Bangladesh Water Development Board (BWDB)

Embassy of the Kingdom of the Netherlands (EKN) Dhaka, Bangladesh

Department of Agricultural Extension (DAE)




Technical Report 23

Socio-Economic Baseline Survey Report

May 2018

MOTT MACDONALD

Technical Report 23
Socio-Economic Baseline Survey Report

May 2018

Blue Gold Program

BWDB Office

23/1 Motijheel Commercial Area, Hasan Court, 8th Floor, Dhaka 1000

(T) +88 02 711 15 25; +88 02 956 98 43

DAE Office

502, Middle Building, Khamarbai, Farmgate, Dhaka-1215

(M) +88 01534006158

Gulshan Office

Karim Manjil, Ground Floor, House 19, Road 118, Gulshan, Dhaka 1212

(T) +88 02 989 45 53

Green corner – Save a tree today!

Mott MacDonald is committed to integrating sustainability into our operational practices and culture. As a world leading consultancy business, we are always seeking to improve our own performance and reduce the environmental impact of our business. Meanwhile, many of our staff are committed to living sustainably in their personal lives – as an employee-owned company Mott MacDonald shares their concerns. We feel an ethical obligation to reduce our emissions and resource use and have committed to reducing our per capita carbon footprint by a minimum of 5% year on year.

We print our reports and client submissions using recycled, double-sided paper. Compared to printing single sided on A4 virgin paper, double sided printing on recycled paper saves the equivalent of two trees, over a ton of CO2 and a cubic metre of landfill space for every 100 reams. By choosing the greener path we have been able to achieve efficiencies benefiting both Mott MacDonald and our customers.

We would like to share some of the principles of our own ‘Going Green’ initiative:

• When possible, we scan rather than print and consider what really needs to be on paper

• We use electronic faxing when practicable

• We work on e-forms

• We use recycled paper when possible

• Reducing paper in the office creates a better working environment for our staff and our clients

We believe that you, as one of our esteemed clients, will share our concern to conserve precious resources for the benefit of our planet and its inhabitants.

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
V.1	22/06/2017	Dr. Sharmin Afroz	MRL team		Initial contents and tables
V.2	22/08/2017	Dr. Sharmin Afroz	MRL team, Guy Jones, & Alamgir Chowdhury		Initial analysis of the findings
V.3	18/10/2017	Dr. Sharmin Afroz			Incorporation of comments
V.4	13/11/2017	Dr. Sharmin Afroz	MRL team, Guy Jones, & Alamgir Chowdhury	Guy Jones	1st draft of the report
V.5	04/02/2018	Dr. Sharmin Afroz	MRL team, Guy Jones, & Alamgir Chowdhury	Guy Jones	Final draft (including executive summary, analysis, recommendations
V.6	20/03/2018	Dr. Sharmin Afroz	BWDB staff		Share the final draft of the report with BWDB
V.7	30/05/2018	Dr. Sharmin Afroz	MRL team, Guy Jones, & Alamgir Chowdhury	Guy Jones	Incorporation of comments from BWDB and finalize the report

Contents

List of Tables

List of Figures

Glossary

ADP	Annual Development Plan
ADG	Additional Director General
AEO	Agricultural Extension Officer
AGEP	Agricultural Growth and Employment Program
BAU	Bangladesh Agricultural University
BWDB	Bangladesh Water Development Board
CAHW	Community Animal Health Worker
CBO	Community-Based Organisation
CDMP	Comprehensive Disaster Management Program
CDSP IV	Char Development and Settlement Project Phase IV
CEIP	Coastal Embankment improvement Project
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Centre
CO	Community Organizer
CPWF	Challenge Programme on Water and Food (CPWF)
CSISA	Cereal Systems Initiative for South Asia
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DLS	Department of Livestock Services
DoC or DOC	Department of Cooperatives
DoF or DOF	Department of Fisheries
DP III	Department of Planning III
DPP	Development Project Proposal
DTL	Deputy Team Leader
EKN	Embassy of the Kingdom of the Netherlands

EOI	Expression of Interest
EMM	Euroconsult Mott MacDonald
EWM	Equitable Water Management
FFS	Farmers Field School
FGD	Focus group Discussion
GAP	Gender Action Plan
GESAP	Gender Equality Strategy and Action Plan (of BWDB)
GoB	Government of Bangladesh
GoN	Government of the Netherlands
GPWM	Guidelines for Participatory Water Management
IRRI	International Rice Research Institute
ha	Hectare
HH	Household
IF	Innovation Fund
IFMC	Integrated Farm Management Component
IGA	Income Generating Activity
IMRC	Inter-Ministerial Review Committee
IPM	Integrated Pest Management
IPSWAM	Integrated Planning for Sustainable Water Management
IPSWARM	Integrated Planning for Sustainable Water Resources Management
IWM	Institute of Water Modelling
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
LCG	Local Consultative Group
LCS	Landless/Labour Contracting Societies
LG	Local Government
LGED	Local Government Engineering Department

LGI	Local Government Institutions
M&E	Monitoring and Evaluation
MRL	Monitoring, Reflection & Learning
MoU	Memorandum of Understanding
MoWR	Ministry of Water Resources
MTR	Mid – Term Review Mission
NGO	Non-Governmental Organisation
O&M	Operation and Maintenance
PCD	Project Coordinating Director
PCWM	Polder Community Water Management
PD	Project Director
PDP	Polder Development Plan
PMC	Project Management Committee
PM	Progress Marker
PSC	Program Steering Committee
PWMR	Participatory Water Management Rule
SDE	Sub-Divisional Engineer
SVC	Strengthened Value Chains
SWAIWRPMP	Southwest Area Integrated Water Resources Planning and Management Project
TA	Technical Assistance
T&C	Training & Communications
TL	Team Leader
TNA	Training Needs Assessment
TOT	Training of Trainers
UAO	Upazila Agricultural Officer
UP	Union Parishad
WAP	Water Management Group Action Plan

VC	Value Chain
VCA	Value Chain Analysis
VCD	Value Chain Development
VCS	Value Chain Selection
WASH	Water Sanitation and Hygiene education
WMA	Water Management Association
WMG	Water Management Group
WMIP	Water Management Improvement Project
WMO	Water Management Organisation
WRM	Water Resource Management
WUR	Wageningen University and Research Centre
XEN	Executive Engineer (BWDB)
ZSEs	Zonal Socio-Economists

Summary

Blue Gold Program (BGP) is an eight-year, the Government of Bangladesh and the Government of the Netherlands-funded project designed to "To reduce poverty for 199326 households living in 119124 ha area of selected coastal polders by improving water management, creating a healthy living environment and a sustainable socio-economic development." The project operations concentrate on 22 polders of four districts: Khulna, Satkhira, Patuakhali, and Barguna and is being implemented by Bangladesh Water Development Board (BWDB) in the lead, and the Department of Agricultural Extension (DAE) – in association with the Department of Livestock Services (DLS) and the Department of Fisheries (DoF). This baseline study provides an analysis of quantitative data that will guide the design of the project, implementation, and evaluation. It provides a benchmark for measuring a wide range of outcomes and impacts over the life of the project. In addition to providing the prevailing socio-economic situation with a special emphasis on agricultural, fisheries and livestock production and will serve as both a valuable information source for the program as well as a method for tracking the progress and outcomes of the Blue Gold Program.

The survey covered a sample size of 3651 households in 70 mouzas of selected 7 polders in three districts. Sampling followed a stratified random sampling that stratified firstly based on the land elevation (low/medium/high) and the different mouzas within the polders were selected proportionately from high-, medium- and low land. Secondly, the sample was proportionately selected from different landholding categories. A structured pre-coded questionnaire was used to elicit information about demographic profile, production information of crops, livestock and fisheries, crop losses, participation in the water management and collective actions, women empowerment, and household income and assets status of the surveyed households.

The results indicate that out of total 3651 households 17.8% represented landless, 44.3% marginal farmer, 28.9% small farmer, 7.5% medium farmer and 0nly 1,4% large farmer households. The surveyed households included 16795 individuals of which 52% were male and 48% were female. Findings reveal that the average family size is 4.6, with an average number of children around 1 in the study areas. Among the studied households, around 3.6% percent are female-headed. Level of education of the household head is in general low with only 6.5% having SSC certificate while 93.4% households have enrolled their children (6-12 yrs) in the school.

Most of the households in the coastal zones live in the one-bedroom house. The data shows a widespread use of the tin for the roof with 74.9% households while only 10% households live in a house that are roofed concrete and 16% households living in a dwelling unit in which tiles/hemp/bamboo /other is used as the roof material. More than half of the households (57%) live in dwelling units whose outer walls are mainly constructed with either mud brick or CI sheet or wood while around one-third of the households (34.1%) occupy dwelling units with outer walls made of concrete. Findings show that about 88% and 97% of households have access to arsenic free safe drinking water and hygienic toilet facilities respectively whereas only around one-third households have the practice of washing hand with soap before a meal. Nearly one-fourth of the households have business in the study areas where they able to generate average employment of 1.27 for the family labor wand 0.39 for the hired labor.

The average of homestead and cultivable land area in the study polders are 18.6 decimal (.08 ha) and 70.3 (0.28 ha) decimal respectively. Findings show that the land distribution is not significantly varied among the polders but it is highly skewed among the different categories of households.

The highest 918.4 ha of the land area was utilized for the paddy cultivation in Kharif-2 season (*Aman*) in the surveyed households among the three seasons while land utilization was insignificant (19.9 ha) in the

Aus season and was partial (537.9 ha) in the Boro season. In the Aman season, farmers were more likely to cultivate HYV Aman (540.3 ha of land and an average yield 3.6t/h) compared to the LV of Aman (378.1 ha of land with an average yield 2.3 t/h). On the other hand, in the Boro season a widespread cultivation of HYV Boro paddy cultivation was observed in some particular polders (504.2 ha of land with an average yield 5.4 t/h) while the cultivation was very limited for the hybrid Boro (33.7 ha), however, the yield was considerably higher (6.3 t/ha). Findings show that farmers are more tend to sale paddy to the local buyer (paiker/farm gate) followed by the local market.

Cultivation of cash crops like maize, mung bean, other pulses (cow-pea, felon), sesame, sunflower, other oilseeds and jute is very limited during the Kharif-1 and the Rabi season. However, around 22% and 30% households cultivated mung bean and other pulses respectively in the Rabi season in the two polders of Patuakhali zone. Findings reveal that majority of the households have homestead vegetable (70%) and fruit cultivation (nearly 90%) while very insignificant numbers of the households practice commercial fruit cultivation in these areas.

Fish culture is an important livelihood strategy for costal people where around 35% and 24 % households respectively practice pond and gher fisheries, though the polders of Patukhali are more likely to practice pond fisheries while some of the polders of Khulna and Sathkhira zone tend to do the gher fisheries. A gradual increasing trend is observed for the practice of the pond and gher fisheries from the landless to the medium category households while it declines slightly for the large farmer households. The average size of the pond was larger in Patuakhali zone compared to Khulna and Sathkhira zone but the yield of fish for pond fisheries was reported lowest in Patuakhali zone. In pond fisheries, average yield was 3t/ha with an average price of 122 per kg.

The polders that have the practice of gher they follow as a gher based cropping system where they occupied their agricultural land for fish cultivation in Kharif-I & II for while cultivating Boro paddy in Rabi/ Boro season. Polders of Khulna were likely to cultivate prawn while polders of Satkhira cultivate shrimp in their ghers. On an average, the size of gher is .5 ha where the average production of shrimp and prawn are 0.3 t/ha and 0.2 t/ha while whitefish production is 0.7t/ha. The average price of shrimp and prawn are 556 and 607 Tk/Kg where as white fish is only 126 Tk/Kg.

Poultry rearing is one of the main income generating activities along with the primary income source. About 80% of the household rear poultry as a source of income but the percentages are varied across the polder. The number of poultry birds increases with the increase of landholding. Findings show that the households of the study areas reared poultry mainly for household consumption as average 31% of the household mentioned that rearing poultry was for only for household consumption while 69% reported that they reared poultry for both consumption and selling where 51% households sold less than half of their productions while only 15% sold more than half of their productions. All types of households in all the study polders have a regular income from the selling of poultry birds and eggs. Though these incomes are varied across the polders, the income from poultry steadily increases from the landless to the medium category of households but drops for the large household category. Zone wise analysis of poultry rearing shows that Patuakhali zone has a better practice of poultry rearing compared to Satkhira and Khulna zone where a higher percentage of households have the practice of poultry rearing with a higher average number of different types of poultry and they have a higher average from the selling of birds and eggs.

Approximately one- fifth of all households' own goat/sheep while half of all households' own cow/buffalo and milking cow. Though the average number of goat/sheep and cow/buffalo both were 3 per households, the number is varied considerably across the polder. Both the percentage of households having goat/sheep and cows/buffaloes (including milking cows) and the average number of all animals per household is gradually increased with the land-based economic status of the households. Findings show considerable differences regarding income from all types of livestock across the polders and there is an

increasing tendency of the average household income from all types of livestock with the increase of the area of owned land.

The households of coastal areas are vulnerable to water logging, flooding, the intrusion of saline water, shortage of fresh water in the dry season, and also climate variability and extreme climatic events that result in fallow land and losses of crop and income. On an average, 23.1% of the households have crop losses in the study polders and crop loss is recorded the most in Patuakhali zone followed by Khulna and Sathkhira zone. Among all the crops, loss of rice is reported most and the amount of loss is also the highest with an average 9830 Tk/HH. According to the household category, a trend of rapid increase of crop loss is observed from the landless farmer to the large farmer category. Water-logging is reported by the maximum (58.4%) number of all households followed by flood (28.3%) and salinization (16.4%).

Flood, waterlogging, drought, pest, and other disease affected the crop cultivation significantly in Khulna zone whereas the salinity and cyclone caused the crop loss more in Patuakhali zone. There is lack of fresh water in the dry season, overall only 38.6% households in the study areas are using irrigation in the Rabi/dry season with a limited area of land. Households of some polders of Khulna and Satkhira zone report more of using irrigation with an average irrigated land per household 75 and 90 decimal respectively. Some of the polders of these two zones have significant Boro paddy cultivation in the dry season with gher based cropping system and some extents of irrigation facilities. Deep tub-well and canal are the popular sources of irrigation. Very small numbers of households have participated in water management activities as well as in collective action as the baseline study includes only the new polders where the BGP has just introduced their programs.

Food insecurity is not significantly reported in the study areas. The frequency of monthly household consumption of fish, meat and egg shows that households consumed fish nearly 4-5 days and consumed egg 2-3 days in a week while the meat was available rarely to them like 2-3 days within a month. The findings show a steady increase in the number days of taking fish, meat, and egg from the landless households to the large farm households. Overall nearly 81% households mentioned that they never felt food shortage (not having enough food) in the last months and, nearly 7% households indicate there were some months when food was not sufficient (less than two times in a day) at any time within the last year. Data according to household category followed a predictable pattern of the landless households had the highest frequency and the well-off households experienced less, both for the food shortage and insufficient food. Data shows an overall pattern of a lean period in terms of insufficient food, with the months of food insecurity falling between Ashar-Kartik (mid-June – mid-November).

The status of women is an important input and an equally important outcome of livelihood strategies. The pattern of consumption of some selected food like meat, fish and egg between male and female members within the households shows that a considerable percent (around 75%) of households reported equal consumption of different foods among the male and female members. Data shows that a significant percentage of household's mention women participation in income generating activities that contribute to improving household income but that participation does not ensure income for them. They are more engaged in homestead cultivation (66%), post-harvest agricultural activities (55%), poultry and duck rearing (81%), livestock rearing (57%) that are performed inside the household in all the polders of study areas. Women have some extents decision making authority as around 70% and 75% of all households respectively mention that male and female jointly make the decision on spending the money that they earned and purchasing and selling of household assets.

The mobility of women (can go their own) is limited in the survey area, more than half of women, for example, are unable to go to local market, NGO, children' school but they have significant access to hospital and health clinic with more than 70% women. Poorer have more mobility as they are culturally less bounded as well as they have lack of choice rather than empowerment. Data shows that women are

the loan holders when the loan is taken from formal institutions mainly NGOs while men are the loan holders when the loan is taken from informal institutions like friends and relatives. The vote casing behavior among the women in the study areas was significantly positive, almost 99% and 97% of all household's report that women cast their vote in the local election and national election respectively. In addition, women of 32.3% and 5o% of the households are able to decide on their own and jointly with their counterpart whom to vote.

Data has confronted the traditional view that rural livelihood strategies are based upon various forms of agricultural production as the total average household earnings from non-agricultural (82974 BDT) sector was reported to be more than earnings from agricultural sector (76865 BDT) that represent respectively 52% and 48% of total income. As expected a gradually increasing trend in earnings from both the agricultural and the non-agricultural sector was observed from the landless to the large farmer category. In addition, the differences regarding asset value and their percentage of the total value of the assets are significantly noticeable among the different types of household categories. The most valuable asset is cultivable land that embodies 56.4% of the total value of the asset followed by homestead land that represents nearly one-third of the total asset value while the other assets comprise only around 12% of the total asset value. Poverty Index (PI) data supports the general trend or amputations that the households belong to the lower percentile are likely to be poorer while upper percentile households tend to have more income compared to the lower percentiles. However, it is noteworthy that the large and medium landholding households are more likely to belong in the higher percentile of the PI score but some of them also belong to the lower percentile while some of the landless, marginal and small farmer households also belong to the upper percentile.

Based on the findings of the study, a set of recommendations are presented in this report. Instead of attempting ambitious plans, the suggestions came to strengthen the program activities, reach the program goals and above all fully accomplish the overall program goal of an improved water management system for a productive and better livelihood of the vulnerable coastal people of Bangladesh. It is also intended that these recommendations would also serve to attain the specific objective of supporting and complementing strategies that enable local communities and institutions to ensure a healthy living environment and a sustainable socio-economic development the southwest and southeast coastal zone of Bangladesh.

1. Introduction

1.1 Background

Bangladesh has a population of over 161 million, growing at 1.34%, with a population density of over 1000 persons per sq. km (BBS 2016). Of a total of 32 million households, 77% live in rural areas. Bangladesh has experienced significant economic growth in recent decades and, with a gross national income of just over USD 1,000 per capita, is now classified as a lower middle-income economy (World Bank 2016). The incidence of poverty has declined but is still 31.5% overall and 35.5% in rural areas. One-fifth of the country's GDP comes from agriculture and two-thirds of the workforce is directly or indirectly engaged in agricultural activities. Hence the country's economy is highly vulnerable to the degradation of natural resources and variability and trends in climate. The problems are even more alarming for coastal areas of Bangladesh.

Bangladesh has a 710 km-long coastline bordering the Bay of Bengal (MoWR 2005). The coastal zone plays an important role in the Bangladesh economy, while being identified as the most vulnerable part of the country. The coastal zone represents an area of 47,211 km^2, nearly a third of the landmass, in which over 35 million people or 28% of the total population reside in 6.85 million households (BBS, 2012). The coastal zone covers 19 out of 64 districts, of which 12 are abutting the Bay of Bengal and 7 are in close proximity (MoWR 2006). Around 50% of the coastal zone (23,935 sq. km) is exposed to the sea. The land, water, and ecosystems of coastal areas are severely affected by the climate variability and trends like increased flooding, waterlogging, riverbank erosion, saltwater intrusion, permanent inundation, extreme weather events, and less congenial conditions for agricultural livelihoods. High dependency on natural resources like land and water as well as the exposure to extreme weather events, the people of coastal areas of Bangladesh are particularly vulnerable to secure their livelihood.

These issues are particularly pressing in the southern and south-western costal zones of Bangladesh. The districts of Khulna Satkhira Patuakhali and Barguna are directly exposed to the sea and likely to be at higher risk of natural disasters. The people of these districts more vulnerable due to the flat and low-lying topography, disadvantageous location, high population density, and widespread poverty, with most rural households relying on climate-sensitive sectors like agriculture and fisheries. In coastal areas, the tidal system is regulated through the coastal embankment system that includes the embankments, sluice gates, and canals. So, they have a specific water management system and for these coastal districts, proper water management and food security are the two most fundamental challenges. Strengthening agricultural production through improved water management system is a fundamental means of improving incomes and food security for the vulnerable group of food insecure in these coastal areas in the context of climate variability.

To address this situation the project entitled 'Blue Gold Program' builds on the results and lessons learned from previous programs and projects in Bangladesh, notably the Integrated Planning for Sustainable Water Management (IPSWAM) program (2003-2012), Southwest Area Project, Char Development & Settlement Project-IV etc. and the Bangladesh and Dutch experiences and expertise in participatory water management in polders. This project is jointly funded by the Government of Bangladesh and the Government of the Netherlands. The project area includes the districts of Khulna, Satkhira, Patuakhali, and Barguna (see Table 1.1 and Figure 1.1).

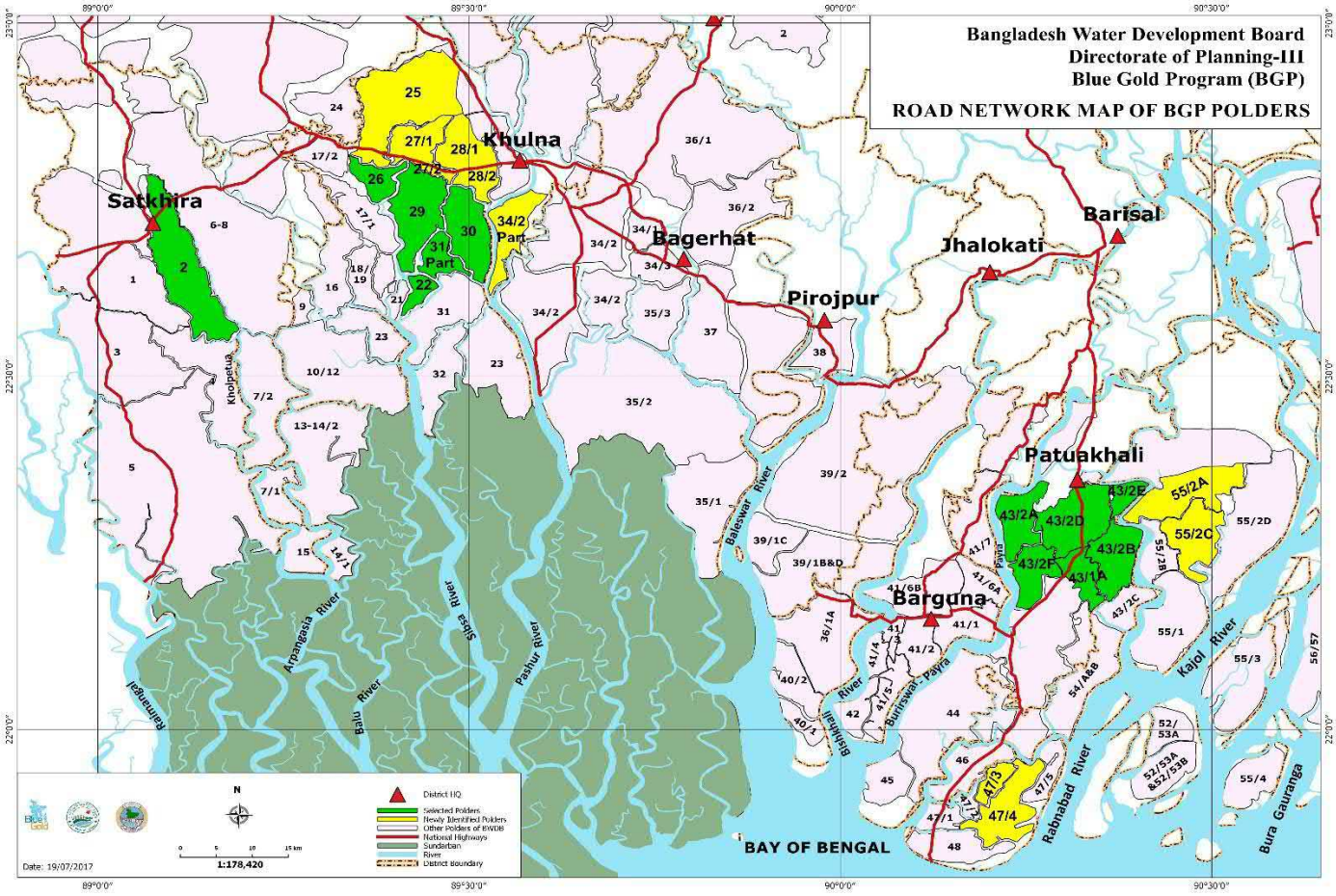

Figure 1-1: Road network map of BGP polders

The Blue Gold Program became operational in March 2013 and extends over a 8 years period, until June 2020. Its operations concentrate on the polders of four districts: Khulna, Satkhira, Patuakhali, and Barguna. This project aims to reduce poverty and improve food security through equitable water management and strengthened value chains-resulting in improved livelihoods for communities. The expected outcome of the project is that crop and water management practices will be reduced poverty for 199,326 households living in 119124 ha of selected coastal polders by creating a healthy living environment and a sustainable socio-economic development the Southwest Coastal Zone of Bangladesh. Equitable water management involves representatives of all community stakeholders (e.g. farmers, fishermen, landowners, landless, etc.) working through water management organisations (WMOs) in partnership with government, NGOs and the private sector to manage water to meet agricultural requirements. Strengthened value chains enable the farm households to enhance their productivity, be it for home consumption or sales; to make use of the additional availability of land and opportunities for different cropping systems, and to pursue better services from government and private agencies; and better deals from input suppliers and bulk buyers. The project has four main outputs:

1. The communities in Water Management Organizations (WMGs) were organized which become the driving force for the natural resources-based development (agriculture, fisheries, and livestock), whereby environment, gender and good governance were effectively addressed.

