

2- Local Government Engineering Department; 8-Agriculture Department; 11-Forest Department; 20-Fishery Department; 21- Union Parishad; 23- Bangladesh Water Development Board; 42- Krishi Bank


Figure 6. Organizational landscape of natural resource management according to the women's group




→ Coordination

Can 

Rive 

Roadside Tree  
Plantation 

Aquacult 

Irrigatio 

Organizations:

11- Forestry Office; 20- Local Government Engineering Department ;24- Upazila Fishery Office; 27- Bangladesh Water

Development Board

**Table 11. Organizations that did not appear in the NRM landscape during the midline study but were mentioned during the baseline study**

Women	
Name of organization	Why were they not included in the midline organizational landscape
Women Agri Training Institute	Related activities decreased; they have no major current training course related to NRM
BRAC	Reduced activities related to NRM
CODEC	Reduced activities related to NRM
ASA	Reduced activities related to NRM
Livestock Department	Reduced activities related to NRM
Men	
Name of organization	Why were they not included in the midline organizational landscape
Women Agri Training Institute	Related activities decreased; they have no major current course related to NRM
Grameen Bank	Related activities decreased; they have no major current activities related to NRM in this village
BRAC	Related activities decreased; they have no major current activities related to NRM in this village

**Table 12. Organizations that appeared in the NRM landscape during the midline but not during the baseline**

Women	
Name of organization	Why did they not appear in the baseline study
Bangladesh Water Development Board	Overlooked
Men	
Name of organization	Why did they not appear in the baseline study
Bangladesh Krishi Bank	Less access to this organization at the time, was overlooked

#### **D. Gender differences between organizational landscapes**

Table 13 below summarizes information on all the organizations identified separately by male and female participants. The organizations are classified according to their role in supporting food availability, access and/or utilization and the management of natural resources.



**Table 13. Information on highlighted organizations by the men's and the women's groups (unless otherwise noted, 1=yes, 0=no)**

Organizational Landscape	Men					Women				
	Org. ID by men	Sphere. 1=village 2=locality 3=Beyond locality	Food security	Food crisis	NRM	Org. ID by women	Sphere. 1=village 2=locality 3=Beyond locality	Food security	Food crisis	NRM
Mosque	1	1	0	0	0	1	1	0	0	0
Local Govt. Engineering Department	1	2	1		1	1	2	1		1
Baitul Mamur Hafezia Madrasa	1	1	0	0	0	1	1	0	0	0
Gabgachhia Primary School	1	1	1	1	0	1	1	1	1	0
Sonali Bank	1	2	1	0	0	1	2	1	0	0
Post Office	1	2				1	2			
Bagerhat Court	1	3	0	0	0	1	3	0	0	0
Agriculture Department	1	2	1	1	1	1	2	1	1	0
WorldFish	1	2	1			1	2	1		
Livestock Department	1	2	1	0	0	1	2	1	0	0
Forest Department	1	3	1	1	1	1	2	1	1	1
BRAC	1	2	1	0	0	1	2	1	0	0
Social Welfare Office	1	2	1	0	0	1	2	1	0	0
Youth Development Centre	1	2	0	0	0	1	2	0	0	0

Relief Facility, Daibaggahati	1	2	1	1	0	0	0	0	0	0	0
Khalilur Rahman College	1	2	0	0	0	1	2	0	0	0	0
Bedkashi High School	1	2	0	0	0	0	0	0	0	0	0
Brac Primary School	1	3	0	0	0	0	0	0	0	0	0
Uttarputikhali Dakhil Madrasa	1	2	0	0	0	0	0	0	0	0	0
Fishery Department	1	2	1	1	1	1	2	1	0	1	1
Union Parishad	1	2	1	1	1	1	2	1	1	1	0
Bagerhat District Hospital	1	3	1	0	0	0	0	0	0	0	0
Bangladesh Water Development Board	1	2	0	0	1	1	3	0	0	0	1
Community Clinic, Bedkashi	1	2	1	1	0	1	2	1	1	1	0
Association of Social Advancement (ASA)	1	2	1	0	0	1	2	1	0	0	0
Police Station	1	2		0	0	1	2	0	0	0	0
Islami Bank	1	2	1	0	0	1	2	1	0	0	0
Relief and Disaster Management Centre	1	2	1	1	0	0	0	0	0	0	0
Bagerhat PC College	1	3	0	0	0	0	0	0	0	0	0
Union Information	1	2	0	0	0	0	0	0	0	0	0