2. The communities and their land located in polders against floods from river and sea (climate change adaptation) have been protected and optimized the use of water resources for their productive sectors

3. The household income derived from the productive sectors has been improved

4. The institutional framework for sustained water resources development and related development services in the SW/SC zones has been strengthened.

The project will ultimately improve the livelihood of about 199326 households living in 119124 ha with increased protection against floods, reduced drainage congestions , expedited irrigation, retained rain water as fresh source of water during dry season, including fine-tuning works, contributing to improve food security in 13 Upazilas under Khulna, Satkhira Patuakhali and Barguna district through 512 Water Management Organization (each WMG contains 389 households (male and female members from each HH)) of which 30% perform Savings & Credits activities and provide for Mechanization services, 200 producer groups operating supporting development of selected value chains in agriculture, fisheries and livestock and 30% of the women working in LCS (2250 out of 7500) are earning from other income generating activities. An overview of the project is given below:

Project period: March 2013-December 2020

Implementing agencies: Bangladesh Water Development Board (BWDB) in the lead, and the Department of Agricultural Extension (DAE) – in association with Department of Livestock Services (DLS) and Department of Fisheries (DoF)

Funding agency: The Government of Bangladesh and the Government of the Netherlands

Table 1-1 : Locations of Project Polders

BGP Polder No.	District	Upazila
22	Khulna	Paikgacha
26	Khulna	Dumuria
29	Khulna	Dumuria & Batiaghata
30, 31 Part, 34/2	Khulna	Batiaghata
25	Khulna	Dumuria, Fultala and Dighlia
27/1, 27/2, 28/1, 28/2	Khulna	Dumuria
2 & 2 Ext.	Satkhira	Sathkhira Sadar and Assasuni
43/2A, 43/2D, 43/2E	Patuakhali	Patuakhali Sadar
55/2A	Patuakhali	Patuakhali Sadar, Bauphal, Dashmina & Galachipa
55/2C	Patuakhali	Dashmina & Galachipa
47/3, 47/4	Patuakhali	Kalapara
43/2B	Patuakhali & Barguna	Galachipa, Patuakhali Sadar & Amtali
4**3**/1A, 43/2F	Barguna	Amtali
22	4	13

1.2 Objectives of the Baseline Study

The Baseline study of Blue Gold Program is an indispensable part of the program to explore the overall interventions of the program, to evaluate its contribution towards poverty reduction and ensuring food security, to get the impression to assess the existing conditions and issues affecting targeted households and finally to understand the current socio-economic situation of households in the selected polders. It aims to take a snapshot of the prevailing socio-economic situation with a special emphasis on agricultural, fisheries and livestock production and will serve as both a valuable information source for the program as well as a method for tracking the progress and outcomes of the Blue Gold Program. The specific objectives of the baseline assessment are as follows:

- To collect demographic and socio-economic situation information of project beneficiaries
- To collect their information on major crops, livestock and fisheries production and crop water use practice as well as their involvement with local institutions and collective actions, especially Water Management Groups
- To identify challenges and potentials of agriculture and food security of project areas.
- To assess current productivity status and to formulate development options for planning exercise.

2. METHODOLOGY OF THE STUDY

2.1 The Study Framework

The baseline study entails collecting primary data from BGP polders locations and analyzing them to draw the benchmark for the targeted coastal communities to serve as a guide for project implementation. It required firstly, review and analysis of project documents e.g. propo and documents relating to context and area profile e.g. national policies and plan, statistics and census reports. Secondly, it needed an accumulation of primary quantitative data from the field location through a household questionnaire survey. Thirdly, it required processing and analysis of data collected from the field locations to develop a baseline report as a benchmark.

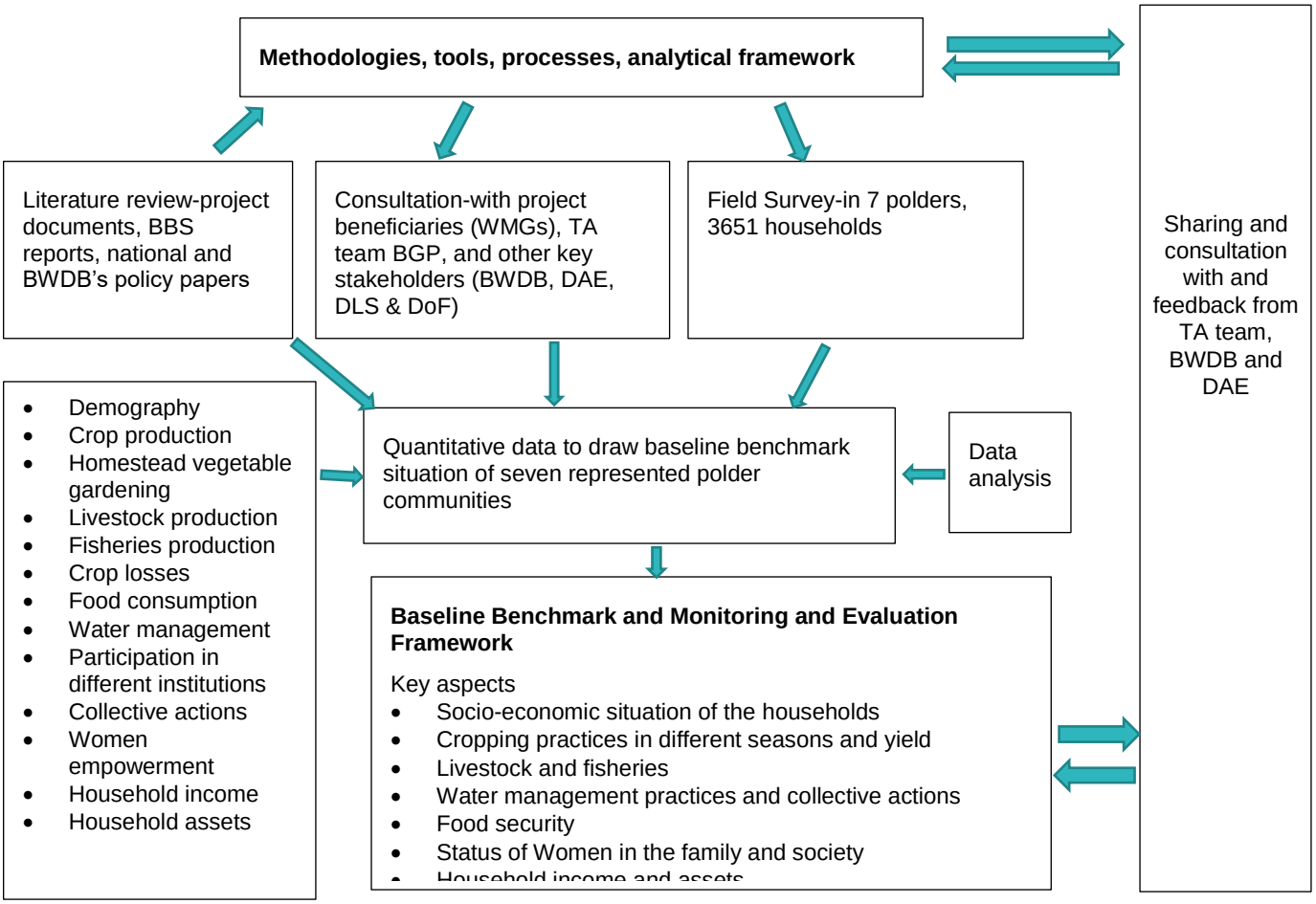

Figure 2-1: Conceptual framework of the study

To conduct the baseline study MRL team formed a baseline study team involved members with multidisciplinary backgrounds who have extensive experience in the design and implementation of similar surveys in Bangladesh. The baseline study team developed the methodology of the Baseline study in consultation with Bangladesh Water Development Board (BWDB) and the Department of Agriculture

(DAE), and agreement on the methodology was reached on 18th January 2017 (minutes of which were issued on 22nd January 2017). The conceptual framework of the study is graphically presented above.

2.2 Survey Design

2.2.1 Selection of the polders:

With consultation with the key stakeholders (BWDB and DAE), the study team selected 7 representative polders (See Table 2-1) out of 13 polders of BGP considering the similar geo-location and characteristics of the polders.

2.2.2 Sample selection:

The sample size was estimated to ensure the representation of all the indicators set forth in the ToR of the Baseline study. Considering this, 3651 households were selected from the studied communities. Samples were collected using stratified random sampling. The sample was stratified firstly based on the land elevation (low/medium / high) and the different mouzas within the polders were selected proportionately from high-, medium- and low land. Secondly, the sample was proportionately selected from different land holding categories.

Table 2-1: Name of the selected polders, their locations and no of the sample households from each polder

Name of the Polders	District	Upazila	No. of Mouza	Area of land (ha)	No. of Total HH	No. of sample HH
Polder 25	Khulna	Dighlia /fultola/Dumuria	50	17,400	18,816	755
Polder 31 Part	Khulna	Batiaghata	14	4,848	4,196	169
Polder 28/1	Khulna	Dumuria/ Batighata	14	5,600	6,056	242
Polder 34/2 part	Khulna	Batiaghata	23	4,900	11,227	448
Polder 55/2A	Patuakhali	Patuakhali/Galachipa / Bahuphal/ Dasmina	31	7,166	13,966	558
Polder 47/4	Pathuakali	Kalapara	12	6,600	11,853	474
Polder 2 and 2 Ext.	Satkhira	Assasuni/Satkhira	50	12,600	25,077	1,005
Total	3	11	194	59114	91,191	3651

The survey covered a sample size of 3651 households (HHs) in 70 mouzas of selected 7 polders in three districts (see Table 2-1). A household census was done to get basic information on the households of the selected mouzas. In order to capture authentic information about households, the survey team went from door to door in the selected mouzas to collect basic information, which included, address of households, name of HH head, name of father/husband of HH head, source of income, amount of land owned, member of WMG and HH cell number. Sample households were then selected from the list of households prepared

through the household census. In case of large mouzas (larger than 300 households), a part of the mouzas was selected for the census while making sure that all the social groups of the mouza in question are represented. Then the households were categorized on the basis of landholding sizes as used by BBS, please see Table 2-2

Table 2-2: HH category and land holding size

Sl. No.	HH Category	Land holding size (decimal)
1	Landless	up to 4 decimals
2	Small farm 1	5 - 49 decimals
3	Small farm 2	50 to 99 decimals
4	Small farm 3	100 to 149 decimals
5	Small farm 4	150 to 249 decimals
6	Medium farm 1	250 to 499 decimals
7	Medium farm 2	500 to 749 decimals
8	Large farm	750 decimals and above

Then the team finally selected sample households following the random sampling methodology; the numbers of sample households from different categories were proportionately selected; it was also ensured that different types of professions were represented in every category. As per ToR, the survey team took at least 50 sample HHs per mouza. However, during the analysis of data, the household categories were divided into five categories; please see Figure 2-2.

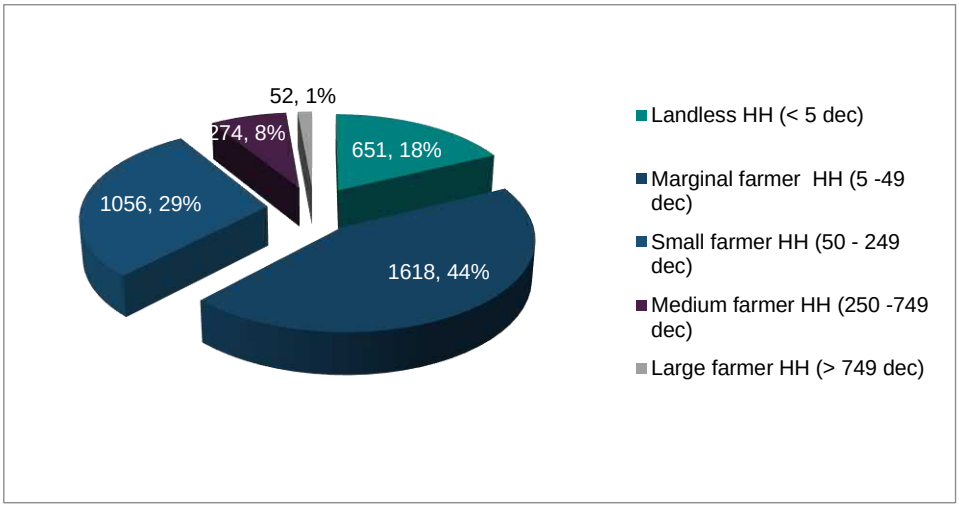

Figure 2-2: Number and percentage of households in the analysis of the baseline data, by household category (N=3651)

2.3 Questionnaire Development and Field Test

The Baseline study team also consulted some related questionnaires in order to collect data on a comparable set of variables. The questionnaire development was guided by a quantitative research approach. It was a structured pre-coded questionnaire designed to elicit information about demographic profile, production information of crops, livestock and fisheries, crop losses, water management, household income and assets, participation in the wider network and collective actions, women

empowerment. The baseline questionnaires include modules that together provide an integrated data platform to answer a variety of the research questions posed in the Baseline study research proposal. The survey has been designed to collect gender-disaggregated information, as appropriate. This questionnaire was used to make descriptive assertions about the study community through focusing what the distribution is rather than concerning why the distribution exists.

The study team prepared a draft questionnaire for the Baseline study, which was reviewed by TA team of BGP. There were also a number of consultations with the BWDB and the DAE to share and get their feedbacks on the questionnaire. A revised questionnaire was distributed to the TA team of BGP and the other stakeholders (BWDB and DAE) for comments. The study team received detailed feedbacks from them and incorporated the feedbacks in the questionnaire. Finally, a multi-module questionnaire was developed, a part of the questionnaire was prepared for female respondents and the other for a responsible member of a household who could be male or female. The developed questionnaire was grounded in the study area (polders 55/2A and 47/4). The study team conducted an interactive household survey to receive the response of the respondents. The questionnaire and was corrected considering the field test outputs, and the final version was agreed with BWDB on 6th February 2017. Finally, a sharing meeting with TA team of BGP was conducted to finalize the developed questionnaire for this research (for detail questionnaire see Annex-3).

2.4 Administrating the Data Collection

The selection of firm to carry out the collection of baseline survey information was carried out in accordance with Blue Gold procurement procedures. Bidding documents included an invitation, procurement guidelines, information to service providers and terms of reference. Six firms with expertise in conducting complex surveys and data analysis were shortlisted and issued with a bidding invitation and documents on 1st March 2017. A pre-bid meeting was held on 6th March, and answers to questions raised in the pre-bid meeting were provided to all six bidders on 8th March. Six bids were submitted on 16th March 2017, and the evaluation of technical proposals was concluded on 1st April, recommending that the financial proposals of only two firms which passed the 70-point threshold should be opened. Consequently, the financial proposals of the two firms were opened and checked, and - on the basis of a 90/10 weighting (technical/financial) - the successful firm was identified and informed, and the contract for data collection was signed on 11th April 2017.

The successful firm was supervised and guided by the study team and zonal representatives. The survey team comprised 35 experienced survey enumerators, 5 supervisors to administer the survey, and a survey coordinator who coordinated all logistical and technical arrangements for the baseline survey. The study team supported by the BWDB and TA team trained the enumerators and supervisors in all practical aspects of the survey. The training of the survey team, consisting of a formal classroom component (from 18 to 20 April 2017 in Dhaka), followed by pre-testing of the questionnaire on 22nd April and a subsequent review and finalizing of the questionnaire on 24/25 April. Fieldwork started on 27th April 2017 and continued to 11th June 2017 and was subject to close monitoring by the Blue Gold team.

The enumerators conducted the interviews one-by-one and face-to-face with the respondents assigned to them. On average, it took about one and half an hour to two hours for the interview one household. The field supervisors accompanied the enumerators to the village and supervised them. Each field supervisor was responsible for his defined region. All enumerators reported their activities to their superiors using a standard progress report form. Completed questionnaires were delivered to the contracted firm in Dhaka on a regular basis for further quality control and validation during data entry. The data was collected in a digital questionnaire format that was developed through Open Data Kit (ODK) and supported to input the data in the system by using Tab during data collection.

2.5 Data Quality Control and Triangulation Protocol

In order to ensure data quality various quality control mechanisms were applied: Firstly, every day the enumerators cross-checked each other's collected data. Supervisors stayed in the respective polders and went to some random households every day during the data collection period for monitoring the collection of data. The Supervisors checked every day at least 50% filled up questionnaires. Supervisor also checked about 15-20% filled up questionnaires the following day by going to the respondents' houses to verify the accuracy of the data collected from those households. If any error was found or data are missing, enumerators went again to the relevant households for correcting the data. In addition, the consortium recruited a person with research experience to go to the field for monitoring and quality control of the data collection. Moreover, the survey coordinator went to the field to oversee and guide the data collection. He also checked the quality of the data collected. He reviewed the filled-in questionnaires with the enumerators and supervisors and provided feedback to the enumerators and supervisors at field level. Besides the Baseline study team members, the members of MRL team at the zonal level also had an overall supervision to ensure the quality of the data.

Since the data have been checked in 3 stages - crosschecked by enumerators; checked by supervisors and checked by Survey Coordinator and a research expert, the study team was confident regarding the quality the data. After transferring the data from ODK format to Excel and SPSS format, once again the consistency was checked by the Software Programmer/ODK Expert. No major errors were found; some minor inconsistencies were found that was re-checked with respondents over the cell phone to correct them.

2.6 Data Processing and Analysis

The quantitative data was analysed through statistical analysis. The quantitative data was processed through SPSS and MS Excel Programme. Tools for data entry and analysis as well as the dummy tables were prepared on the basis of indicators required. The study team explored the possible linkages and relations between different categories of data.

2.7 Report Preparation and Finalization

The draft report had been shared with TA team members of BGP. After incorporating of the Initial feedbacks, the draft report was presented and shared in a meeting participated by research team members and TA team members of BGP. The gap analysis was done through a detailed discussion during the meeting. The final draft report was submitted to team leader and deputy team leader of BGP for reviewing before final submission. The report contains twelve chapters. Besides the introductory and concluding chapters, the report consists a chapter on methodology and overview of the study polders. The report also contains chapters on demographics profile of the selected sample households, production of crops, livestock and fisheries, crop losses, water management, participation in water management and collective actions, women empowerment, and household income and assets.

3. GENERAL GEOGRAPHICAL AND AGRICULTURE INFORMATION OF THE STUDIED POLDERS

This chapter is an attempt to give brief overview information of seven polders of the baseline study that explores the context of the livelihood of the costal people. Most of the information here is reserved from the Polder Development Plan (PDP), this information highlights the contextual factors that influence in shaping the livelihood strategies of the people of polders, and thus influencing the outcomes that ensue. To get an overview of the present condition of water resource management and infrastructure of these seven polders please see Annex-2.

3.1 Polder 25

Time of construction: This polder was constructed during 1963-67 and was rehabilitated later on under the KJDRP project from early 1996 to 31 December 2002.

Location: This polder covers Khornia, Rudaghora, Rughunathpur, Dhamalia and Rangpur unions of Dumuria upazila; Damudor, Jamira and Atra Gilatola (P) union of Fultola upazila; and Arongghata (P) and Jogipol (P) union of Digholia upazila under Khulna district. It is surrounded by Hamkura (dead) and Bhadra (dead) river in its South, Bhairab river at the East, Hori river in the West and Jessore-Khulna high way road in its Northern part.

Polder boundary: 61 km

Total no of mouzas: 55

Total polder area: 17400 ha

Total no of HHs: 44483

Total no of catchments: 10

Total cultivable land: 14379 ha (high land 27%; medium high land 47%, low land 26%)

Population: 224953; male-109490, Female-115463

Major occupations: Agriculture (45%), agricultural labour (27%), business (13%) and others (15%)

Wealth categories: Rich (13%), middle class (54%), and poor (33%)

Literacy rate: 81%

Figure 3-1: Location of the polder 25

Road communication: The Khulna-Satkhira highway passes through part of the southern part of the polder (Kharnia Union) and Khulna by-pass road forms part of the eastern boarder of the polder. There are about 172 kms of metalled road, 189 kms brick soling road and 179 km of earthen road. The local inhabitants are

using van, rickshaw and easy bike as major transport. Internal road communications facilities are connected with embankment road.

Main crops: Rice and vegetable are the main field crop while Prawn and crap culture (pond fisheries-20 – 40 % HH, Rich-fish- 90% HH) and livestock rearing (Cattle 36.6% HH; Goat – 20.5% HH; Poultry – 64.6%HH; Duck-51.9HH; & Goose-3.4% HH) also main economic activities.

Cropping pattern: Fallow-Fallow-T. Aman (10%), Boro-Fallow-T.Aman/Fisheries (60%), Boro-Fish-Fish (16%), Rabi Veg-Fallow-T.Aman (5%), Spices-Vegetable- Vegetable (5%), Vegetable- Vegetable-Vegetable (4%).

Cropping intensity: Cropping intensity is 207%

Vulnerability to natural calamities: Water logging, river bank erosion, thunder storm, flood and heavy rainfall and water hyacinth congestion.

3.2 Polder 28/1

Time of construction: This Polder was constructed in 1965-70 by the Bangladesh Water Development Board (BWDB) and later on was rehabilitated under the KJDRP project from 1996 to 2002.

Location: The polder covers a big portion of Gutudia union under Dumuria upazila and small portion of Jalma union under Batiaghata upazila of Khulna district. The polder is surrounded by the upper Shoilmari (west), lower Shoilmari (south, via 28/2) and Moyuri (east) rivers.

Polder boundary: 32.20 km

Total no of Mouzas: 10

Total polder area: 5600 ha

Total no of HHs: 5519

Total no of catchments: 07

Total cultivable land: 4500 ha (high land 25%; medium high land 10%, low land 65%

Population: Total 36085, Male: 10522, Female: 10340

Major occupations: Agriculture (80%); agricultural labour (5%); business (5%) and others (10%)

Wealth categories: Rich (5%), middle class (60%), and poor (35%)

Literacy rate: 70%

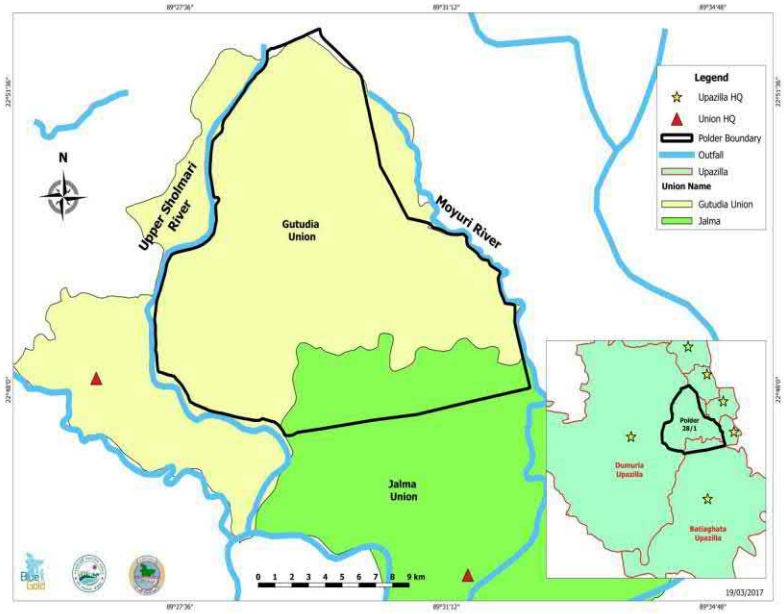

Figure 3-2: Location of the polder 28/1

Road communication: Internal road communication is good as the area is directly linked to two high way roads. The greatest part of the internal road network is carpeted road. Some roads are HBB & BFS. Few earthen roads exist inside the polder. Inside the polder 18.5 km road is carpeted, 27.75 km is brick made and 48.75 km is earthen road.

Main crops: Local T.Aman, sesame and vegetable are the main field crop while fish culture (80 % areas are covered by fish culture (white fish and golda)) and livestock rearing (cattle: 65-70 % HH, goats: 20-25 % HH poultry: 80-85% HH) are also main economic activities.

Cropping pattern: Boro- Fish-Fish (75%) with dike vegetable, Boro – Fallow – T.Aman (10%), Vegetable-Vegetable- Vegetable (5%), Potato – Vegetable- Vegetable (5%), Spices – Vegetable – Vegetable (5) Cropping intensity: Cropping intensity is 200%.

Vulnerability to natural calamities: Water logging and flooding are the two major hazards.

3.3 Polder 31 Part

Time of construction: The polder was constructed in 1967-72 by Bangladesh Water Development Board (BWDB).

Location: Polder 31 Part covers only the Surkhali union under Batiaghata Upazila of Khulna District. The polder is located in the South-West hydrological region of Bangladesh, with administrative jurisdiction under the Khulna O&M Division -2, BWDB, Khulna. The polder is directly surrounded by the Upper Bhadra River in the west, Jhapjhapia River in the east, Manga River in the southeast and Bhadra River (dead) in the southwest.

Polder boundary: 26.7 km

Total no of Mouzas: 14

Total polder area: 4848 ha

Total no of HHs: 5196

Total no of catchments: 09

Total cultivable land: 1853 ha (high land 2%; medium-high land 75%, medium-low land 8% and low land 15%)

Population: 9400; male-109490, Female-115463

Major occupations: Agriculture (37.1%); Agricultural labour (21.5%); Business (6.5%) and others (34.9%)

Wealth categories: Rich (10%), Middle class (25%), Poor (65%)

Literacy rate: 44.72%

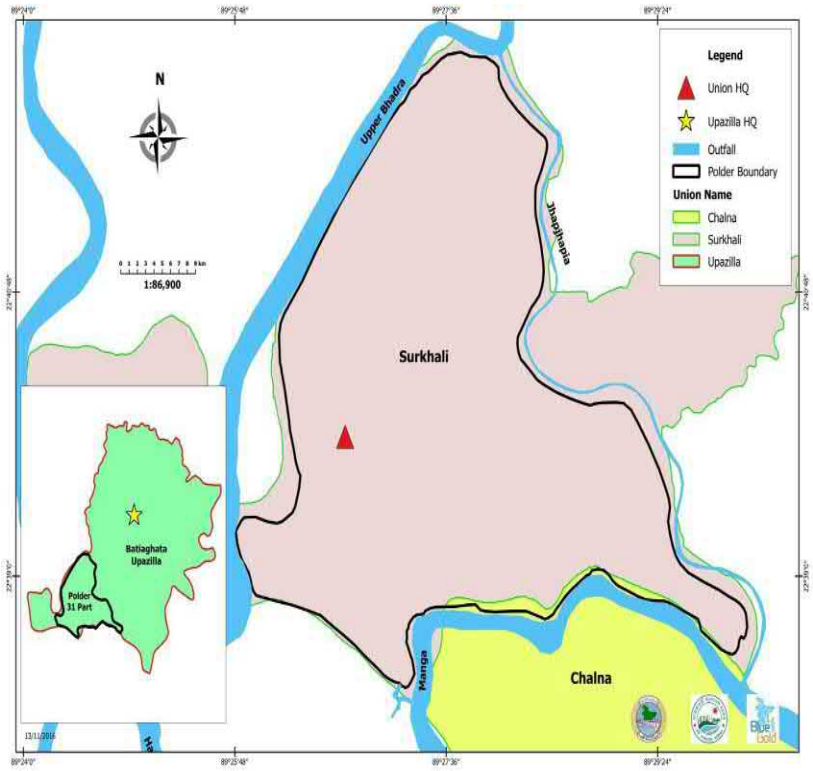

Figure 3-3: Location of the polder 31 Part

Road communication: Internal road communication facilities are partially depending on embankment road and inside branching roads are connected with embankment road. In the polder there are 51 Km road in which 10 km Pucca road (Bituminous road), 12 km are Herring Bone (Brick made) and 29 km kaacha (earth made) road.

Main crops: T-aman, Sesame and Boro Rice are the main field crop while 65 -70% of the households are involved in fish culture. Livestock rearing also very (Cattle: 90-95 % Poultry: 85-90 %, Goat: 60-70 % and Sheep: 5-10%) common economic activities.

Cropping pattern: The main cropping pattern are Fallow –T. Aman – Fallow; Fallow – T. Aman – Boro; Fallow – T. Aman – Sesame and Fallow – T. Aman – Vegetables.

Cropping intensity: Cropping intensity is 176%

Vulnerability to natural calamities: Water logging and salinity are the main natural calamities while cyclone, tidal surge and river bank erosion are also threatening for the livelihood of the people of this polder.

3.4 Polder 34/2 Part

Time of construction: Polder 34/2 Part is managed by the Bangladesh Water Development Board (BWDB) and was constructed during 1998-2005.

Location: It is located in Amirpur union (part), Vanderkote union (part) and Baliadanga union under Batiaghata upazila, Khulna district. It is surrounded by Mathabhanga river in the north, Rupsha river in the northwest, Kazibacha in the west, Poshur in the south and dead Poshur & dead Mathabhanga in the east (shown in the map).

Polder boundary: 52 km

Total no of Mouzas: 48

Total polder area: 5633 ha

Total no of HHs: 11532

Total number of catchments: 11

Total cultivable land: 4633 ha (high land 27%; medium high land 47%, low land 26%)

Population: 45566; male-22643, Female-22923

Major occupations: Agriculture (70%), Business (20%) and others (10%)

Wealth categories: Rich (20%), Middle class (30%), Poor (50%)

Literacy rate: 46%

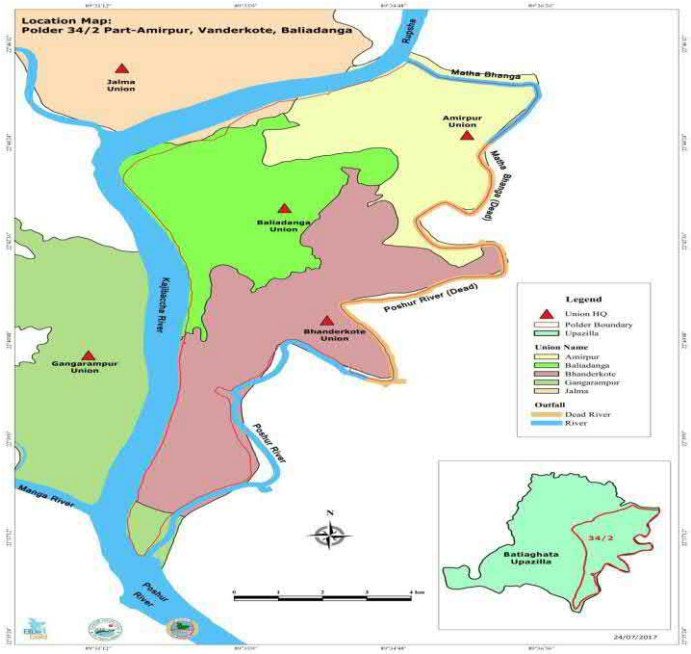

Figure 3-4: Location of the polder 34/2 Part

Road communication: Polder 34/2 Part is situated on the left bank of Kazibacha river. The Sunderban is very closer to this polder. The internal roads consist of about 35 km of bituminous road, 58 km of brick soling road and 78 km of earthen road.

Main crops: Local T-Aman and vegetable are the main field crop while 20 – 40 % of the households have the practice of pond fisheries but about 70% households are involved with rice-fish culture. On the

other hand, livestock rearing (cattle 36.6% HH; goat – 20.5% HH; poultry – 64.6%HH; duck-51.9 HH; & Goose-3.4% HH) is also a main economic activity.

Cropping pattern: Boro (HYV) -Fallow -T. Aman, Boro -T. Aus -T. Aman, Rabi crops -Fallow -T. Aman Vegetables -Vegetables – Vegetables, Fallow - Sesame -T. Aman, Fallow -Vegetables -T. Aman, Fallow - Fisheries -T. Aman, Fallow -Fallow -T. Aman, Mixed culture (fisheries + paddy)

Cropping intensity: Cropping intensity is 207%

Vulnerability to natural calamities: Tropical cyclone, salinity intrusion, river bank erosion, water logging, and thunderstorm are the main natural calamities.

3.5 Polder 55/2A

Time of construction: This Polder was constructed during the Early Implementation Project from 1988-89 to 1993-94.

Location: This polder covers Kamlapur union of Patuakhali sadar upazila; Adabaria and Nawmala unions in Bauphal upazila; Bakulbaria union in Galachipa upazila and Betagi-Sankipur union in Dasmina upazila. This polder is surrounded by Bhuria river, Joinkati river, Kalagachia and Baloikati river.

Polder boundary: 45 km

Total no of mouzas: 33

Total polder area: 7,166 ha

Total no of HHs: 13,966

Total no of catchments: 13

Total cultivable land: 5,570 ha (high land 25%; medium high land 60%, low land 15%)

Population: 69,130; male-33,504, female-35,625

Major occupations: Agriculture, agricultural labour and services

Wealth categories: Rich (11%), middle class (24%), poor (65%)

Literacy rate: 68%

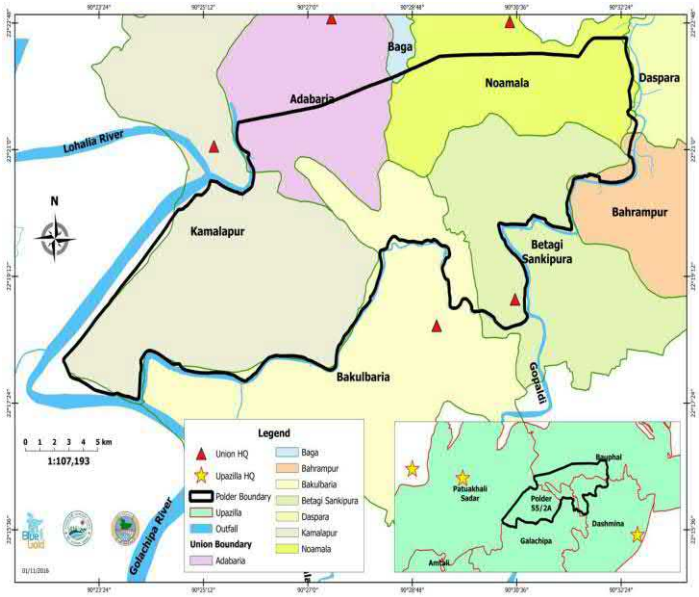

Figure 3-5: Location of the polder 55/2

Road communication: The greatest part of the internal road network is kaacha (earth made) road. During monsoon it is difficult to communicate through earthen roads inside the polder due to heavy mud formation. About 54 km road is Pacca out of 250 km road of this polder.

Main crops: T-Aman, Mung bean, pulses and ground nut are the main field crop while 50-60% of the households have pond fisheries and livestock rearing (cattle 40% HH, buffalo– 10% HH, poultry – 80-90% HH) as main economic activities.

Cropping pattern: Main cropping pattern are Mungbean – Fallow-T. Aman, Fallow-Fallow-T.Aman, Ground nut-Fallow-T.Aman and Grass Pea- Fallow —T. Aman.

Cropping intensity: Cropping intensity is 215%

Vulnerability to natural calamities: Tropical cyclones, water logging, tidal and river flooding and salinity intrusion are very common phenomena in the polder area.

3.6 Polder 47/4

Time of construction: Polder 47/4 is managed by the Bangladesh Water Development Board (BWDB) and was constructed during the year 1961-1964.

Location: It is located in Dhulasar union (part), Mithaganj Union (part), Dalbuganj Union (part) and Baliatali union under Kalapara upazila, Patuakhali district. It is surrounded by Andharmanik river in the north, Hauder Varani river in the north-west, Dhulasar and Char Chapli river in the south, Rabnabad and Tiakhali river in the east and Pakhyapara river in the west.

Polder boundary: 59 km

Total no of mouzas: 12

Total polder area: 6600 ha

Total no of HHs: 11853

Total no of catchments: 27

Total cultivable land: 5,940 ha (high land 25%; medium high land 60%, low land 15%)

Population: 31,520; male-15,270, Female-16,250

Major occupations: Agriculture (70%), fisherman (15%), business (5%)and others 10%

Wealth categories: Rich (10%), Middle class (40%), Poor (50%)

Literacy rate: 65%

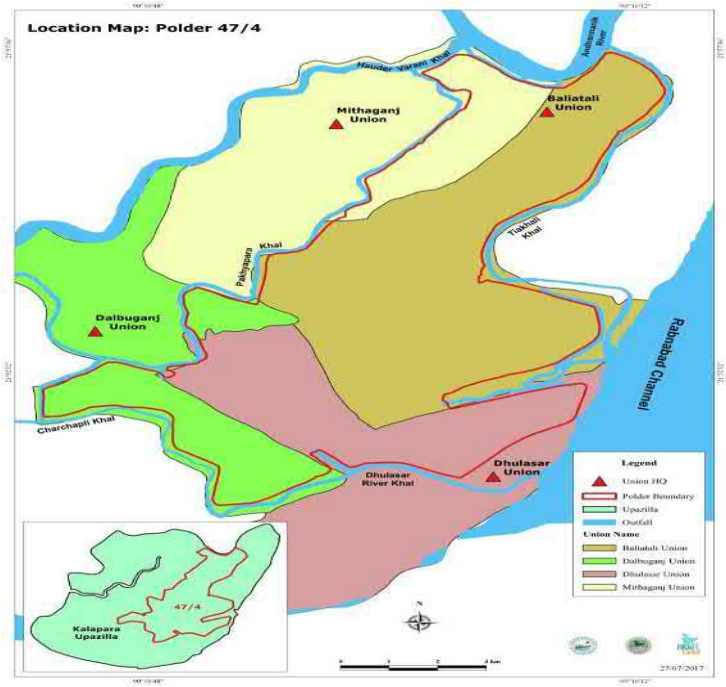

Figure 3-6: Location of the polder 47/4

Road communication: The polder is very close to the Bay of Bengal. The internal roads consist of about 30 km of bituminous road, 5 km of brick soling road and 50 km of earthen road.

Main crops: T-Aman, Mung bean, and Grass Pea are the main field crops. 75% of the households have pond fisheries of which 40% cultivate fish for whole year while other practice seasonal fisheries. Livestock rearing (cattle 38% HH, goat – 12% HH, poultry – 80%HH, duck-60%.) also a main economic activity.

Cropping pattern: Main cropping pattern are Fallow-Fallow-T. Aman, Fallow-Fallow-T. Aman, Grass Pea –Fallow – T. Aman, Falon –Fallow – T. Aman, Mung bean-Fallow-T. Aman, Chilli-Fallow – T. Aman, Ground nuts-Fallow-T.Aman, Sweet Potato-Fallow-T. Aman, and Fallow-Aus-T. Aman

Cropping intensity: Cropping intensity is 180%

Vulnerability to natural calamities: Tropical cyclones accompanied by storm surges comes first while water logging considered as second hazards according to consideration of severity of effects and frequency of problem occur.

3.7 Polder 2 & 2 Ext.

Time of construction: The polder was constructed in 1963-65 by the Bangladesh Water Development Board (BWDB).

Location: Polder 2 and 2 Ext. is located at Budhhata and Kulla unions under Assasuni upazilla and Brahmarajpur, Fingri, Dhulihar, Labsa unions and Satkhira pourashava under Satkhira sadar upazilla, Satkhira district with administrative jurisdiction under the Satkhira O&M Division – 2, BWDB, Satkhira.

Polder boundary: 43.5 km

Total no of mouzas: 50

Total polder area: 12600 ha

Total no of HHs: 28129

Total no of catchments: 6

Total cultivable land: 11296 ha (high land 10%; medium-high land 46%, and low land 44%)

Population: 148397

Major occupations: Agriculture (48%), agricultural labour (22%), business (20%) and others (10%)

Wealth categories: Rich (12%), middle class (32%), poor (56%)

Literacy rate: 54.28%

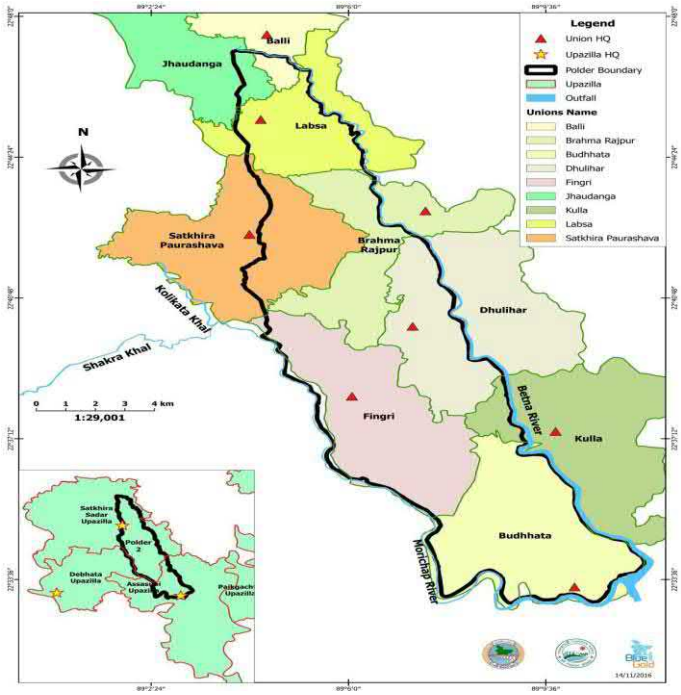

Figure 3-7: Location of the polder 2 & 2 Ext.

Road communication: Internal road communication facilities are good. In the polder there are 60 km pacca road in which 23 km (Satkhira-Assasuni road), 18 km (Budhata- Bangdaha-Fingri-Satkhira road) and 4 km (Satkhira-Benerpota-Khulna road) pacca road. 25 km are herring bone bound (brick made) and 20 km kaacha (earth made) road. Besides, well communication facilities are connected with this polder in-between district head quater and nearest upazilla (Assasuni) but in polder area paved road condition not so good in rainy season.

Main crops: T-aman, Boro Rice and mango are the main field crop while 30-32% of the households are involved in fish culture. Livestock rearing also very (Cattle: 80-85 % Poultry: 90-93%, Goat: 50-55 % and Sheep: 5-10%) common economic activities.

Cropping pattern: The main cropping pattern are Fallow-T-Aman-Boro, Fallow-T-Aus-Boro,

T-Aus- T-Aman-Boro and Fallow – T. Aman – Vegetables

Cropping intensity: Cropping intensity is 158%

Vulnerability to natural calamities: Water logging and salinity are the main natural calamities while cyclone, tidal surge and river bank erosion are also threatening for the livelihood of the people of this polder.

4. DEMOGRAPHIC INFORMATION OF SURVEY HOUSEHOLDS

The profile households give information about the demographic status of the rural coastal households. This section describes the number of households of baseline study by polder and household category, socioeconomic status of the households, including the demographic composition, the gender of the household head, the level of education of the household head and the school enrollment of children of the sample households. This chapter also focuses on the dwelling, access to water and sanitation and ownership of business of the households.

4.1 Demographic Characteristics

Baseline Study-Phase II includes basic demographic information on 3651 households and 16795 individuals. The proportion of individuals in the sample that are male is 52%, and that are female is 48%. Figure 4-1 shows that overall, the average family size is 4.6 in the study areas, only the polder 55/2A has a higher family size with 5.1. However, there is a significant difference in the average size of household among the different types holding households. The figure shows as well-being improves from landless to large farmer, household sizes become significantly larger. The landless households have an average household size 4.4 compared to 6.0 for the large farmer households.

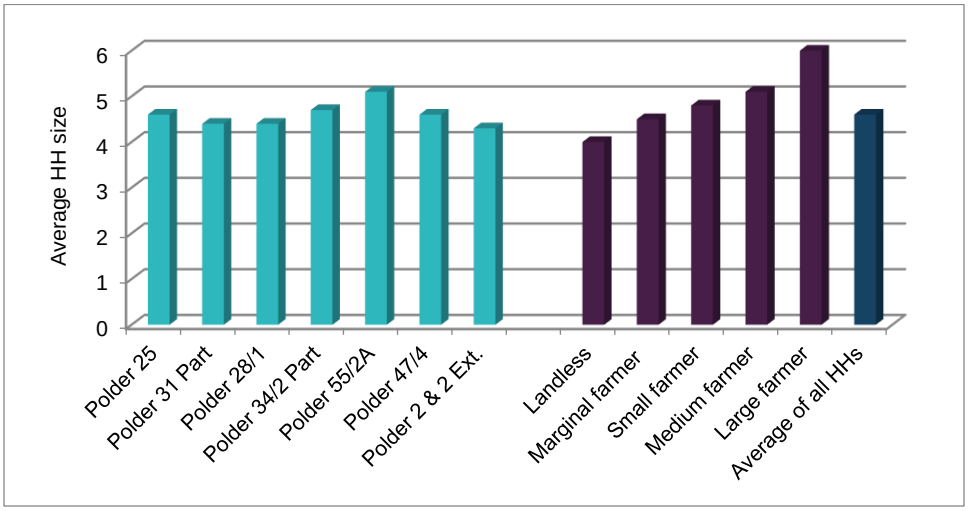

Figure 4-1: Average household size, by polder and household category (N=3651)

Figure 4-1 shows the average size of households, an average number of male, female and children within the households and the percentage of female-headed households in the studied polders. The average number of male and female members within the households is very similar while all the polders have a slightly higher average number of male members (overall 2.4) than the female members (2.2) while the polder 31 part and 28/1 both have an equal average number of male and female (2.2). All the polders show the average number of children is around 1 while in the polder 28/1 has a lower average with 0.7%

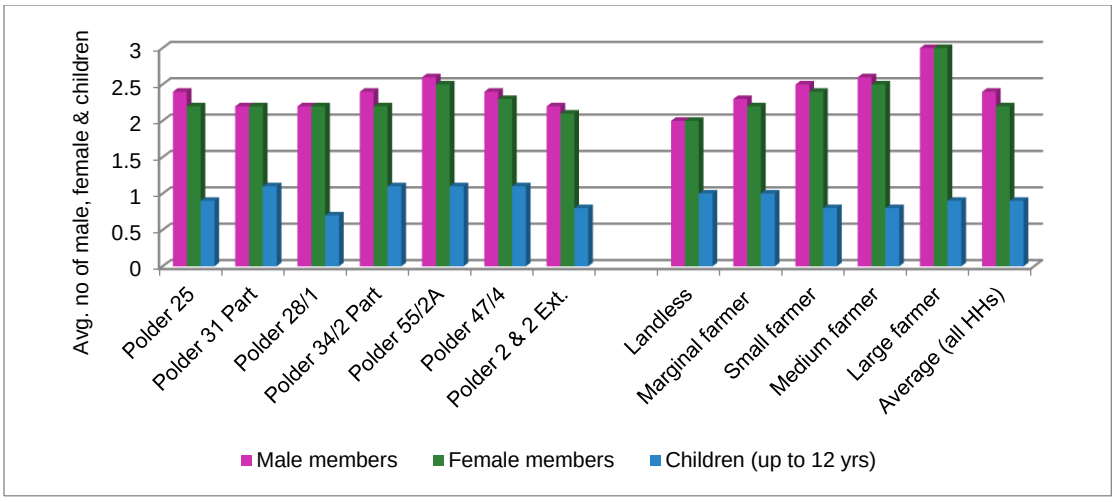

Figure 4-2: Average number of male, female members and children by polder and HH category (N=3651)

The Figure 4-2 shows variation in terms of female-headed households in the study areas and household categories. Overall only 3.6% households are headed by the female. A comparatively higher percentage of female-headed households are living in the polder 31 Part with 6.5% followed by the polder 34/2 with 4.9% and the polder 55/2A with 4.7% respectively while only 2.1 % of the surveyed households are female-headed in the polder 25.