Training Centre											
Grameen Bank	1	2	1	0	0	1	2	0	0	0	0
Upazilla Health Complex	1	2	1	0	0	1	2	0	0	0	0
Daibaggahati Hospital	1	2	0	0	0	0	0	0	0	0	0
Uddipon	1	2	1	0	0	1	2	0	0	0	0
Tulatola Eye Hospital	1	1	0	0	0	0	0	0	0	0	0
Dhaka Chittagong Garments Factory	1	3	0	0	0	0	0	0	0	0	0
Morrelganj Upazilla Parisad	1	2	0	0	0	0	0	0	0	0	0
Women Agri Training Institute	1	1	1	0	0	1	1	1	1	1	0
Cyclone Shelter	1	2	0	0	0	1	2	0	0	0	0
Daibaggahati College	1	2	0	0	0	0	0	0	0	0	0
Fire Service and Civil Defence	1	2	0	0	0	0	0	0	0	0	0
Bangladesh Krishi Bank	1	2	1	0	1	1	2	1	0	0	0
RIC	1	2	1	0	0	1	2	1	0	0	0
Fish Processing Zone	0	0	0	0	0	1	2	0	0	0	0
<b>TOTALS</b>	<b>43</b>	<b>Village-5 Locality-32 Beyond Locality-6</b>	<b>23</b>	<b>8</b>	<b>7</b>	<b>30</b>	<b>Village-4 Locality-24 Beyond Locality-2</b>	<b>17</b>	<b>6</b>	<b>4</b>	

### Topic 3: Information networks

This exercise aimed to understand better the multiple means of access to information on agriculture and weather; how different people take advantage of the available sources of information, including if some sources are not used and why. The baseline site analysis report described networks of how people access and share information within the community. The current midline study investigated if these networks have changed.

The men's and the women's groups held similar views on this topic. The major sources of information reported were friends and family, neighbours, organizations, media e.g., radio and in most cases, they also depended on their own observation and experiences.

The new topics on which information was received regarding agriculture decision making for the men's group were: new type/variety of vegetables, crops, crops' early/late plantation and demands/supply of products in the market whereas for the women's group those were mostly vegetables and fruits.

**Table 14. Networks of information as identified during midline study**

Information source	Topic (men)				Topic (women)			Total
	Market information	Rain-fall	Planting time	Farm inputs: seeds and fertilizer	Land preparation	Manure application	Weather information	
Family	0	0	1	1	0	0	0	2
Friends	1	1	1	1	1	1	1	7
Neighbour	1	1	1	1	1	1	1	7
Organizations	1	1	1	1	1	1	1	7
Radio	0	1	1	0	0	0	1	3
Observation	0	1	1	1	1	1	1	6

**Table 15. Changes in the sources of information for different topics (types of information) as mentioned in the women’s group.**

Types of information	New sources of information that have become available	Sources of information that are no longer used
Agriculture	School Teachers, elites, NGOs, small traders	Astrologist/priest
Weather	School Teachers, elites, NGOs	Astrologist/priest

**Table 16. Changes in the sources of information for different topics (types of information) as mentioned in the men’s group.**

Types of information	New sources of information that have become available	Sources of information that are no longer used
Agriculture	Imam of Mosques, School Teachers, Local Elite Members of society	Astrologist/priest
Weather	Imam of Mosques, Teachers, Elite members of the community, Internet/apps	Astrologist/priest

**Table 17. New topics (types of information) mentioned by both the men’s and women’s groups**

Type of information	Mentioned by men / women
Agriculture: New type/variety of vegetables, crops	women, men
Fruits	women
Crops’ early/late plantation	men
Market demands/supply	men

## Conclusion and recommendations

Gabgachhia village is located near the Sundarbans and several rivers in the coastal region of Bangladesh’s Khulna district. The community has access to bridges, schools, mosques, markets and health services.