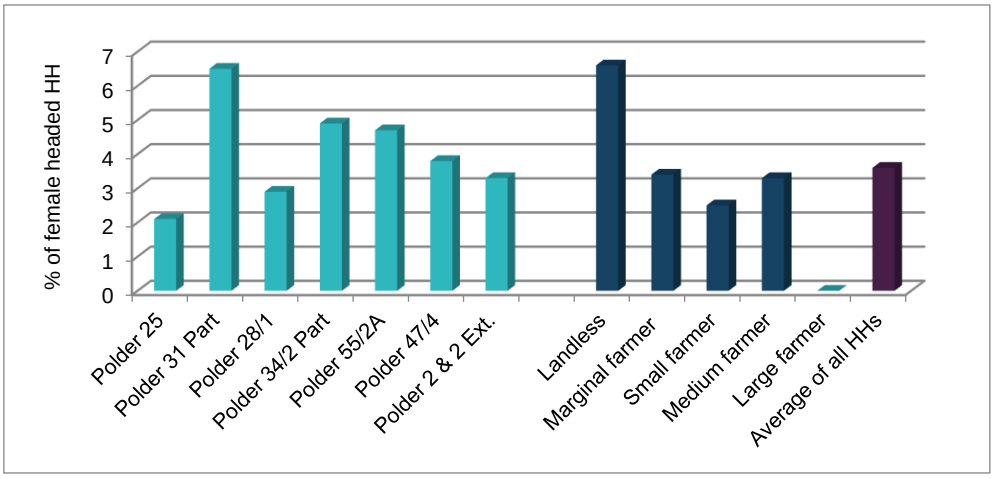

Figure 4-3: Level (%) of female headed HH by polder and household category

Female-headed households are more prevalent (6.6%) in the landless household category followed by the marginal farmer with 3.4% while none of the large farm households is the female headed household. This could be due to the fact that husbands of many women in the poorer group in the rural areas work and reside outside their villages within Bangladesh or abroad, especially in the coastal areas where agricultural wage labour works are not available particularly in Rabi and Kharif -1 season. Such households are classified as female-headed by definition.

4.2 Educational Status of the Households

Table 4-1 gives an overview of the educational status of the household heads of all the polders. There is considerable variation in the level of education of the HH heads across the polders. In the polder areas, the rate of no schooling (Illiterate and can sign only) of the household heads is the lowest in the polder 25 and the highest in the polder 31 Part. Among them overall 9.2% are illiterate. Overall, 28% of the household heads completed primary level education. Polders 55/2A and polder 47/4 have a higher percentage of primary attainment (around 35%) while polders 25 and polder 31 Part have comparatively lower percentage of primary attainment (around 25%). In total 21.5% household heads have a secondary level education while only 6.5% completed SSC level. However, proportions of the household heads having completion of HSC or graduate and above level are quite low (3.9% and 3.7% respectively).

Again, the variation of the level of education among different types of households is visible in the study areas (see Annex-1 Table 1). The educational attainment in terms of the level of education of household head is positively correlated with the ownership of the land size. The percentages of completion of secondary, SSC and HSC level education are higher for the medium and large farm households. From large farm households, 28.8%, 25.0%, 13.3% and 13.5% household heads have completed their secondary, SSC, HSC and graduate level education respectively. Completion of graduation and above is highest in the medium farm households with 15.7%. No schooling (illiterate and can sign only) is more prevalent in the landless and marginal farm households. The completion of SSC, HSC or graduate level is very less likely among these two types of households.

Table 4-1: Level (%) of education of HH head by polder

Level of education	Polder 25 (N=755)	Polder 31 Part (N =169)	Polder 28/1 (N =242)	Polder 34/2 part (N =448)	Polder 55/2A (N =558)	Polder 47/4 (N =474)	Polder 2 & 2 Ext. (N =1005)	Average of all HHs (N =3651)
Illiterate	8.9	12.4	10.5	10.5	7.9	5.7	11.6	9.2
Can sign only	21.5	32.5	25.0	25.0	24.0	28.3	26.7	25.1
Primary	25.8	24.3	27.9	27.9	33.7	34.6	26.7	28.1
Secondary	24.6	21.3	21.2	21.2	21.0	18.4	20.7	21.5
SSC	7.9	4.7	5.4	5.4	6.6	4.9	5.5	6.5
HSC	4.4	2.4	4.9	4.9	3.6	3.2	3.0	3.9
Graduate and above	4.2	2.4	3.1	3.1	2.7	3.2	3.3	3.7
Others	2.7	0.0	2.0	2.0	0.5	1.7	2.5	2.0
Total	100	100	100	100	100	100	100	100

Table 4-1 shows that a considerable percentage of the school enrolment of children is visible across the polders and among all types of households while it was highest (96.7%) in the medium farm households compared to lowest (91.3%) in the large farm households. Across the polders, the proportion of school-age children who do not go to school is lowest in polder 25 (2.6 %) that is the closest polder near to Khulna city and highest in polder 47/4 (9.8 %). The percentage of households with primary and secondary school-age children who do not send their children to school declines rapidly due to the different initiatives of government and NGOs.

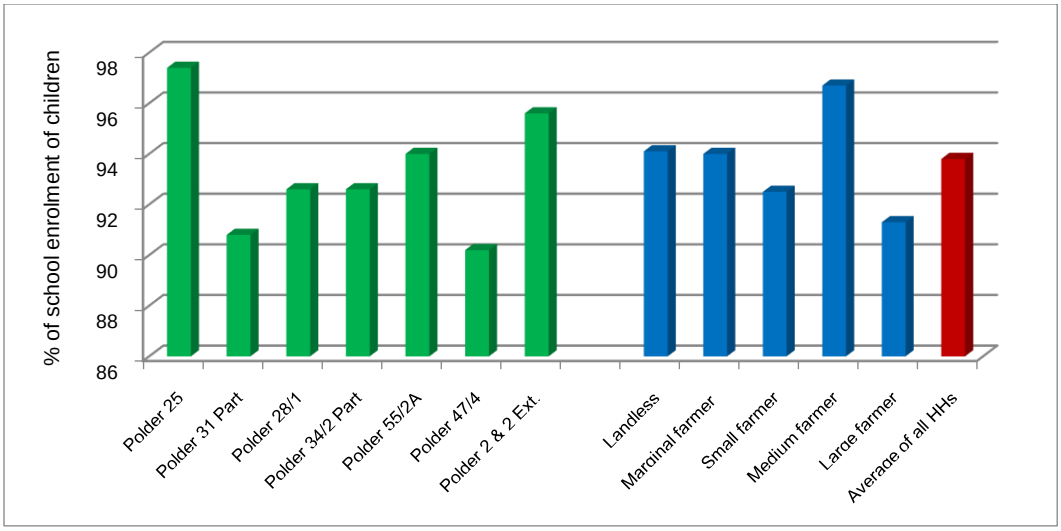

Figure 4-4: Level (%) of school enrolment of children (6-12 yrs.) by polder and HH category (N=3651)

4.3 Housing

Figure 4-5 and 4-6 explore two characteristics of the houses of study areas –materials used for roof and wall construction.

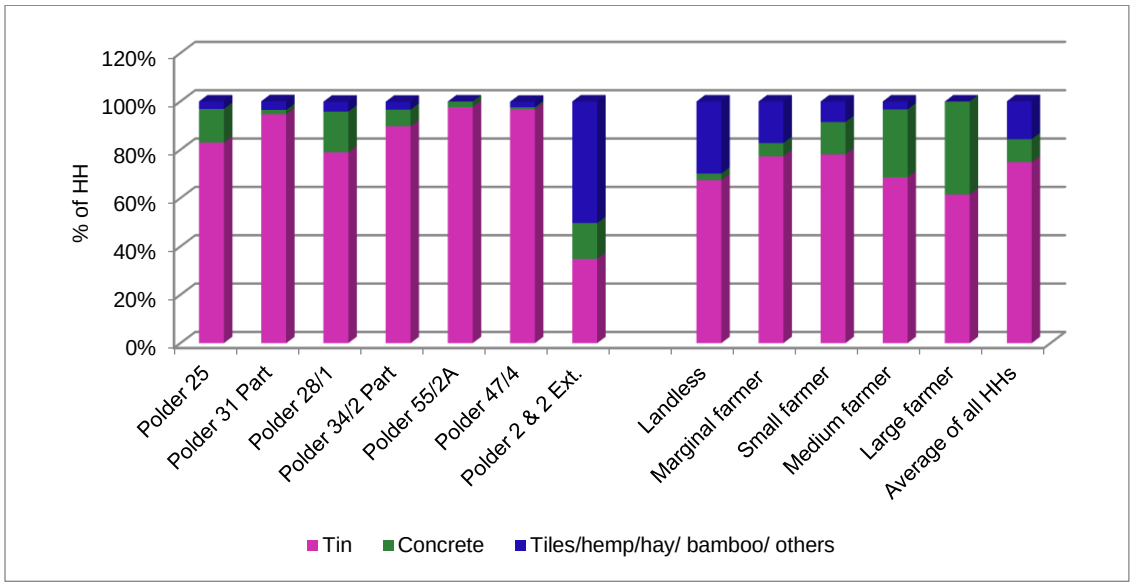

Figure 4-5: Level (%) of HHs reporting of the materials of roof by polder and HH category

Figure 4-5 shows that the majority of the households (74.9%) in the polders live in dwelling units roofed with tin with proportions ranging from 34.9% in the polder 2 and 2 Ext. to 97.7% in the polder 55/2A. About 10% households live in houses that are roofed concrete while around 16% households living in houses roofed with tiles/ hemp/hay/bamboo/others. The proportion of households living in dwelling units in which tiles/ hemp/hay/bamboo/others is used as the roof material is considerably higher (50.3%) in the polder 2 and 2 ext. while polder 55/2A has no dwelling units roofed with tiles/ hemp/hay/bamboo/others.

The data shows a widespread use of tin for the roof, ranging from 61.5% for the large farm households to 74.9% households for the small farm households. The use of concrete as roof material steady increases with the increase of land ownership where more than 38.5% of large farmer households have concrete made roof compared to 2.8% and 5.5% for the landless and marginal farmer households respectively. Other than tin, the use of tali as roof material is prevalence among the landless and marginal farmer households with 25.3% and 15.7% respectively

Figure 4-6 indicates that more than half of the households (57%) live in dwelling units whose outer walls are mainly constructed with either mud brick or CI sheet or wood while around one-third of the households (34.1%) occupy dwelling units with outer walls made of concrete. Polder 47/4 has the highest proportion of households (95.6%) occupying houses with the outer walls constructed with either mud brick or CI sheet or wood and polder 25 having the least (38.9%). Polder 2 and 2 Ext. has the highest proportion of households (59.6%) living in houses whose outer wall is made of mud concrete followed by the polder 25 (55.2%). Overall, 8.9% households having outer wall is made of hemp / hay /bamboo/others, however, a significant proportion of households in polder 34/2 Part (27.7%) and the polder 31 Part (22.5%) occupy dwelling units with outer walls made of hemp/ hay/ bamboo / others compared to the other polders.

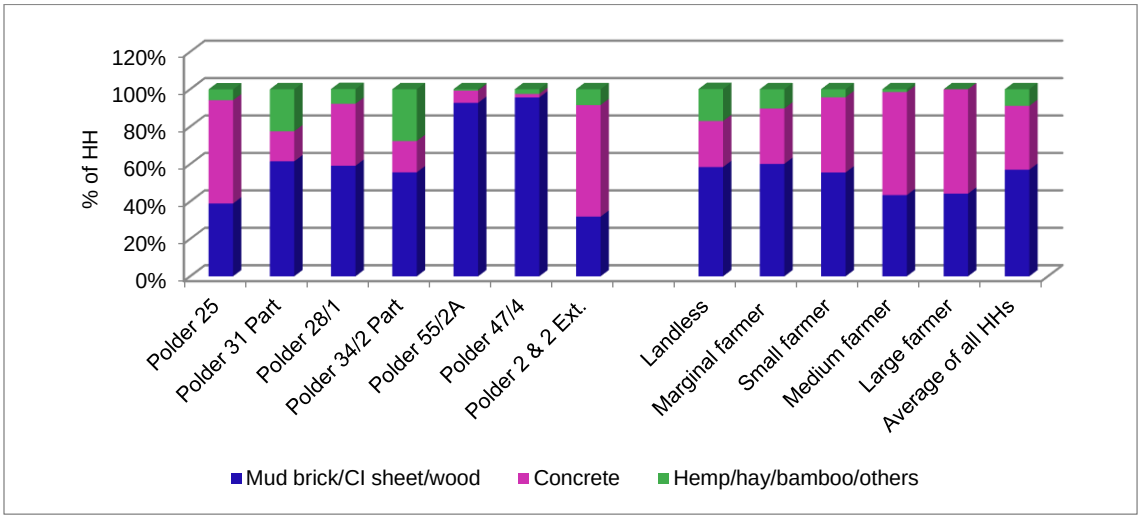

Figure 4-6: Level (%) of HHs reporting of the materials of the wall by polder and HH category

Just like the roof material mud brick, C.I. sheet and wood are mostly used as primary wall material of the landless, marginal and small farm households compared to the medium and large farm households. The use of concrete wall is more prevalent among the medium and large farm households with more than 55% of the households while the percentage is less than half for the landless households. It is worthy to mention that around 17% of the landless and 10% of the marginal farm households use hemp or hey or bamboo for the wall of their households.

4.4 Water and Sanitation

Figure 4-7 explores some issues that are related to hygiene and health of the people of the surveyed polders. Access to safe drinking water is essential for good hygiene and health. In the surveyed polders, about 88% of households have access to arsenic free safe drinking water. Polder 25 has the highest proportion of households (99.1%) have access to safe drinking water while the polder 2 and 2 Ext. has the least (61%).

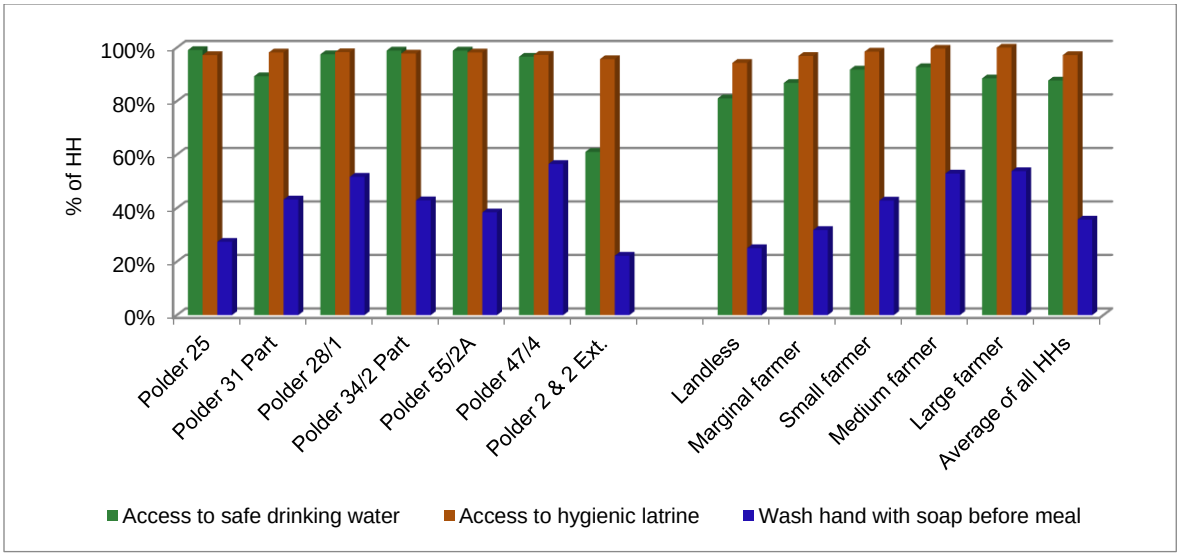

Figure 4-7: Level (%) of HHs having access to safe drinking water and sanitation by polder and HH category (N=3651)

A considerable variation is observed among the household categories regarding these issues. The access to safe water rises with the increase of land ownership ranging from 81% for the landless households to 92% for the medium farm households while it drops to 88.5% for the large farm households. It is noteworthy that, the access to safe drinking water drops for the large land households as a significant percentage of households from this category has been selected from polder 2 and 2 ext. where the lowest percentage of the households (61%) having access to safe drinking water due to widespread prevalence of arsenic.

Approximately 97% percent of the households in the survey areas have access to some kind of hygienic toilet facilities. The access to hygienic toilet facility is the highest (98.3%) in the polder 28/1 and the lowest (95.7%)in the polder 2 and 2 Ext. Irrespective to the categories of the households, most of the households have access to hygienic latrine where almost 100% of the medium and large farm households confirm of having access to the hygienic latrine.

However, the habit of washing hand is significantly lower compared to having access to safe drinking water and hygienic toilet facilities. Data shows that only around one-third households in the polders have the practice of washing hand with soap before a meal with proportions ranging from 22.2 % in the polder 2 and 2 Ext. to 56.5 % in the polder 47/4. The habit of washing hand before meal upsurges with the well-off categories, where more than 50% of the households from the medium and large farm households practice this while the percentage is almost half of the landless households.

4.5 Business Involvement

Figure 4-8 explores the engagement of the households in business by polder and household category. Data indicates that around one-fourth of the households have business in the study areas. Among them, households from polder 25, polder 31 Part and polder 34/2 Part are slightly more involved in business with more than 26% households compared to the polder 28/1, 55/2A and 47/4 with around 20% households.

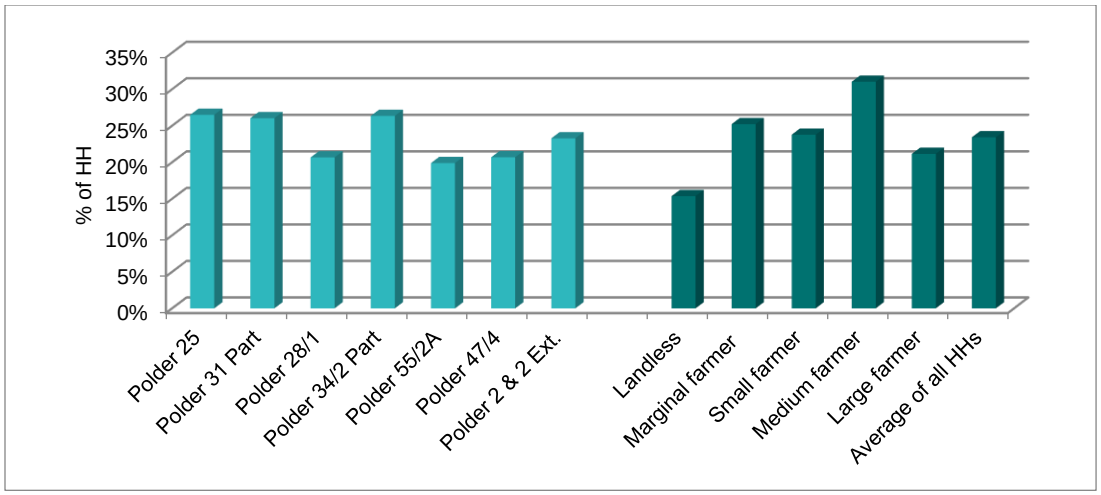

Figure 4-8: Level (%) of HHs reporting of having business by polders and HH category

The figure also indicates 23.4% of the households are involved in business. The medium farmer households have the highest percentage (31.02%) of being involved in business and the rate marks the lowest (15.36%) for the landless household. The marginal, small and large farmer households show a similar percentage of involvement in business with the percentages of 25.2%, 23.7%, and 21.2% respectively.

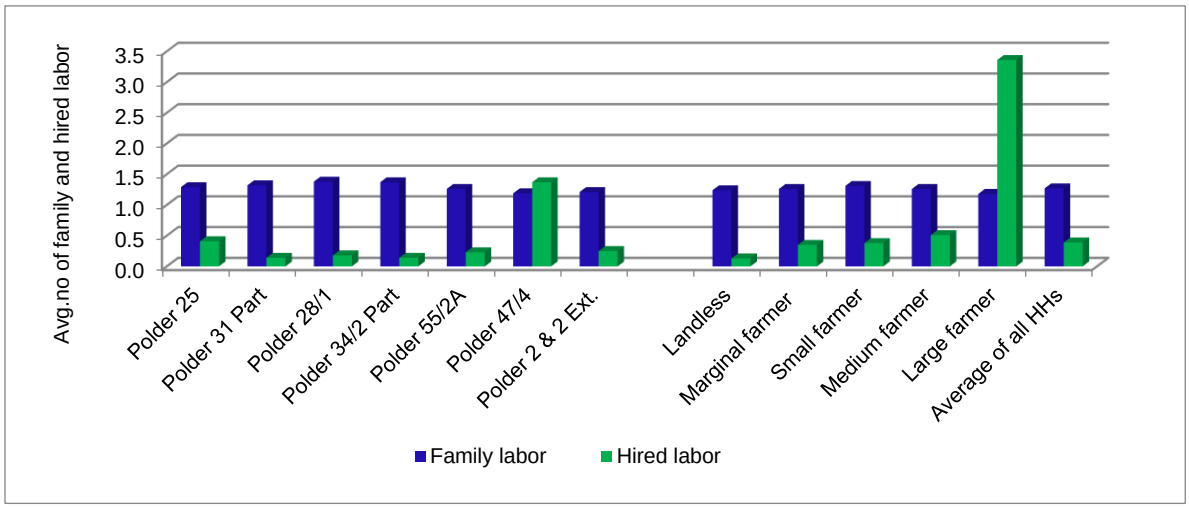

Figure 4-7: Average number of family and hired labour engagement in business by polder and HH category

Figure 4-9 illustrates the ownership of business and the engagement of family and hired labour in that businesses on the basis of the different land ownership household categories and polder. The households report that they mainly depend on family labour where the average employment generation is 1.27 for the family labour while 0.39 for the hired labour. Only the polder 47/4 reports of 1.37 hired labour for their business.

For family labour, the average number varies a little where the average number of labour rates 1.2 for all household categories. Family labours (1.31) are more used in business for the small farmer households followed by the medium farmer households with 1.26. A gradual increasing trend is observed in different land own categories from landless to the large landholding households for a number of hired labour engagement in business, where the rate is minimum (0.13) for the landless and maximum (3.36%) for large farmer households.

4.6 Zone Wise Demographic Characteristics

As mentioned earlier, these seven polders of baseline study covered three districts (Patuakhali, Khulna and Sathkhira) that are also called as zone in BGP. So, the findings are also analysed as zone, table 4.2 shows zone wise picture of demographic characteristics.

Table 4-2: Some demographic characteristics by zone

	Patuakhali zone (N=1032)	Khulna zone (N=1614)	Satkhira zone (N=1005)	Average of all HHs (N=3651)
Average HH size	4.9	4.6	4.3	4.6
Average no of male member	2.5	2.4	2.2	2.4
Average no of female member	2.4	2.2	2.1	2.2
Average no of children	1.1	0.9	0.8	0.9
Female headed HH (% of HH)	4.3	3.5	3.3	3.6
School enrolment of children (% of HH)	92.3	94.7	95.6	93.8
Have access to safe drinking water (% of HH)	97.8	97.8	61	87.7
Have access to hygienic toilet (% of HH)	97.8	97.6	95.7	97.2
Wash hand with shop before a meal (% of HH)	46.7	37	22.2	35.7
Having business (% of HH)	20.3	25.5	23.3	23.4

Table 4-2 shows some selective indicators of the demographic characteristics of the surveyed households by zone. Among the three zones (Patuakhali, Khulna and Satkhira), Patuakhali has a slightly higher average size of household compared to other regions with a higher average number of male and female member and number of children. In addition, female-headed households are more prevalent in Patuakhali zone. On the other hand, the school enrolment for the children is reported comparatively lower in Patuakhali zone with around 92% while the percentages are almost 95% for Khulna and Satkhira zone. Around 98% households of Patuakhali and Khulna zone have access to safe drinking water and hygienic latrine while having access to safe drinking water was significantly lower in Satkhira zone due to the widespread prevalence of arsenic in the groundwater in this region. Moreover, only 22% of households of Satkhira zone have the habit of washing hand before a meal while the percentage is more than double in Patukhali zone but still more than half of the households do not have this habit. Having engagement in business is more prevalent in Khulna zone with around 25% households compared to Patuakhali and Satkhira zone with 20% and 23% respectively.

5. AN OVERVIEW OF LAND HOLDING PATTERN AND CROP PRODUCTION

Coastal areas have a large number of people, who mainly depend on agriculture for their livelihoods and likely to be vulnerable to the climate variability. In this changing climate condition, a sustainable livelihood of these people requires initiatives to ensure food security and income generating activities. Strengthening agricultural production through new technology is a fundamental means of improving incomes and food security for these coastal people. The household survey included a series of questions designed to assess patterns of ownership of to land, crop production and yield, marketing of crops, practice of homestead vegetable and fruit cultivation and commercial fruit cultivation.

5.1 Land Holding Pattern

The figure 5-1 and 5-2 explain the landholding patterns that include homestead and cultivable land among the different categories of farmers and in the different study polders. The land distribution was highly skewed among the different categories of households but was not significantly varied among the polders. Among 3651 households, the total average of the homestead and cultivable land area in the study polders were 18.6 decimal and 70.3 decimal respectively. The average of homestead land area rated the maximum in the polder 47/4 with around 29 decimal, followed by the polder 55/2A with 22 decimals. Owing to the land area for the homestead was almost similar in the polder 31 Part, polder 28/1, polder 34/2A Part and the minimum area was recorded in the polder 25 in the Khulna zone and in the polder 2 and 2 Ext. of Sathkhira zone with around 15 decimals.

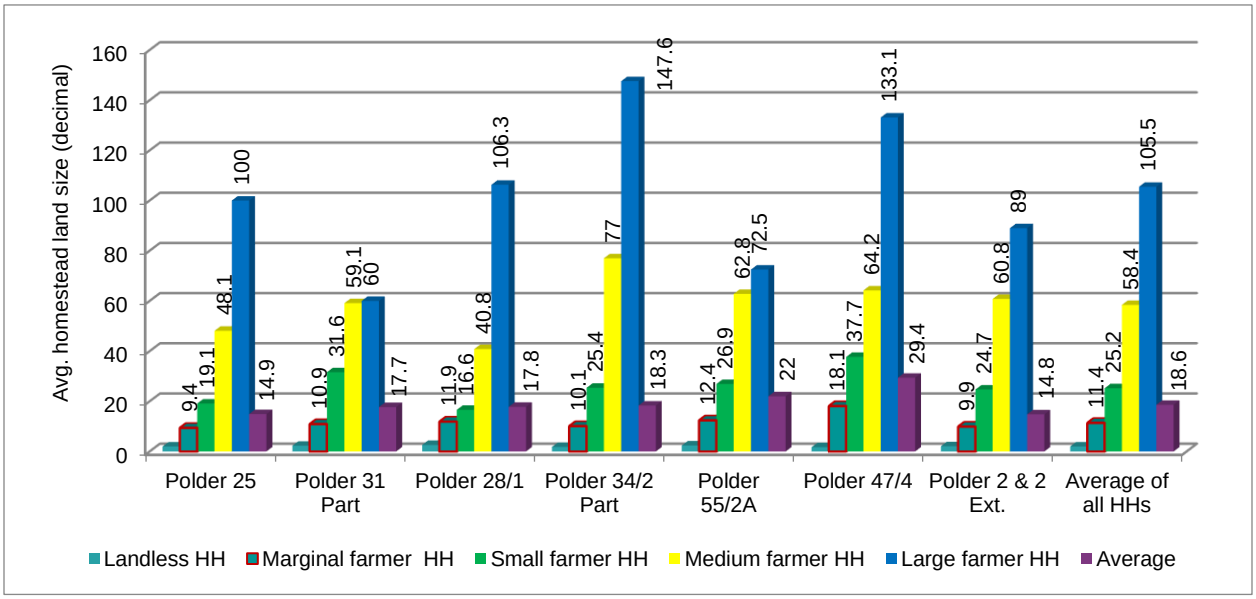

Figure 5-1: Average homestead land size (decimal) by polder and HH category (N=3651)

A total of 70.3 decimal of average cultivable land was calculated in the study areas. The maximum amount of cultivable land was observed in the polder 47/4 (93 decimal) and the polder 55/2A (nearly 79 decimal) of Patuakhali zone and in the polder 28/1 (89 decimal) of Khulna zone. The minimum average of cultivable land was recorded in polder 31 part (58 decimal) of Khulna zone and polder 2 and 2 Ext. (60 decimal) of Sathkhira zone.

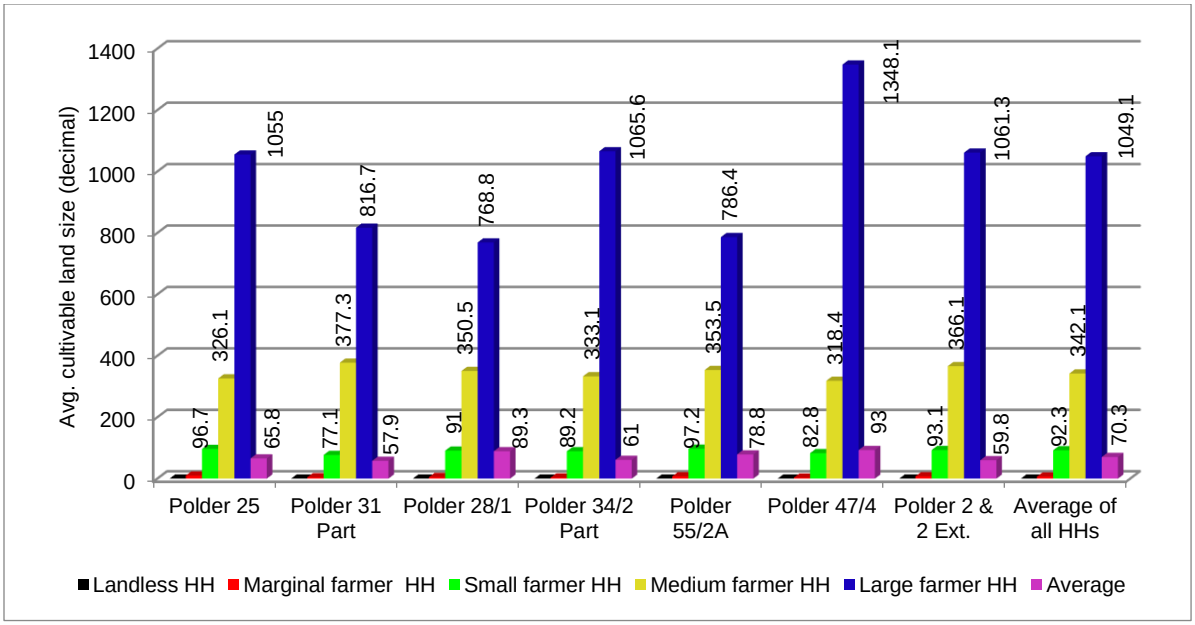

Figure 5-2: Average cultivable land size (decimal) by polder and HH category (N=3651)

There were significant differences among the large and other types of households in terms of the average homestead and agricultural land ownership in each polder. Large farmer households have got larger average homestead and cultivable land compared to the different classes of households. The average of homestead land of all the polders rated 2 decimals for landless households. The ownership of homestead land of this category was not varied significantly among the polders ranging from 1.7 decimal in the polder 47/4 to 2.6 decimal in polder 28/1. It is noteworthy that households of this category had no cultivable land of their own.

For the marginal farmer the average homestead land was more than five times compared to the landless, however, the average cultivable land for this category of households was only around 7 decimals. The average homestead land for small farmer households was around 25 decimals while it was more than double for medium farmer households and four times more for the large farmer households compared to the small farmer households. In term of cultivable land, the differences were more significant, the average cultivable land for the small farm household was nearly 92 decimals whereas the medium farmer households owned three times more and the large farmer households possessed more than 10 times compared to them.

Table 5-1: Average size of homestead and cultivable land per household by zone

	Patuakhali zone	Khulna zone	Satkhira zone	Average of all HHs
Homestead land (decimal)	25.4	16.6	14.8	18.6
Cultivable land (decimal)	85.3	67.2	59.8	70.3

Table 5-1 explores zone wise average size of homestead and cultivable land. The data shows that among the three zones, households of Patuakhali zone owned comparatively more land for homestead and crop cultivation. On the other hand, the minimum average of homestead and cultivable land was recorded in Satkhira zone.

5.2 Crop Production in Kharif-II/*Aman* Season

5.2.1 Paddy production in Kharif-II /Aman season

Table 5-2: Level (%) of households, use of land and yield of paddy in Kharif-II/*Aman* season by polder and HH category

Name of the Polder	Paddy land & yield in *Aman* season		
	% of HH	Total Land (ha)	Avg. yield (t/ha)
Polder 25	5.0	7.2	3.1
Polder 31 Part	40.2	35.2	3.4
Polder 28/1	40.9	47.2	1.8
Polder 34/2 Part	43.5	118.7	2.6
Polder 55/2A	65.2	253.4	2.6
Polder 47/4	68.6	399.6	3.6
Polder 2 & 2 Ext.	16.3	57.1	3.5
HH category			
Landless HH	13.8	54.6	3.3
Marginal farmer HH	28.7	270.7	3.0
Small farmer HH	50.5	348.7	2.9
Medium farmer HH	47.8	154.8	3.0
Large farmer HH	65.4	89.5	3.0
All HHs	34.3	918.4	3.0

Table 5-2 explains the land utilization and yield of paddy in the *Aman* season by the different polders and HH categories. A total 918.4 hector of the land area was utilized for paddy cultivation in Kharif-2 season (*Aman*) in the surveyed households and the area was highest among the three seasons, with the maximum area of land in the polder 47/4 followed by the polder 55/2A and polder 34/2 part. In total around 34% households reported that they practiced *Aman* season paddy and the average yield was 3.0 t/ha. It is noticeable that more than 65% of the households from the both polders (55/2A and 47/4) of Patuakhali zone, more than 40% households of three polders (31 Part, 28/1 and 34/2 Part) of Khulna zone while just over 16% of the households in polder 2 and 2 Ext in Sathkhira zone practiced this. The practice of *Aman* season paddy was very insignificant in the polder 25 in Khulna zone. Similarly, the practice, the yield was varied significantly among the polders ranging from 1.8 t/ha in the polder 28/1 to 3.6 t/ha in the polder 47/4.

In this season, around 50% of the small farmers and 29 % of the marginal farmers utilized the maximum land area for paddy cultivation with 348.7 ha and 270.7 ha respectively. 13% of landless farmers cultivated the minimum (54.6 ha) land area but they got the highest yield (3.3 t/ha). Around 48% of the medium and 65% of the large farmer cultivated *Aman* season paddy in the area of 154.8 ha and 89.5 ha respectively. This finding supports that large landholders are likely to share crop out or lease out their lands to the smallholders and the landless households.

Table 5-3: Land area, yield and price of different varieties of Kharif-II/*Aman* season paddy by polder

Name of the Polder	LV T-Aman		HYV T-Aman		Selling status	
	Total Land (ha	Avg. Yield (t/ha)	Total Land (ha)	Avg. Yield (t/ha)	Selling (% of HH)	Average price (Tk/maund)
Polder 25	1.8	2.0	5.4	3.4	10.5	720
Polder 31 Part	9.5	2.5	25.6	3.7	38.2	768
Polder 28/1	41.2	1.7	6.0	2.7	20.2	818
Polder 34/2 Part	112.6	2.5	6.1	3.8	39.0	850
Polder 55/2A	177.4	2.3	76.0	3.4	48.4	656
Polder 47/4	32.9	2.5	366.7	3.7	86.2	714
Polder 2 and 2 Ext.	2.6	2.0	54.5	3.6	53.7	708
All HHs	378.1	2.3	540.3	3.6	53.5	718

Table 5-3 represents the land use, yield and the selling status of *Aman* paddy in the different polders. It is important to note that the households of the polder 25 and 2 and 2 Ext. were less likely to cultivate the *Aman* paddy as they were more tend to cultivate *Boro* paddy with their *Gher* based agricultural system. Local variety (LV) of T-*Aman* was cultivated in a total land area of 378.1 ha under the seven different polders and the average yield was 2.3 t/ha. The highest (177.4 h) area of land was used in the polder 55/2A under Patuakhali zone with the yield 2.3 t/ha and the lowest (1.8 h) amount of land for the cultivation was observed in the Polder 25 which was situated in Khulna zone. LV T-Aman yield rated highest (2.5t/h) in the polder 31 Part and polder 34/2A. The lowest (1.7 t/ha) yield was observed in the polder 28/1.

For high yielding variety (HYV) T-Aman cultivation, an average of 540.3 ha land was utilized with the yield 3.6 t/ha. In the polder 47/4 under Patuakhali zone, the land utilization was significantly high (366.7 ha) compared to the other polders. Yield was the highest (3.8 t/ha) in the polder 34/2 Part and the lowest (2.7 t/ha) in the polder 28/1. On an average 53% of the households reported of selling this season with an average price of 718 Tk/maund. The highest percentage of households (86.2%) reported of selling in the polder 47/4 while the lowest percentage was 10.5% in the polder 25. Polder 34/2 Part got the highest selling price (850 Tk/maund) whereas the polder 2 and 2 Ext. reported of the lowest (708 Tk/maund).

When data was analysed according to the household category, the findings show that the small landholder households were more tend to cultivate the Aman season paddy (both the LV and HYV variety) (see Annex-1 Table 2). They cultivated the highest area of land with 164.8 ha for LV T-Aman and 183.9 ha for the HYV T-Aman cultivation while the landless farmers cultivated only 14.9 ha and 39.74 ha respectively. However, the yield was almost same for both varieties of Aman paddy for all the categories of the households. The percentage of households was highest (85.3%) for the larger farmers regarding the selling of Aman paddy with the highest average price 740 Tk/maund. The selling price was slowly increased with the increase of the ownership of land.

Table 5-4: Land utilization and yield of Kharif-II/ *Aman* paddy by zone

	Patuakhali zone	Khulna zone	Sathkhira zone	Total
HHs practiced Aman paddy (% of HH)	66.8	24.8	16.3	34.3
Total Land area under T- Aman paddy (ha)	653	208.3	57.1	918.4
Average yield (t/ha)	3.1	2.8	3.5	3
Total Land area under LV T- Aman paddy (ha)	210.3	165.1	2.6	378
Average yield of LV T- Aman paddy (t/ha)	2.3	2.4	2	2.3
Total Land area under HYV T- Aman paddy (ha)	442.7	43.1	54.5	540.3
Average yield of HYV T- Aman paddy (t/ha)	3.5	3.5	3.6	3.6

Table 5-4 explores zone wise Aman paddy cultivation senario. Land utilization and percentage of households practiced of Aman paddy cultivation reported the highest in Patuakhali zone followed by Khulna zone. Some of the polders of Khulna and Satkhira zone have gher based cropping system where the households produced either shrimp or prawn in their gher in Kharif-II/Aman season. Though the practice of Aman paddy cultivation was lowest in Satkhira zone, the maximum yield was reported here. Findings show that households of Patuakhali and Satkhira zone were more tended to cultivate HYV T-Aman while households of Khulna were more likely to cultivate LV T-Aman. It is noticeable that the yield of LV T-Aman was almost similar in Patuakhali and Khulna zone while reported slightly lower in Satkhira zone. On the other hand, the yield of HYV T-Aman was higher compared to LV T-Aman but it was not varied among three zones.

5.2.2 Other Crops Production in Kharif-II Season

Table 5-5: Level (%) of households, land area, and income from vegetable in Kharif-II/*Aman* season by polder

Name of the Polder	% of HH	Total Land (ha)	Avg. income/HH (BDT)
Polder 25	1.3	1.2	15000
Polder 31 Part	0.5	0.1	3000
Polder 28/1	1.2	0.3	8500
Polder 34/2 part	1.1	0.7	21800
Polder 55/2A	0.2	0.04	4000
Polder 47/4	1.5	1.0	16857
Polder 2 & 2 Ext.	2.1	3.0	21477
Total	1.3	6.2	18000

Table 5-5 explains the percentage of households, land coverage, and income from the commercial vegetable cultivation as a field crop in the *Kharif-II* season in the different polders. It is noteworthy that other than *Aman* paddy only vegetable cultivation was reported in *Kharif-II/Aman* season. Both the percentage of households and the area coverage for the cultivation of vegetable in the *Kharif-II* season were very limited. A total just over 1% of the households cultivated vegetable

in this season but varied across the polder ranging from 0.5% in the polder 31 Part to 2% in the polder 2 & 2 Ext. Overall only 6.2 ha area of land was used for vegetable cultivation while the polder 2 & 2 Ext. represented half of the land and the other polders aggregately used the rest half.

On an average 18000 Tk was earned form vegetable cultivation but it varied significantly across the polders. For example, polder 34/2 of Khulna zone earned most (21800 Tk), followed by the polder 2 and 2 Ext. of Satkhira zone (22477 Taka) while polder 31 Part of Khulna zone earned the lowest amount with only 3000 Tk.

Table 5-6: Level (%) of HHs, land area, and income from vegetable in Kharif-II/*Aman* season by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
HHs practiced vegetable cultivation (% of HH)	0.8	1.1	2.1	1.3
Total Land area under vegetable cultivation (ha)	1	2.3	3	6.3
Average income from vegetable cultivation per HH (BDT)	15,344	13,459	21,477	18,000

Table 5-6 shows the percentage of households, land coverage, and income from the commercial vegetable cultivation as a field crop in the Kharif-II/*Aman* season in the different zones. Both the percentage of households and the area coverage for the cultivation of vegetable in the *Kharif-II* season were very limited in every zone. A total just over 1% of the households cultivated vegetable in this season but varied across the zone ranging from 0.8 in Patuakhali zone to around 2% in Satkhira zone. Overall only 6.2 ha area of land was used for vegetable cultivation while the Satkhira zone represented half of the land while it was only 1 ha in Patuakhali zone. Income from vegetable cultivation reported highest in Satkhira zone while it was the lowest in Khulna zone.

5.3 Crop Production in *Rabi/Boro* Season

5.3.1 Paddy production in *Boro* season

Table 5-7: Level (%) of HHs, area and yield of paddy in *Boro* season by polder and HH category

Name of the Polder	**Paddy land & yield in *Boro* season**		
	% of HH	**Total Land (ha)**	**Avg. Yield (t/ha)**
Polder 25	72.1	183.7	5.4
Polder 31 Part	21.3	14.8	5.2
Polder 28/1	60.3	63.2	5.2
Polder 34/2 Part	37.9	78.5	5.3
Polder 55/2A	0	0	0
Polder 47/4	0	0	0
Polder 2 & 2 Ext.	51.4	197.3	5.6
HH category			
Landless HH	24.9	40.4	5.4

Name of the Polder	Paddy land & yield in *Boro* season		
	% of HH	Total Land (ha)	Avg. Yield (t/ha)
Marginal farmer HH	35.7	171.2	5.3
Small farmer HH	49.5	219.2	5.6
Medium farmer HH	48.9	89.1	5.3
Large farmer HH	34.6	18.0	6.0
Total	38.8	537.9	5.4

Table 5-7 explains the percentage of households and their land utilization and yield of paddy in the *Boro* season by the different polders and HH categories. In this season, in total, nearly 39 % households reported that they practiced *Boro* season paddy in 537.9 ha of the land with an average yield 5.4 t/ha. The highest percentage of household (72%) was in the polder 25 followed by the polder 28/1 with 60%. Land utilization in *Boro* season was marked maximum in the polder 2 and 2 Ext. (197.3 ha) subsequently in the polder 25 (183.7 ha). *Boro* paddy cultivation was not reported in any of the polders of Patuakhali zone

Table 5-2 and 5-3 show that the average land used for Aman paddy was higher than other seasons' paddy in the polder 31 Part, 34/2 Part, 55/2A, 47/4. The land coverage by Boro paddy was not substantial or lower compared to Aman paddy in these polders. There were two reasons that mainly influence farming communities to utilize more land for Aman paddy. Firstly, irrigation facilities, in these polders farmers cultivated Aman paddy in rain fed conditions while in Boro season lands were dry and limited freshwater for irrigation constrained them from cultivating all their land. In addition, using irrigation facilities were expensive and groundwater was too salty to be used for irrigation in the dry season in some polders. Secondly, the timing of Aman cultivation, the farmers especially in the polders of Patuakhali cultivated Aman paddy in late seasons that led a late harvesting of Aman paddy that hindered them to cultivate the Boro/Rabi season in the same land. On the other hand, polder 25, 28/1 and polder 2 and 2 ext. had a significant area of land under Boro paddy. In these polders, Gher based aquaculture was practiced where farmers converted rice fields into Gher and cultivated Prawn/shrimp or both in the monsoon season with Boro paddy in the Rabi season. The structure of Gher facilitated them to irrigate Boro paddy in the dry season. In addition, they could use underground water for irrigation as well.

Findings show that the small and marginal farmer households were more likely to cultivate Boro season paddy compared to the other household categories. Almost 50% of the small and 36% of the marginal farmer households cultivated in the Boro season paddy and utilized the higher land area with 219.2 ha and 171 ha. But the yield was highest (6.0 t/ha) for large farmer category compared to the other household categories.

Table 5-8: Land utilization, yield and price of different varieties of paddy in the *Boro* season by polder

	HYV Boro		Hybrid Boro		Selling status	
	Total land (ha)	Avg. yield (t/ha)	Total land (ha)	Avg. yield (t/ha)	% HH	Avg. price (Tk/maund)
Polder 25	163.5	5.3	20.1	6.0	48.9	699
Polder 31 Part	14.8	5.2	0.0	0.0	63.9	670
Polder 28/1	55.9	5.2	5.4	6.8	62.3	718
Polder 34/2 Part	74.7	5.2	3.8	6.7	57.6	708
Polder 2 & 2 Ext.	193.2	5.6	4.1	6.7	54.4	691
Total	504.2	5.4	33.7	6.3	53.8	698

Table 5-8 illustrates the practice of *Boro* paddy cultivation in the *Boro* season including selling status in the study polders. A total 504.2 ha area of land was utilized for HYV *Boro* cultivation and the average yield rate was 5.4 t/ha. In the Polder 2 and 2 Ext., HYV *Boro* cultivation was highest in term of the utilization of land (193.2 ha) and yield (5.6 t/ha), followed by the polder 25 with land (163.5 ha) and yield (5.3 t/ha). Compared to these polders, the land under HYV *Boro* paddy cultivation was significantly lower in other polders but the reported yield was not varied vividly. The total land area under hybrid *Boro* cultivation was lower compared to the HYV *Boro* with only 33.7 ha but the yield was considerably higher with 6.3 t/ha. The adoption of hybrid rice technology was considerably higher in the polder 25 where highest volume of land (20.1 ha) was used among the polders, with a yield 6.0 t/ha. Overall around 54% of the households reported of selling in *Boro* paddy with an average price 698 Tk/maund and the selling price of *Boro* paddy was not varied noticeably across the polders.