As reported during the baseline, forests have been considerably depleted conditions which have not improved much even as there are some initiatives to support roadside tree plantation and social forestry. While participants noted that silt in rivers remain an important problem, low productivity in farmlands is reported to have improved as soil salinity has reduced. Moreover, the farmlands have now been modified to some extent into higher-productive ‘gher’-structures, possessing an inner

canal/deeper body within the rice fields to produce fish in combination with rice production in fields encircled with raised embankments to prevent flooding. The high yielding varieties of 'Amon' rice is cultivated, and vegetables are grown through dyke-cropping practices. There were also some farmland landscapes modifications to enable the cultivation of improved high-yielding vegetables/fruit varieties. Rice and fish remained the traditional sources of food but some households also grew fruits and vegetables for home consumption. There is a community fishpond which provides some fish and acts as a water source for the newly-established water (sand) filter to generate a supply of drinking water.

The participants reported that the village does not have year-round food security and adequate nutrition levels. The community has limited access to fresh water which can be used for irrigation and livestock. The available drinking water was reported to be limited to ponds and a few wells. Safe water facilities have been improved but they are not sufficient to meet the needs of the community. Moreover, the study participants pointed out that electrical systems have been installed with wiring lines established in the village but the system is not fully functioning yet. The rivers surrounding Gabgachhia have become overrun with silt and no longer support life. Deforestation has also reduced the surrounding forests. Erratic rainfall, sea level rise, flooding, more dramatic temperature variation and cyclones are noted to affect directly Gabgachhia's village livelihoods and food security.

Many organizations are reported by participants to be operating or having activities in and around the village of Gabgachhia. The men's group identified 43 organizations in the village while the women's group identified 30. The organizations identified included the local and national government agencies, local and international NGOs, private sector institutions, banks, mosques, schools and training institutes. The most important organizations according to the participants are the mosque and the primary school. The men's group identified further five organizations as most important for them, namely the Mosque, the Local Govt. Engineering Department, Baitul Mamur Hafezia Madrasha, the Gabgachhia Primary School and the Sonali Bank. The women's group reported five organizations as most important to them, namely the Mosque, the Govt. Hospital, Baitul Mamur Hafezia Madrasha, the Gabgachhia Primary School and the Khalilur Rahman College. Accordingly, it can be inferred that for the men participants, religious activities, education, infrastructure and finance organizations were most important whereas for the women participants, religious activities, health services and education institutions were the most important.

The majority of these organizations are working in the village and the locality, with few working beyond the locality.

The most popular sources of information according to both the men's and the women's groups are neighbors, friends or relatives, government and finally, radio and television. Multiple sources of information on several topics were reported, with friends and neighbors being the most common sources of information on rainfall, temperature, disasters and agriculture. The means of accessing information as well as the type of information accessed did not vary between the men's and the women's groups.

### **Implications for CCAFS and recommendations of major opportunities**

Attention should be given to resilient rice and vegetable varieties production to ensure food security and enable food diversification while addressing flood and adverse weather conditions and climatic changes which threaten production, e.g., erratic/uneven rainfall or drought. Initiatives should be taken to support climate friendly agricultural practices such as organic agriculture, early/late plantation, roadside plantations, IPM and plant clinics, composting and bio-fertilization.

Fresh water aquaculture resilience and sustainability should be supported to help farmers' agricultural production and encourage a sustainable management of available resources.

Improvement in access to drinking water is of primary importance. Improving access to markets and the infrastructure is necessary for the development of the community. There should also be combined initiatives to develop and improve health services, sanitation and hygiene facilities as well as education facilities. The local council should be strengthened and improve its coordination to enable the implementation of long-term climate friendly interventions. To encourage and support agriculture, livestock and fish production, common and combined policy and guidelines can be developed and followed through in coordination with related departments. The upgrading and repairing of the seasonal canal facility, combined with the construction of a multipurpose shelter facility in the village and clean-up/dredging of the river following a sustainable managing plan should be prepared and implemented in the near future. Gher technology can be further supported to improve and expand the year-round production of rice, fish and vegetables as well as fruits production.