Data shows considerable difference regarding the paddy production in Boro season within different household categories (see Annex-1 Table 3). It was found that marginal, small, and the medium farmers were more likely to practice HYV *Boro* cultivation. The small farmers utilized the maximum (203.2 ha) amount of land for cultivation and the yield was 5.5 t/ha. The highest (5.9 t/ha) yield reported among the large farmers though they used the minimum (16.8 ha) amount of land area.

In term of Hybrid *Boro* paddy cultivation, the adoption of hybrid *Boro* paddy was more prevalent among the small farmer households with a maximum (16.7 ha) scale compared to other categories with a yield of 6.3 t/ha. But again, the yield was highest (7.2 t/ha) for the large farmers even though again they utilized the lowest (1.21 ha) land area for cultivation. A total 53.8% of households reported of selling of Boro paddy in which the highest percentage (94.4%) for the large farmer households, the average price of Boro selling was 698 Tk/maund and it was not varied noticeably among the household categories.

Table 5-9: Land utilization, yield of different varieties of paddy in the *Boro* season by zone

	Patuakhali (N=1032)	**Khulna (N=1614)**	**Satkhira (N=1005)**	**Total (N=3651)**
HHs practiced Boro paddy (% of HH)	0	55.5	51.4	38.8
Total Land area under Boro paddy (ha)	0	340.2	197.3	537.9
Average yield (t/ha)	0	5.3	5.6	5.4
Total Land area under HYV Boro paddy (ha)	0	308.9	193.2	504.2
Average yield of HYV Boro paddy (t/ha)	0	5.2	5.6	5.4
Total Land area under hybrid Boro paddy (ha)	0	29.3	4.1	33.4
Average yield of hybrid Boro paddy (t/ha)	0	6	6.7	6.3

Table 5-10: Level (%) of HHs, area, yield and selling price of maize in Rabi season by polder and HH category

Name of the Polder	% of HH	Total land (ha)	Avg. yield (t/ha)	Avg. price (Tk/maund)
Polder 55/2A	0.4	0.02	2.5	900
Polder 47/4	2.3	1.9	3.8	791
Polder 2 & 2 Ext.	0.1	0.01	0.8	500
HH category				
Landless HH	0.3	0.1	3.4	750
Marginal Farm HH	0.2	0.1	6.6	833
Small Farm HH	0.5	0.8	3.2	850
Medium Farm HH	1.1	0.6	4.4	833
Large Farm HH	1.9	0.3	3.4	550
Total	0.4	1.9	3.7	786

5.3.2 Other crops production in *Rabi* Season/*Boro* season

Table 5-10 explains the area, yield and selling price of maize in the different polders for Rabi season among the different types of households. The total land area, average yield and price for maize were reported 1.9 hector, 3.7 t/ha and 786 Tk/maund respectively from the three polders. The cultivation of maize was very prevalent among the polders and the

household categories, of which the highest was with 2.3% of the households in the polder 47/4 of Patuakhali zone. The land area also was calculated maximum (1.9 ha) in this polder with the highest yield 3.8 t/ha while the price was the highest (900 Tk/ maund) in the polder 55/2A.

A gradual increasing trend of maize cultivation practice was observed in different household category from landless to large farmers. Out of 14 households, including all household the small farmer category reported the maximum amount of cultivated land (0.8 ha) and the marginal farmers achieved the highest yield (6.6 t/ha). The selling price rated similar (833 Tk/ maund) for the marginal and the medium farmer category. Large farmers' category reported the minimum amount of selling price (550 Tk/ maund).

Table 5-11: Level (%) of HHs, area, yield and selling price of sesame in Rabi season by polder and HH category

Name of the Polder	Sesame grower (% of HH)	HYV		LV		Avg. price Tk/maund
		Total land (ha)	Avg. yield (t/h)	Total land (ha)	Avg. yield (t/h)	
Polder 31 Part	1.2	0.2	4.3	1.0	0.4	1450
Polder 28/1	0.4	0	0	0.3	0.8	Didn't sell
Polder 34/2 part	3.8	1.4	0.6	4.9	1.7	1322
Polder 55/2A	2.0	0.2	0.6	0.9	0.6	1757
Polder 47/4	0.2	0	0	0.2	0.7	Didn't sell
Polder 2 and 2 Ext.	0.1	0	0	0.1	3.3	Didn't sell
Household category						
Marginal farmer HH	0.7	1.0	1.3	3.6	0.9	1400
Small farmer HH	2.1	0.7	0.8	3.1	2.0	1485
Medium Farm HH	1.5	0.1	0.7	0.4	0.6	1567
Large Farm HH	3.9	0	0	0.3	0.6	Didn't sell
Total	0.9	1.8	1.1	7.3	1.3	1454

Table 5-11 illustrates the land area, yield and selling price of sesame in Rabi season in the different polders among the different types of households. On an average only 0.9% of the household in each polder cultivated sesame. The practice of sesame cultivation was observed comparatively more in the households of polder 34/2 Part (3.8%) and polder 55/2A (2%). The percentages of the households in the other polders were very insignificant.

For the HYV of sesame, a total 1.8 hector land area was utilized in the polder 31-part, 34/2 Part and 55/2A and the yield rated 1 t/ha on an average. The highest yield for HYV reported in polder 31 part (4.3 t/ha). For the LV of sesame, a total 7.3 ha land was utilized while it was highest in the polder 34/2 Part with 4.9 ha. On an average 1454 Tk/ maund was the market price for sesame while the households of the polder 55/2A reported the highest price with 1757 Tk/ maund

Among the farmer households, the larger farmer households (3.9%) cultivated sesame more compared to the others, but they used only 0.3 ha of land while the marginal, small and medium farmer households cultivated 1 ha, 0.7 ha and 0.1 ha respectively. The yield rate of HYV was the highest among the marginal farmer category (1.3 t/ha) while the small farmers achieved the maximum (2 t/ha) yield for LV with an area of 3.1 ha. The price of sesame was reported similar for the marginal and small farmer category. The highest (1567 Tk/maund) was reported by the large farmer category.

Table 5-12: Area, yield and price of other oil seeds (other than sesame) in *Rabi* season by polders and HH category

Name of the Polder	% of HH	Total land (ha)	Avg. yield (t/ha)	Price (Tk/maund)
Polder 55/2A	30.1	9.4	1.2	1,994
Polder 47/4	4.9	1.5	1.2	1,743
Polder 2 and 2 Ext.	4.7	8.2	0.9	1,829
HH category				
Landless HH	1.2	0.6	1.1	2,100
Marginal farmer HH	4.6	5.2	1.0	1,959
Small Farmer HH	11.1	8.6	1.1	1,936
Medium farmer HH	11.3	3.9	1.2	1,872
Large Farmer HH	17.3	1.2	1.2	1,872
Total	6.6	19.4	1.1	1,938

Table 5-12 illustrates area, yield and price of different oil seed in different polders among the different household category in the Rabi season. Different types of oil seed were cultivated in three polders with an average 6.6% of the households. Oil seed cultivation and yield was significantly higher in the polder 55/2A of Patuakhali zone comparing to the polder of Sathkhira zone. The maximum 30.1% of the households cultivated different Oil seeds in polder 55/2A of Patuakhali zone A total 19.1 ha of land area was utilized for the cultivation with maximum land area utilization in the polder 55/2A (9.3 ha) of Patuakhali and the polder 2 and 2 Ext. (8.2 ha) of Sathkhira zone. The average yield was 1.1 t/ha and the rate varied from 0.9 t/ha to 1.2 t/ha in different polders, with average price was 1838 Tk/ maund where the maximum price was reported in the polder 55/2A.

The highest percentage (17%) of households reported of cultivation from the large farmer category and a gradual increasing trend for cultivation was observed from the landless farmers to the large farmer category. The maximum land area was utilized by the small farmers (8.6 ha) and the minimum (0.6 ha) by the landless farmer category. The average yield was varied from 1 t/ha to 1.2 t/ha in different household category. Price rated the maximum in the landless farmer category (2100 Tk/ maund) and the lowest in medium and large farmer category (1872 Tk/ maund). A decreasing rate in oil seed price was observed from the landless to the larger farmer category. The fandless farmers utilized minimum amount of land area for cultivation but got the maximum price (2100 Tk/ maund).

Table 5-13: Level (%) of HHs, area of land and average income of vegetable in *Rabi* season by polder

Name of the Polder	% of HH	Total land (ha)	Income per HH (Tk)
Polder 25	4.9	5.1	26,669
Polder 31 Part	4.7	0.8	10,650
Polder 28/1	8.3	5.5	30,889
Polder 34/2 part	1.3	41.1	17,583
Polder 55/2A	1.8	0.6	11,800
Polder 47/4	5.5	2.4	20,252

Polder 2 and 2 Ext.	3.7	5.5	27,911
Total	3.9	60.9	24,046

Table 5-13 explains the percentage of households, area coverage, and income from commercial vegetable cultivation in the different polders. In term of the number of households reported of having vegetable cultivation as field crop was significantly lower with nearly 4% in the Rabi season. The highest percentage of the households for vegetable cultivation was recorded in the polder 28/1 (8.3%) of Khulna zone, followed by the polder 47/4 (5.5 %) of Patuakhali zone. In the other polders the range varied from 1.3% to 4.9%. In the Rabi season total 60.9 ha of the land area was utilized for the vegetable cultivation. The use of the land area for cultivation was significantly higher in polder 34/2 part (41.1 ha) compared to other polders. On an average 24046 Tk was earned from vegetable cultivation of which households from polder 28/1 earned most (30889 Tk) of Khulna zone and followed by the polder 2 and 2 Ext. (27911 Tk) of Sathkhira zone.

Table 5-14: Level (%) of HHs, area, yield and price of Mung bean in *Rabi* season by polder

Variety	**HYV**				**LV**			
Polder Names	% of HH	Total land (ha)	Avg. yield (t/ha)	Price Tk/maund	% of HH	Total land (ha)	Avg. yield (t/ha)	Price Tk/maund
Polder 55/2A	27.4	103.9	0.7	2147	37.1	73.2	0.6	2,263
Polder 47/4	20.3	5.1	0.5	2711	4.6	34.4	0.4	2,665
Total	22.1	109	0.6	2489	24.1	107.6	0.5	2,402

Table 5-14 illustrates the area coverage, yield and price of mung bean in the Rabi season in the different polders. The cultivation of mung bean was observed mainly in the polders 55/2a and polder 47/4 which are under Patuakhali zone. A total 22% households from these two polders cultivated the HYV of mung bean in the area of 109 ha land where the average yield was .6 t/ha while around 24% households cultivated LV mungbean in these two polders utilized almost same area as HYV mung bean with an average yield 0.5 t/ha. The average price of both varieties was around 2400 Tk/maund.

Around 27% household of the polder 55/2A cultivated HYV mung bean in the area of 103.9 ha with a yield. 7 t/ha while in the polder 47/4, land utilization was 5.1 ha and the yield were 0.5 t/ha. However, in the polder 47/4, households got a higher price with around 2700 Tk/maund compared to the polder 55/2A.

For LV mung bean 73.2 ha and 34.4 ha of the land area was utilized in polder 55/2A and polder 47/4 respectively and the yield rates were 0.6 t/ha and 0.4 t/ha. Similar to the HYV, the price of LV also was higher (2665 Tk/maund) in the polder 47/4 even though the land utilization and yield rate were lower compared to the polder 55/2A.

Table 5-15: Level (%) HHs and income from pulses (other than mung bean) cultivation in the Rabi season by polder

Name of the Polder	Number	% of HH	Income (Tk)
Polder 55/2A	168	30.11	4,034
Polder 47/4	148	31.22	8,444
Total	316	30.10	5,004

Table 5-15 illustrates the numbers and percentages of the households that cultivated other pulses (other than mung bean) and the average household income from this cultivation. Cultivation of pulses (other than mung bean) like felon, cow pea only observed in the polder 55/2A, and the polder 47/4 of Patuakhali zone. On an average, around 30% of households of

these two polders cultivated the other types of pulses. The average income in the two polders rated taka 5004 and the maximum income was recorded in the polder 47/4 (8444 taka) that was almost double compared to the polder 55/2A.

Table 5-16: Other crops cultivation in Rabi season by zone

		Patuakhali	Khulna	Sathkhira	Total/Average
Maize	Maize cultivation (% of HH)	1.3	0	0.1	0.4
	Total Land area (ha)	1.9	0	0.01	1.9
	Average yield (t/ha)	3.7	0	0.8	3.7
Sesame	Sesame cultivation (% of HH)	1.2	2.3	0.1	0.9
	Total land area under LV sesame (ha)	1.1	6.2	0.1	7.4
	Average yield of under LV sesame (t/ha)	0.6	1.5	3.3	1.3
	Total land area under HYV sesame (ha)	0.2	1.6	0	1.8
	Average yield of HYV sesame (t/ha)	0.9	0.6	0	1.1
Other oil seeds (other than sesame)	Oil seeds (other than sesame) (% of HH)	18.5	0	4.7	6.6
	Total land area under other oil seeds (ha)	10.9	0	8.2	19.4
	Average yield (t/ha)	1.2	0	0.9	1.1
Mung bean	LV mung bean cultivation (% of HH)	24.1	0	0	0
	Total land area under LV mung bean (ha)	107.6	0	0	0
	Average yield of under LV mung bean (t/ha)	0.5	0	0	0
	HYV mung bean cultivation (% of HH)	22.1	0	0	0
	Total land area under HYV mung bean (ha)	109	0	0	0
	Average yield of HYV mung bean (t/ha)	0.6	0	0	0
Vegetable	vegetable cultivation (% of HH)	3.5	4.4	3.7	3.9
	Total land area under vegetable cultivation (ha)	3	52.5	5.5	60.9

Table 5-16 explores the percentage of households, land area and yield of different other crops by zone. Data shows other than paddy and vegetable maize, sesame, others oil seed, mung bean were cultivated in Rabi season in different zones. However, none of the crop was practiced significantly among the studied households. Maize was cultivated in only

Patuakhali and Satkhira though the practice was not significant in any zone. Sesame was practiced in three zones but it was more prevalence in Khulna zone with total 7.8 ha land compared to other two zones. The cultivation of LV sesame was more popular to the studied households compared to the HYV sesame. Yield also mentioned higher for LV sesame. Other oil seeds (other than sesame) was cultivated more in Patuakhali with around 10 ha of land followed by Satkhira zone with 8.2 ha land but yield was very similar. On the other hand, none of the households in Khulna zone reported of other oil seeds cultivation. Mung bean was cultivated only in Patukhali zone while the LV of mung bean was almost as popular as HYV mung bean with almost similar percentage of households, land area and yield. Vegetable cultivation as field crop was not also very likely in any zone, however, this practice was higher in Khulna zone compared to Patuakhali and Satkhira zone where 4.4% households brought around 52 ha of land under vegetable cultivation.

5.4 Crop Production in *Kharif-I/Aus* Season

5.4.1 Paddy production in *Kharif-I/Aus* season

Table 5-17: Level (%) of HHs, land area and yield of paddy and in the *Kharif-I/Aus* season by polder

Polder name	% of HH	Total land (ha)	Avg. yield (t/ha)
Polder 25	4.6	9.0	2.3
Polder 31 Part	0	0	0
Polder 28/1	0	0	0
Polder 34/2 Part	0	0	0
Polder 55/2A	0	0	0
Polder 47/4	1.6	2.3	2.2
Polder 2 & 2 Ext.	1.9	8.6	3.8
HH category			
Landless HH	0.9	1.7	3.1
Marginal farmer HH	1.2	7.7	2.5
Small farmer HH	2.6	7.8	2.9
Medium farmer HH	2.6	2.7	2.9
Large farmer HH	0	0	0
Total land and avg. yield	1.6	19.9	2.8

Table 5-17 explains the land utilization and yield of paddy in the Aus seasons in the different study polders among the different types of household categories. In Kharif -1 (Aus) season, in total only 1.6% of households reported of the cultivation of Aus paddy. This practice was recorded only in the polder 25, polder 47/4 and polder 2 and 2 Ext where 19.9 ha land area was utilized while it was highest in the polder 25 (9 ha) followed by polder 2 and 2 Ext. (8.6 ha) with the highest yield with 3.8 t/ha and the average yield for all polders was 2.8 t/ha. Land under Aus paddy in the Kharif-1 season was very insignificant while in polder 31 part, 28/1, 34/2 part, 55/2A had no land under Aus paddy, scarcity of fresh water hindered them to cultivate paddy in this season.

The small farmers were found to cultivate the maximum (7.8 ha) amount of land in the Kharif-1 (Aus) season and the landless farmers rated the minimum (1.7 ha) but achieved the highest rate of yield (3.1 t/ha). All the household categories were reluctant to cultivate paddy in this season due to lack of fresh water while the large farmer households did not cultivate at all.

Table 5-18: Level (%) of HHs, land area, yield and price of different varieties of paddy in *Kharif-I (Aus)* season by polder

Name of the Polder	LV T-Aus		HYV T-Aus		Selling status	
	Total land (ha)	Avg. yield (t/ha)	Total land (ha)	Avg. yield (t/ha)	Selling (% of HH)	Average price (Tk/maund)
Polder 25	6.8	2.6	2.2	2.0	11	645
Polder 47/4	1.7	2.3	0.5	3.0	100	765
Polder 2 & 2 Ext.	1.4	2.4	7.2	3.3	36.8	618
Total	10	2.5	9.9	2.7	28.3	676

Table 5-18 explains the land utilization for T-Aus cultivation and yield in the different polders. Data shows that T-Aus cultivation was very limited in the study polders as among the seven study polders only the polder 25, polder 47/4 and polder 2 and 2 Ext. had cultivation of Aus paddy with limited area of land. LV T-Aus cultivation was the highest with 6.8 ha land area and yield was (2.6 t/ha) in the polder 25. Land area 1.7 ha and 1.4 ha were used for cultivating LV T-Aus in the polders of 47/4 and 2 and 2 Ext respectively. The total 9.9 ha of land was used for the cultivation of LV T- Aus in the three polders with an average yield 2.5 t/ha.

The total land area for cultivating HYV T-Aus was 10 ha and the average yield was 2.7 t/ha. Highest (7.2 ha) land use was used in the Polder 2 and 2 Ext. for the HYV T-Aus production and the yield also rated highest (3.3 t/ha) comparing to the yield of the polder 25 and polder 47/4 which were 2 t/ha and 0.5 t/ha respectively.

All the growers of T- Aus in the polder 47/4 reported of selling of the paddy and the average price was also high (765 Tk/maund) comparing to the polder 25 (645 Tk/maund) and Polder (618 Tk/maund). The average selling price was 676 Tk/maund while average around 28% grower households sold their paddy.

Household category wise analysis shows that the small farmers used the maximum amount of land (4.5 ha) and the landless farmer used the minimum amount of land (0.5 ha) for T-Aus (see Annex-1 Table 4). But the highest yield (3 t/ha) for LV T-Aus was reported by the medium farmers, cultivating in a land area of 2.2 ha.

Marginal farmers used the maximum amount of land (5 ha) to cultivate HYV T-Aus and the medium farmers used the least (0.5 ha). But the yield was the highest (4.3 t/ha) in the landless farmer category. The total land used for HYV T-Aus cultivation was 9.9 ha and the yield were 2.7 t/ha. The average price for T-Aus was 676 Tk/maund. The medium farmers earned the maximum (800 Tk/maund) amount.

Table 5-19: Level (%) of HHs, area of land and yield of paddy in *Kharif-I/Aus* season by zone

	Patuakhali	Khulna	Sathkhira	Total
HHs practiced Aus paddy (% of HH)	0.7	4	1.9	1.6
Total Land area under T- Aus paddy (ha)	2.3	9	8.6	19.9
Average yield (t/ha)	2.2	2.3	3.8	2.8
Total Land area under LV T- Aus paddy (ha)	1.7	6.8	1.4	10
Average yield of LV T- Aus paddy (t/ha)	2.3	2.6	2.4	2.5
Total Land area under HYV T- Aus paddy (ha)	0.5	2.2	7.2	10
Average yield of HYV T- Aus paddy (t/ha)	3	2	3.3	2.7

Table 5-19 explains the percentage of households and their land utilization and yield of paddy in the *Aus* season by the different zone. In this season, in total, less than 2% households reported that they practiced *Aus* season paddy in only around 20 ha of the land with an average yield 2.8 t/ha. The highest percentage of household (4 %) was in Khulna zone followed by Satkhira zone. Land utilization in *Aus* season was also marked maximum in Khulna zone though the yield was higher in Sathkhira zone.

In Khulna zone, households were more tend to cultivate LV T-Aus while the households of Satkhira zone practiced more HYV Aus paddy where both zone utilized around 7 ha of land. The yield of LV of Aus was almost similar in three zones while the households of Patuakhali and Sathkhira zone got comparative higher yield than Khulna zone.

5.4.2 Other crops production in Kharif-I/Aus season

Table 5-20: Level (%) of HHs, area of land, and average income from vegetable in Kharif-I season by polder

	Kharif- I season		
Name of the Polder	**% of HH**	**Total land (ha)**	**Avg. income (Tk)**
Polder 25	2.7	2.6	23,760
Polder 31 Part	0.0	0.0	0.0
Polder 28/1	1.7	1.3	13,363
Polder 34/2 part	0.2	0.1	10,000
Polder 55/2A	0.0	0.0	0.0
Polder 47/4	1.1	0.4	7,200
Polder 2 & 2 Ext.	2.8	4.8	15,286
Total	1.6	9.1	17,287

Table 5-20 explains the percentage of households, area coverage, and income from commercial vegetable cultivation in Kharif-I in the different polders. In term of the number of households reported of having vegetable cultivation as field crop were very limited with less than 2% in this season. These household utilized around 9 ha of land for vegetable cultivation and got an average income 17287 TK. None of the households in the polder 31 Part and 55/2A reported of vegetable cultivation in the Kharif- I season.

The highest percentage of the households for vegetable cultivation was recorded in the polder 2 and 2 Ext. (2.8%) of Sathkhira zone followed by the polder 25 (2.7 %) of Khulna zone. In the Kharif - I, the use of the land for vegetable cultivation was comparatively higher in polder 2 and 2 Ext. (4.8 ha). Among the households of different polders, households from polder 25 of Khulna zone earned most (23760 Tk), followed by the polder 2 and 2 Ext. (15286 Taka) of Sathkhira zone in this season.

Table 5-21: Level (%) HHs, area of land, yield and price of jute in *Kharif -1/Aus* season by polder

Name of the Polder	**% of HH**	**Total land (ha)**	**Avg. Yield (t/ha)**	**Price Tk/maund**
Polder 25	2.1	1.2	2.3	1,446
Polder 2 & 2 Ext.	5.2	8.8	2.3	1,502
Total	4.5	10.0	2.3	1,491

Table 5-21 illustrates the percentage of households, area of land, yield and price of jute in Kharif-1 season in different polders. The cultivation of jute in Kharif-1 season reported only by the households of the polder 25 of Khulna and polder 2 and 2 Ext. of Satkhira zone. Around 4.5% households of these two polders cultivated jute in the area of nearly 10 ha of land and they got an average yield 2.3 t/ha with an average price 1491Tk/maund. It is noteworthy that the area coverage of jute was almost eight time lower in the polder 25 compared to the polder 2 and 2 Ext. Though the yield was similar in both polders, the price was slightly higher in the polder 2 and 2 Ext.

Table 5-22: Other crops cultivation in *Kharif-I/Aus* season by zone

		Patuakhali	Khulna	Sathkhira	Total
Vegetable	Vegetable cultivation (% of HH)	0.5	1.6	2.8	1.6
	Total Land area (ha)	0.4	4	4.8	9.1
Jute	Jute cultivation (% of HH)	5.2	2.1	0	4.5
	Total Land area (ha)	8.8	1.2	0	10
	Yield	2.3	2.3	0	2.3

Table 5-22 shows other crops cultivation in Kharif-I season by zone. Data reveals that other than paddy households of study areas cultivated only vegetable and jute in this season. Vegetable cultivation was more practiced in Khulna and Satkhira zone compared to Patuakhali zone and around 4 ha and 5 ha of land respectively was utilized for vegetable cultivation. On the other hand, Jute cultivation was more prevalence in Patukhali zone compared to Khulna zone while none of the households of Satkhira zone reported of jute cultivation. Around 8.8 ha of land was utilized for jute cultivation in Patuakhali zone that was around seven times higher than Khulna zone but yield of jute was reported same in both zone.

5.5 Marketing of Paddy

Figure 5-3 and 5-4 explain the selling places of the Aman and Boro season paddy among the grower households by polder and household category. Local buyer (Paiker/farm gate) indicated as the preferable choice for selling the Boro and Aman season paddy among the grower households. On an average 31.2% and 35.9 % grower households sold their paddy to the local buyer respectively in the Boro season and Aman season. It was noticeable that in the Aman season 84.3% in the grower households of the polder 47/4 of Patukhali zone and in the Boro season more than 50% growers of the polder 31 Part of Khulna zone pointed out the local buyer. The second most popular place to sell the Boro and Aman seasons paddy was the local market. For Boro season paddy, 48% households of the polder 28/1 and for the Aman season paddy 37% grower households of the polder 55/2A were more likely sold their paddy in the local market compared to the other polders. Around one-third households of the polder 25 while nearly 25% grower households of the polder 2 and 2 Ext. also respectively sold Boro paddy and Aman paddy in their local market

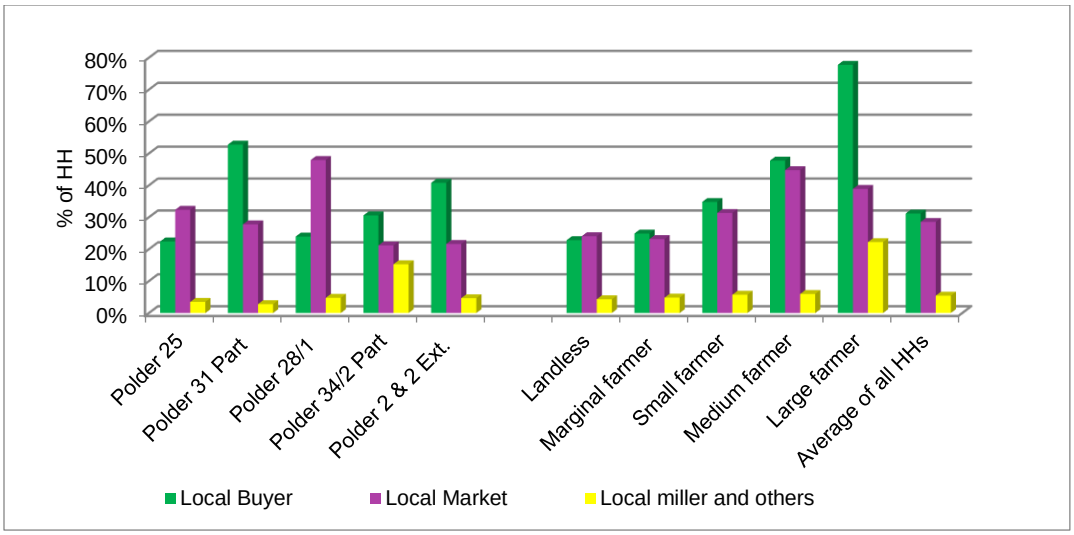

Figure 5-3: Level (%) of HHs reporting the place of sale of paddy in Boro seasons by polder and HH category

A total 5.4% of the household sold their Boro paddy to the local miller or others of which significant percentage (10.3%) of selling was observed in polder 34/2 part of Khulna zone which that was five times higher than the percentage of polder 31 Part of the same zone. Very insignificant percentage of the grower households indicated the other places that includes the regional market, Govt. purchase center and dadon as preferred place to sell the paddy in both seasons.

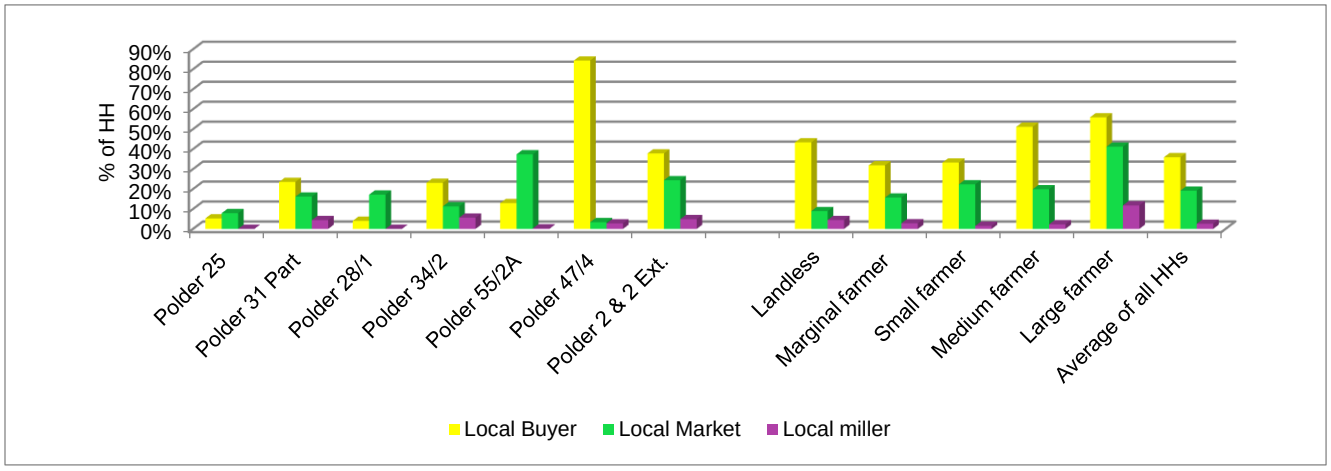

Figure 5-4: Level (%) of HHs reporting the place of sale for paddy in Aman seasons by polder & HH category

The paddy selling place by the grower households of the different land owing category was also analysed for both seasons. The data shows that regardless of the different place to sell paddy, a tendency of gradual increase of the households reporting of paddy selling to the different places was observed from landless farmers to larger farmers. These findings suggest that the well-off households likely to have more paddy to sale compared to the poorer households. Around 77% large farmer households reported of selling Boro paddy to the local buyer compared to 23% and 25% of the households of the landless and marginal households. On the other hand, nearly 45% of the medium farmer households reported of the local market as their preferred place to sell Boro paddy. The data shows that the poorer grower households (around 43% and 32% grower households of the landless and the marginal farmer households) were more likely to sell Aman paddy to the local buyer compared to nearly 9% and 16% grower households of the landless and marginal farmer households that sold to the local market.

5.6 Homestead Vegetable and Fruit Cultivation

Table 5-23: Level of (%) HH reporting of homestead vegetable and fruit cultivation and average yearly production and selling (BDT) by polder

Categories	Homestead vegetable cultivation				Homestead fruit cultivation			
	Production		Selling (among producers)		Production		Selling (among producers)	
	% of HH	Production (Tk/Yr)	% HH	Avg. selling (Tk/ Yr)	% of HH	Production (Tk/ Yr)	% of HH	Avg. selling (Tk/ Yr)
Polder 25	55.4	1,994	22.3	273	87.4	4,257	28.2	1,120
Polder 31 Part	52.1	3,963	40.9	2,102	84.6	4,015	38.5	1,310
Polder 28/1	55.0	4,847	33.8	1,502	92.6	4,413	29.9	1,164
Polder 34/2 part	60.9	3,729	35.2	1,447	88.4	3,848	32.1	1,262
Polder 55/2A	88.4	3,732	30.2	465	95.3	3,839	21.4	1,010
Polder 47/4	83.3	5,108	36.0	657	90.1	5,918	27.2	1,566
Polder 2 & 2 Ext.	75.1	2,143	28.9	411	88.1	4,187	33.2	3,489
Total (N=3651)	70.0	3,257	30.5	663	89.5	4,338	29.4	1,831

Table 5-23 shows the practice of homestead vegetable and fruit cultivation and their contribution in the household consumption and income. It was noticed that a considerable percentage of households (70%) practiced homestead vegetable cultivation with a yearly average production of 3257 Tk/yr. The polders under Patuakhali (55/2A and 47/4) and Satkhira zone (2 and 2 Ext) reported more homestead vegetable cultivation practice compared to the polders under Khulna zone (polder 25, 31, 28/1 and 34/2 Part). It is noteworthy that, polders 25 and 2 and 2 Ext. practiced Gher based prawn/shrimp- Boro cropping pattern reported a lower production of homestead vegetable compared to the polders that practiced rice-based cropping system. Homestead vegetable mainly served for household consumption while average 30 % of the producer households reported of selling of a proportion of their production. So, the overall yearly household income from this was not very high. It was very low in the polder 25, 2 and 2 Ext. and 55/2A while polder 31, 28/1 and 34/2 part reported comparatively higher yearly income from this option.

On the other hand, around 90% households of the study polders practiced homestead fruit cultivation with highest (95.34%) in the polder 55/2A. Though the fruits produced within homestead areas but these were mainly consumed by the households, around one-third households from most of the polders reported of selling around one-fourth of their production while only the polder 2 and 2 Ext reported of selling more than 80% of their productions.

The findings show that the percentage of households practiced homestead vegetable and fruit cultivation, average yearly production and their selling trend were likely to increase gradually as farm size was increased due to having more land available for homestead vegetable cultivation (see Annex-1 Table 5). For example, compared to 47.3 % landless households with average production 1378 Tk/Yr, 92.3% large farmer households reported of having homestead vegetable cultivation with about six times more average production (7828 Tk/Yr). Among them, 21% landless households reported of selling compared to 39.58% large farmer households.

Though, overall 90% of the farm households reported of having homestead fruit cultivation while around 64% landless households able to practice homestead fruit cultivation that was mainly used for the household consumption. On the other hand, all most 100% of medium and large farmer households cultivated homestead fruit trees and 45.2 % of the medium and 51.9 % the large farmers households reported of selling of their productions.

Figure 5-5 shows the top five popular vegetables that were produced within the homestead in different polders. The most common vegetables grown by households in the survey areas were red/stem amaranth, bottle gourd, hyacinth bean, pumpkin, and chili polders and among all the household categories (see table – and -). Red/stem amaranth was the most popular vegetable for homestead cultivation in all the polders while bottle gourd and hyacinth bean were all most as popular as red/stem amaranth in polder 55/2A and 47/4. The data also shows that Bottle gourd was the second choice for homestead gardening in all the polders. Besides, a considerable percentage of the households of the polder 55/2A, 47/4 and 2 and 2 Ext. cultivated pumpkin and chili within the homestead. However, the cultivation of chili in the polder 2 and 2 Ext. was not as popular as pumpkin.

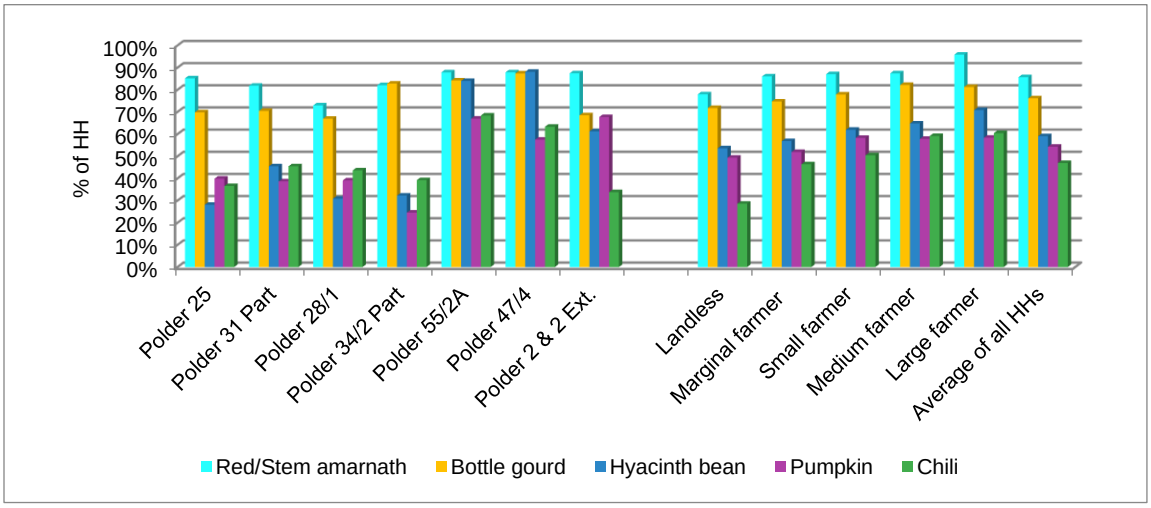

Figure 5-5: Level (%) of HHs among the producers reporting of top five popular vegetables produced in homestead by polder by HH category

The choice of vegetable for homestead cultivation was not diverge among the different wealth categories of the households. Almost all of the large farmer households (95.8%) cultivated red/stem amaranth while more than 85% of marginal, small and medium farmer households practiced this vegetable. Around 82% medium and large farmer households had bottle gourd cultivation within the homestead while the percentage was more than 70% for other categories of the households. Hyacinth bean was the third preference for all type of households however 70.8%, more than 61% of the around 55% of the large farmer households, the small and medium farmer households and the landless and marginal farmer households respectively cultivated this vegetable. Chili was the least popular among the five vegetables for all categories of the households, only a higher percentage (60.4%) of the large farmer households planted chili compared to the cultivation of pumpkin.

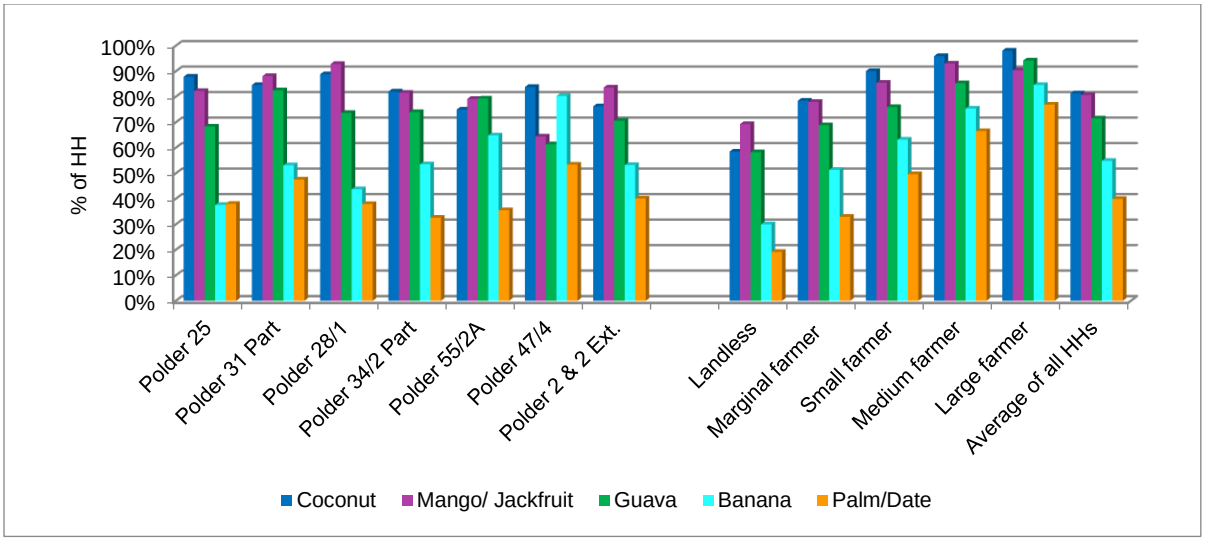

Figure 5-6: Level (%) of HHs among the producers reporting of top five popular fruits produced in homestead by polder and HH category

The figure 5-6 shows that coconut, mango/jackfruit, guava, banana and palm/date were the top five fruit trees for homestead cultivation in all the polders among all categories of the households while coconut and mango/jackfruit were found in more than 80% households in the study areas. Coconut trees were very suitable for cultivation in saline prone coastal areas while mango and jackfruit were very popular in due to their rich taste and exotic varieties. Though the guava and Banana tree was the third and fourth preference among the polders for cultivation but more than 80% of the households had guava and banana tree in the polder 31 Part and 47/4 respectively. Regardless to household categories the same fruit trees were popular but the percentage of households reported of having these fruit trees within the households increased steadily with the rise of the ownership of land. The percentages were significantly higher for the medium and large farmer households compared to the other categories. These fruit trees were also economically profitable. It is noteworthy to mention that homestead was the main source of vegetable and fruit tree production in the coastal areas but increased salinity level hinders the survivability and growth of the vegetables and trees in these regions.

5.7 Commercial Fruit Cultivation

Table 5-24 explains the Level (%) of households reporting of having the commercial fruit cultivation and the income (BDT) in the different polders and in the different types of households. Commercial fruit cultivation was not very likely across the polder. Only 1.9 % of households in all polders reported to have commercial fruit cultivation of which the highest cultivation was in the polder 2 and 2 Ext. (4.9%) of Satkhira zone, this percentage was considerably higher comparing to the other polders. None of the households reported commercial fruit cultivation in the polder 34/2 Part of Khulna zone.

Table 5-24: Level (%) of HHs reporting of having commercial fruit cultivation and the income (BDT) from this by polder

Name of the Polder	% of HH	Avg. income (Tk/yr)
Polder 25	1.9	17,821
Polder 31 Part	0.6	70,000
Polder 28/1	0.4	15,000

Polder 34/2 part	0.0	20,000
Polder 55/2A	0.2	32,600
Polder 47/4	1.1	25,480
Polder 2 & 2 Ext.	4.9	24,873
HH category		
Landless HH	0.3	27,500
Marginal farmer HH	0.7	16,750
Small farmer HH	2.9	19,452
Medium farmer HH	5.8	27,313
Large farmer HH	19.2	47,000
Total	1.9	24,873

A maximum (70000 BDT/Yr) earnings from the cultivation was recorded in polder 31 part of Khulna zone where only 0.6 % households notified to practice commercial fruit garden. The average income from the reported polders was 24873 BDT/Yr and the income ranged from 15000 BDT/Yr to 32600 BDT/Yr in the different study polders.

The highest percentage of households reported of having commercial fruit cultivation from the large farmer category (19.2%). The rate was by far higher compared to other categories and as we can assume that the minimum percentage (0.3%) was observed in landless farmer category. However, an increasing trend was observed from the landless to the large farmer category. A maximum (47000 BDT/Yr) earnings from the cultivation was recorded among the large farmer category and the minimum earnings (16750 BDT/Yr) was recorded among the marginal farmer category.

6. FISHERIES

The rich inland waters and river systems make Bangladesh as very potential for aquaculture. Fish is an essential item for every food of Bangladeshi people as well as one of the main sources of protein. Aquaculture is also identified as a vital livelihood strategy for the rural people. As the coastal regions are situated in the active delta, the people of the coastal region have options of fresh and brackish water capture and culture fisheries. BGP supports the coastal households within the project areas to undertake culture fisheries especially fresh water fisheries that will help the people to increase their income and support to develop an environment friendly sustainable livelihood. The baseline survey questionnaire comprised a series of questions designed to assess the current practices of pond and gher fisheries in the study polders, marketing system, household consumption and income from them.

6.1 Pond Fisheries

Figure 6-1 explores the percentage of households reporting of having pond, their size and practicing of pond fisheries. In the study areas over all 43% of the households reported of having pond in which around 35% of the households reported of having small pond (< 15 decimal) and only 8% of households reported medium/ large pond (> 15 decimal). Only 35% of the households practiced pond fisheries. The percentage of the households of both polders in Patuakhali zone (polders 55/2A and 47/4) reported a higher percentage of having ponds (both for the small and medium size ponds) and practice of pond fisheries compared to the polders of Khulna and Satkhira zone. Among the polders of Khulna zone, the polder 28/1 and 31 Part mentioned a greater percentage of having ponds (both for the small and medium size ponds) and practice of pond fisheries than the other polders of Khulna zone. These percentages were lowest in the polder 2 and 2 Ext. of Sathkhira zone.

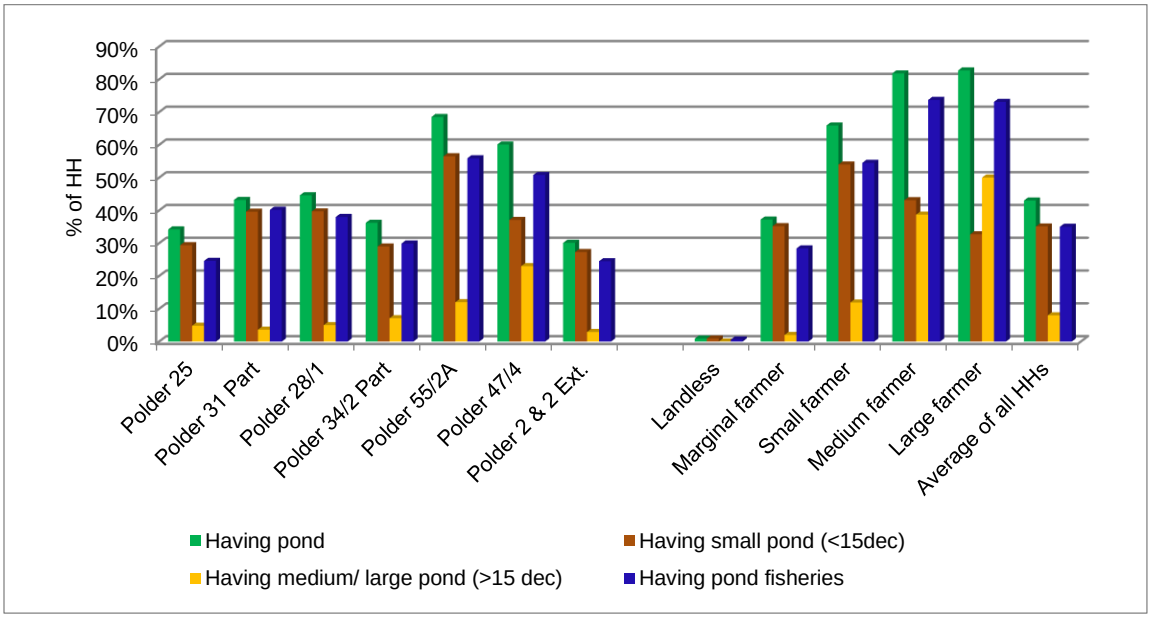

Figure 6-1: Level (%) of households reporting of having pond and pond fisheries by polder and HH category

The percentage of households reported of having pond and pond fisheries as well as the average size of their ponds tend to increase gradually as farm size increases. Overall 35 % households reported of having small size pond (< 15 decimal) while the percentage was steadily increased from the landless household to the small farmer households and then showed

a declining trend for the medium and large farmer households. On the other hand, most of the large landholders reported of having big size pond.

Figure 6-2 shows the average size of pond (decimal) for yearly and seasonal fisheries in the study polders and in the different types of households. The households reported that the average size of pond for yearly fisheries was larger (10.2 decimal) compared to the average size of pond for seasonal fisheries (6.4 decimal). The average size of pond for yearly fisheries and seasonal fisheries was counted the highest in the polder 47/4 with 16.2 decimal and 10.8 decimal respectively. It was lowest in the polder 2 and 2 Ext. with 7.1 decimal for the yearly fisheries and in the polder 55/2A with only 2.5 decimal for the seasonal fisheries.

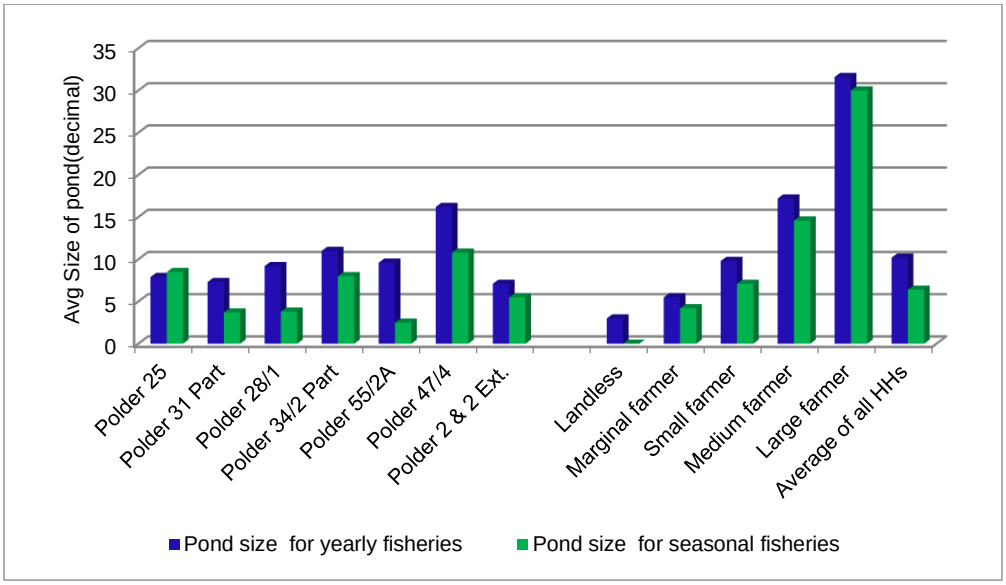

Figure 6-2: Average size of pond (decimal) for yearly and seasonal fisheries by polder and HH category

The data shows that 28% marginal farmers reported of having pond fisheries with an average of 5.5 decimal pond for yearly fisheries compared to around 82% of both the medium and large farmer households with an average of 17.2 and 31.6 decimal pond respectively. Data shows that none of the landless households practiced the seasonal pond fisheries and the size of the pond for the seasonal fisheries increased significantly with the increase of land ownership size ranging from 4.2 decimal for the marginal farmer to 30 decimals for the large landholders. The size of the pond for seasonal fisheries of large landholders was more than double compared to the medium landholder households.

Table 6-1: Average size of pond, production and price of white fish by polder

Name of the polder	Size of pond (dec)	Avg. yield (t/ha)	Avg. price (Tk/Kg)
Polder 25	7.7	3.3	125
Polder 31 Part	6.8	4.7	121
Polder 28/1	7.5	3.0	133
Polder 34/2 part	10.4	3.5	134
Polder 55/2A	9.6	2.4	127
Polder 47/4	15.9	1.9	124
Polder 2 & 2 Ext.	6.8	3.6	103
Total	9.7	3.0	122

Table 6-1 explains the data regarding the cultivation of white fish in the ponds in the different study polders. It includes the information of the average size of pond, production and the average selling price of white fish. On an average, the size of ponds was 9.7 decimal. The pond size ranged from 6.8 decimal in the polder 31 Part of Khulna zone to 15.9 decimal in polder 47/4 of Patuakhali zone.

The yield was 3 t/ha on an average while the maximum amount of yield was observed in polder 31 Part (4.7 t/ha), followed by the polder 25 (3.3 t/ha), polder 34/2 Part (3.5 t/ha) of Khulna zone and the polder 2 and 2 Ext. (3.6 t/ha) of Sathkhira zone. The yield was reported lowest (1.9 t/ha) in the polder 47/4 of Patuakhali zone where the average size of the ponds was the largest (15.9 decimal).

The price of white fish was reported Taka 122 per Kg. on an average. The selling price of white fish was reported highest (134 Taka/kg) in the polder 34/2 Part followed by the polder 28/1 (133 taka/kg) of Khulna zone while it was lowest in the polder 2 and 2 Ext. of Sathkhira zone with 103 Taka/Kg. The selling price of white fish observed almost similar in the polder 25, 31 part, 55/2A and 47/4 and ranged from 121 to 127 takas per kg.

Average size of pond, production and selling price of white fish according to the different household categories show a gradual increase of pond size from the landless farmer to the large farmers (see Annex-1 Table 6). Large farmers possessed pond sized averaging 31.5 decimal that was ten times higher than the landless households, even almost double than the medium farmer households. However, the maximum (6.0 t/ha) yield was observed in the landless farmer category and the minimum (2.3 t/ha) rated in large farmers category. A gradual decreasing trend in yield was observed from the landless farmer to large farmers. The average yield rated 3 t/ha on an average.

The average price was 122 takas per kg in all the categories. The selling price of white fish per kg peaked highest (125 Tk/kg) for the medium farmer category and an increasing trend in price was observed from landless to medium farmer category and it dropped very slightly for the large farmer households.

Table 6-2: Pond fisheries information by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
Having pond fisheries (% of HH)	53.6	29.7	24.5	35
Average size of pond (decimal)	12.5	8.3	6.8	9.7
Average yield of white fish (t/ha)	2.2	3.5	3.6	3
Average price of white fish (Tk/kg)	126	128	103	122

Table 6-2 explores the percentage of households reporting of having pond fisheries, average size of pond, production and the average selling price of white fish by zone. It is noteworthy that households of three zones showed a tendency to cultivate only white fish in their ponds.

Overall 35% of the households practiced pond fisheries, the percentage of the households of Patuakhali zone reported a higher percentage of having practice of pond fisheries compared to Khulna and Satkhira. Average size of pond was comparatively bigger in Patuakhali zone with 12.5 decimal while the sizes were 8.3 and 6.8 decimal respectively for Khulna and Satkhira zone. Though the maximum yield was observed in Sathkhira zone (3.6 t/ha) but the yield was almost same in Khulna zone (3.5 t/ha). The yield was reported lowest in Patuakhali zone where the average size of the ponds was the largest. The price of white fish was reported Taka 122 per Kg. on an average. The selling price of white fish was almost same for Patuakhali and Khulna zone while it was comparatively lower in Satkhira zone.

6.2 *Gher* Fisheries

Table 6-3 describes gher related information in the different polders that includes the percentage of households that reported of having gher, size of the gher, production and market price of prawn, shrimp, and white fish. 23.9% of the households reported of having gher out of the 3651 households, with the highest percentage in the polder 25 (59.9%), followed by the polder 28/1 (47.5%) of Khulna zone and the polder 2 and 2 Ext. (17.8%) of Sathkhira zone. These are the polders where the gher fisheries were practiced and the households followed a gher based cropping pattern. The percentages were very limited in the polder 55/2A (2.2 %) and the polder 47/4 (5.9%) in Patuakhali zone where pond fishery is popular and reported by a significant percentage of households (see Figure 6-1).

Table 6-3: Level (%) of HHs reporting of having gher and production of fish from gher by polder

Name of the polder	Having gher (% of HH)	Size of gher (ha)	Shrimp		Prawn		White Fish	
			Avg. yield (t/ha)	Avg. price (Tk/kg)	Avg. yield (t/ha)	Avg. price (Tk/kg)	Avg. yield (t/ha)	Avg. price (Tk/kg)
Polder 25	59.9	0.4	0.2	658	0.2	618	0.6	122
Polder 31 Part	23.1	0.6	0.2	680	0.2	604	0.7	126
Polder 28/1	47.5	0.5	0.0	0	0.2	602	0.4	154
Polder 34/2 Part	10.9	0.6	0.2	477	0.1	596	0.9	140
Polder 55/2A	2.2	0.2	0.0	0	0.3	600	2.5	131
Polder 47/4	5.9	0.5	0.2	494	0.1	750	0.7	137
Polder 2 & 2 Ext.	17.8	0.7	0.3	535	0.1	534	0.9	110
Total	23.9	0.5	0.3	556	0.2	607	0.7	126

On an average, the size of the gher in all the polders rated 0.5 hectors and average land area for gher varied significantly among the polders ranging from 0.2 hectors in the polder 55/2A to 0.7 hectors in the polder 2 and 2 Ext. The yield rate of white fish was higher (0.7 t/ha) compared to the yield shrimp and prawn but the average market price of prawn rated highest (607 Tk/kg) on an average across the study polders.

The yield and market price of shrimp reported 0.3 t/ha and 556 Tk/kg respectively on an average for the polders. Shrimp cultivation was not practiced in polders 28/1 of Khulna and 55/2A of Patuakhali zone. The yield rate varied considerably among the polders with highest in the polder 2 and 2 Ext. with .3 t/ha that more than double compared to the polder 34/2 Part.

Prawn cultivation was observed in all the polders with an average yield 0.2 Tk/ha and market price 607 Tk/kg. The highest yield was calculated in the polder 55/2A with 0.3 t/ha followed by the polder 25 with 0.3 t/ha while the minimum yield (0.1 t/ha) was observed in polder 47/4. The yield of the polder 2 and 2 Ext. of Sathkhira zone and polder 34/2 part) of Khulna zone was also lower and almost similar (around 0.1 t/ha). The market price of prawn was around 600Tk/kg for most of the polders while the market price reported lowest 534 Tk/kg in the polder 2 and 2 Ext. and was maximum 750 Tk/kg in the polder 47/4.

On average 0.7 t/ha of yield was recorded for white fish cultivation in the ghers with an average market price of 126 Tk/kg. Yield varied across the polders while the polder 55/2A of Patuakhali zone reported a significantly higher yield (2.5 t/ha) and that was around seven times higher than the polder 28/1. The price ranged from 110 Tk/kg to 154 Tk/kg.

The percentage of households of having gher, size of gher, the production and market price of prawn, shrimp and white fish in the gher were also analyzed according to the different household categories (See Annex-1 Table 7). A gradual increasing trend was observed for the practice of the gher fisheries from the landless to the medium category households ranging from 9.7% to 42.7% while it declined to 38.5% for the large farmer households. On an average, the size of the gher for all the household categories reported 0.5 ha with the maximum size of 1.39 hectors for the large farmer category. An increasing pattern in size of the gher was noticed from the landless to the large farmer category ranging from 0.4 ha to 1.4 ha.

The yield for shrimp was similar in all the categories ranging from 0.2 to 0.3 t/ha but the yield was significantly low in the large farmer category with 0.1 t/ha. The medium farmer category reported the maximum price (612 Tk/kg) and for all other household categories, the market price was not varied significantly ranging from 522 to 589 Tk/kg.

The yield of prawn cultivation ranged from 0.2 to 0.2 t/ha and the price ranged from 522 to 621 Tk/kg. The maximum yield and price for prawn were reported by the medium farmer category and the large farmers got the minimum. The yield for white fish cultivation was from 0.6 to 0.8 t/ha and the price was 117 to 128 Tk/kg among the different household categories. The maximum (0.8 t/ha) yield was reported by the larger farmer category but the price was highest (128 Tk/kg) for the small farmer category for white fish cultivation.

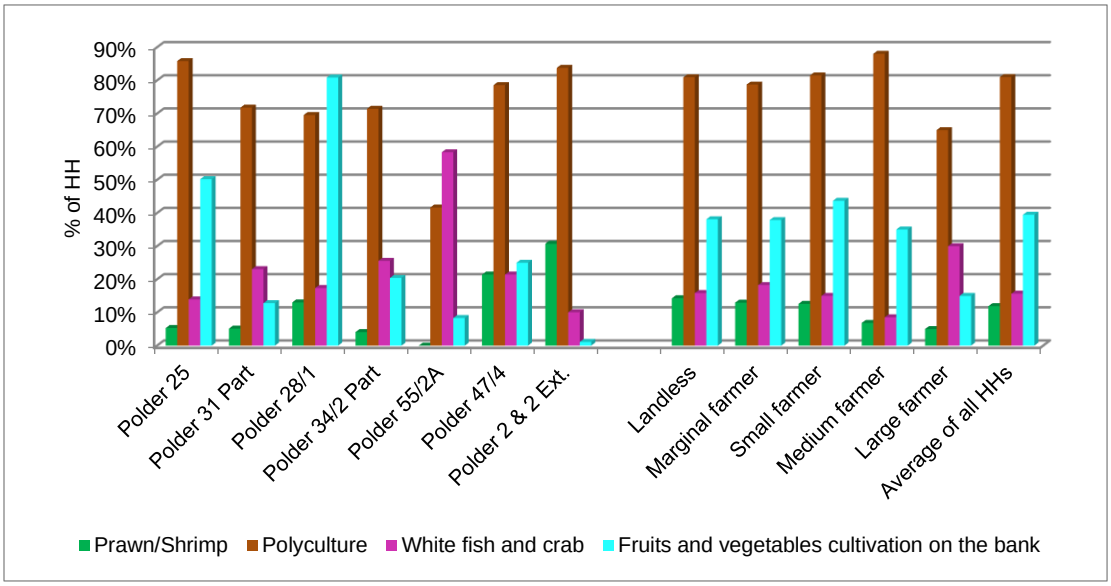

Figure 6-3: Level (%) of HHs among the producers reporting of different uses of gher (other than rice cultivation) by polder and HH category

Figure 6-3 explains the uses of gher (other than rice cultivation) by polder and the different types of households in the study areas. Among the producer households, maximum amount (81.1%) of the household respondent to polyculture in the gher which was followed by cultivation of fruit and vegetables (39.8 %) and white fish, crab production (15.7 %).

On an average of 11.9% of households reported to use gher for cultivating either prawn or shrimp. The maximum number of households were recorded in the polder 2 and 2 Ext. (30.7 %) of Sathkhira zone, followed by the polder 47/4 (21.4 %) of Patuakhali zone and the polder 28/1 (13 %) of Khulna zone. The practice of shrimp and prawn cultivation was not recorded in polder 55/2A of Patuakhali zone.

On an average 81 % of households used the gher for polyculture and the rates of practiced were varied marginally among the polders ranging from 69.6 % in the polder 28/1 to 85.8 % in the polder 25. However, this practice was the lowest (41.7 %) in polder 55/2A of Patuakhli zone.

White fish and crab was practiced by 15.7 % of the households in the study polders. The percentage was significantly higher (58.3 %) in the polder 55/2A of Patuakhali zone compared to the other polders. The rate of cultivating white fish and crab in the gher was ranged from 10.1% to 25.6 % in the other polders.

A total 39.47% of the households cultivated fruits and vegetables at the bank of the gher in the study areas. The highest (80.87%) proportion of cultivation was recorded in the polder 28/1 of Khulna zone and the minimum (1.12%) was noted in the polder 2 and 2 Ext. of Sathkhira zone.

The cultivation of only shrimp or prawn in the gher was more prevalence among the landless categories with 14.29% and it gradually decreased with the increase of the ownership of land. The percentage of households reported of practicing polyculture was around 80% for the landless, marginal and small farmer households while it was highest among the medium farmer households with more than 88% and was the lowest among the large landholder households with 65%. The practice of white fish and crab was by far highest among the large farmer households and was almost double compared to the landless and small farmer households while the lowest proportion was noticed among the medium farmer households. A significant proportion of the households cultivated fruits and vegetables on the bank of gher from the landless to the medium farmer households but the proportion was less than half for the large landholder households compared to the other categories of households.

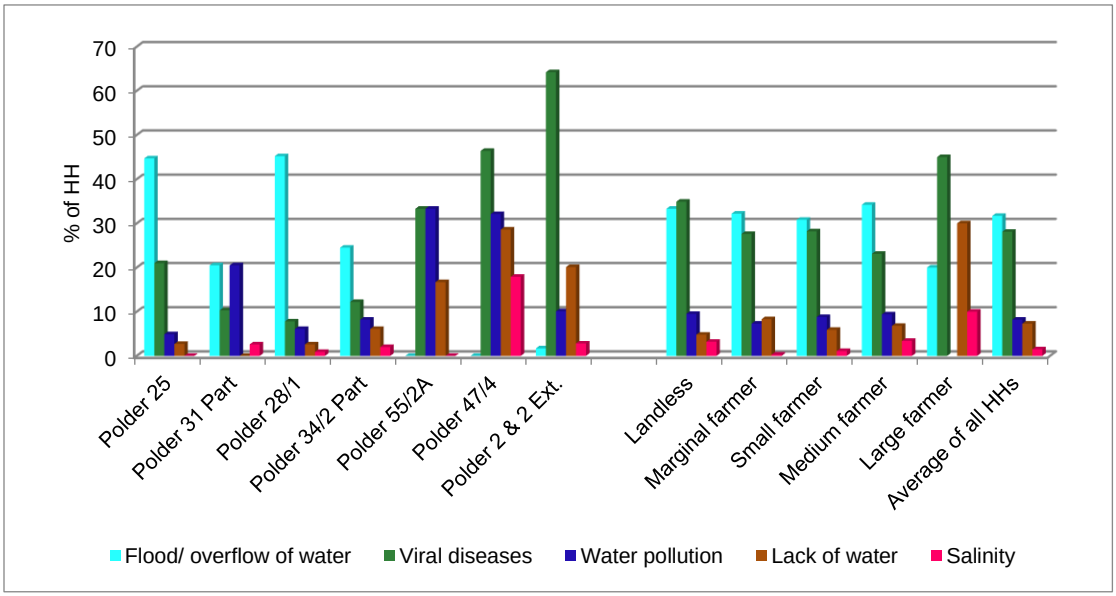

Figure 6-4: Level (%) of HHs among the producers reporting of different problems of undertaking gher by polder and different HH categories

Figure 6-4 explains the percentage of households among the producers reported of facing different problems of undertaking gher in the different polders and different types of households. Among the producer households, the majority (31.7%) mentioned the problem of flood and overflow of water for gher cultivation and 28.1% pointed out the viral disease. On an average around 8% of the households reported both regarding the water pollution and the shortage of water.

The problem of flood and overflow of water was more prominent in Khulna zone with around 45% in the polder 25 and polder 28/1 while it was mentioned by more than 20% of the households of the other two polders (31 Part and 34/2 Part) of Khulna zone. Very insignificant percentage of the households (1.7%) in the polder 2 and 2 Ext. of Sathkhira zone pointed out this problem. The viral disease was recorded in the polder 2 and 2 Ext. (64.2%) of Sathkhira zone, followed by the polder47/4 (46.4%) and the polder 55/2A (33.3%) of Patuakhali zone. The lowest response was recorded in polder 28/1 (7.8%).

The water pollution problem was mentioned significantly in the two polders (polder 47/4 and 55/2A) of Patuakhali zone with around 33% and followed by the polder 31 Part of Khulna zone with nearly 20% of the households. The lack of water recorded the highest in the polder 47/4 (28.6%) and followed by the polder 2 and 2 Ext. (20.1%) and the polder 47/4 (16.7%). The average response rate was 1.5% for salinity problem but it was significantly mentioned by the households of the polder47/4 of Patuakhali zone with nearly 18%.

It was difficult to identify any trend the problem of gher cultivation among the different farmer household categories. The response rate regarding flood and overflow of water was comparable among the different categories ranging from 30.8% for the landless to 34.2% for the medium farmer category. The rate was recorded minimum (20%) for the large farmer category. The problem viral diseases were recorded higher among the large farmer category (45%) and the landless farmer category (34.9%). The response rate was very close for the rest of the household categories ranging from 23.1% to 28.2%. A trend of gradual decrease was observed from landless to medium farmer category for the problem but the rate triggered in large farmer category.

7.3% of the households reported the problem of shortage of water on an average. The maximum response was noted in large farmer category (30%) which was significant compared to the other household categories. The rate of response ranged from 4.8% to 8.3% for the other categories. Similarly, the average response rate to salinity problem was recorded 1.5% while the large farmers responded significantly higher (10%) compared to the other household categories.

Table 6-4: Fish selling, consumption pattern and income among the gher fish producers in the last twelve months by polder

Polders	Selling fish (% of HH)	Avg. sell (kg/HH)	Avg. consumption (Kg/HH)	Avg. earning from fish selling (Tk/HH)	Avg. earning from cultivation of veggie & fruits in gher (Tk/HH)
Polder 25	96.0	243	53	77,782	8,525
Polder 31 Part	89.7	260	57	67,553	3,436
Polder 28/1	91.3	148	55	48,127	16,990
Polder 34/2 part	95.9	227	56	69,167	4,194
Polder 55/2A	100.0	384	24	58,167	1,333
Polder 47/4	100.0	262	42	64,567	4,607
Polder 2 & 2 Ext.	100.0	661	63	1,44,730	780
Total	96.1	318	55	85,959	7,358

Table 6-4 explains the selling and consumption pattern average among the producers of the gher fisheries over the last twelve months in the different polders. On an average 96.1% of the households sold fish. It was significant that 100% households that practiced gher fisheries sold fishes in the polder 55/2A, 47/4 of Patuakahli zone and the polder 2 and 2 Ext. of Sathkhira zone. Overall the findings suggest that households commercially practiced gher fisheries.

The rate of average sell was 318 kg/HH and the average sale was by far highest in the polder 2 and 2 Ext. (661 Kg/HH) in Sathkhira zone and that was more than double compared to most of the polders. The significant amount of sale also recorded in the polder 55/2A with 384 Kg/HH followed by the polder 31 Part and 47/4 with around 260 kg/HH and it was by far the lowest in the polder 28/1 with 148 Kg/HH.

On an average 55 kg/HH fish was consumed by the households in the seven studied polders. The range of consumption was minimum (24 Kg/HH) in polder 55/2A of Patuakhali zone and was maximum (63 Kg/HH) in polder 2 and 2 Ext. of Sathkhira zone. Households in polders of Khulna zone consumed more fish than Patuakhali and Sathkhira zone. On an average 85959Tk/HH was earned by fish selling in the different polders. The maximum amount of earnings was recorded in the polder 2 and 2 Ext. (144730 Tk/HH) of Sathkhira zone that was more than double or three times compared to the other polders. Earnings of other polders ranged from 48127 Tk/HH to 77782 Tk/HH.

Average earnings from fruit and vegetable cultivation on the bank of gher was recorded 7358 Tk/HH of which the maximum amount was recorded in polder 28/1 (16990 Tk/HH) and the minimum in the polder 2 and 2 Ext. (780 Tk/HH). The findings show that households in the polder 2 and 2 Ext. earned the highest from selling fish but the earning was minimum from the of selling vegetables and fruits.

When this data was analyzed according to the household category, data shows that around 96% producer households sold fishes. Average sell, average consumption, and the average earning from fish sell were gradually increased from the landless to the large land households. However, the large farmer category was by far higher in these regards compared to the other category. On the other hand, average earning from vegetables and fruits from the bank of ghers was highest for the medium farmer households followed by the small farmer households and it was lowest among the large farmer households (see Annex-1 Table 8).

Figure 6-5 explains the selling percentage of fishes in the different market by the different types of households in the different polders. The data shows an overall tendency of selling fish in the local market in the study areas. On an average 81.6% of the household sold fish to the local market. The tendency of selling in the local market was observed by far highest in the polder 2 and 2 ext. (97.2%) of Sathkhira zone. The fish selling at local market ranged from 69.4% (polder 34/2 part of Khulna) to 83.3% (polder 55/2A of Patuakhali zone).

On the other hand, average 26.5% of the households sold fishes at the zone market. The percentages of households in the polder 34/2 part and polder 28/1 of Khulna zone with around 45% (44.3%) and was lowest in the polder 2 and 2 Ext. (5.0%) of Sathkhira zone. None of the households in polder 55/2A of Patuakahli zone reported of selling fishes in the district market.

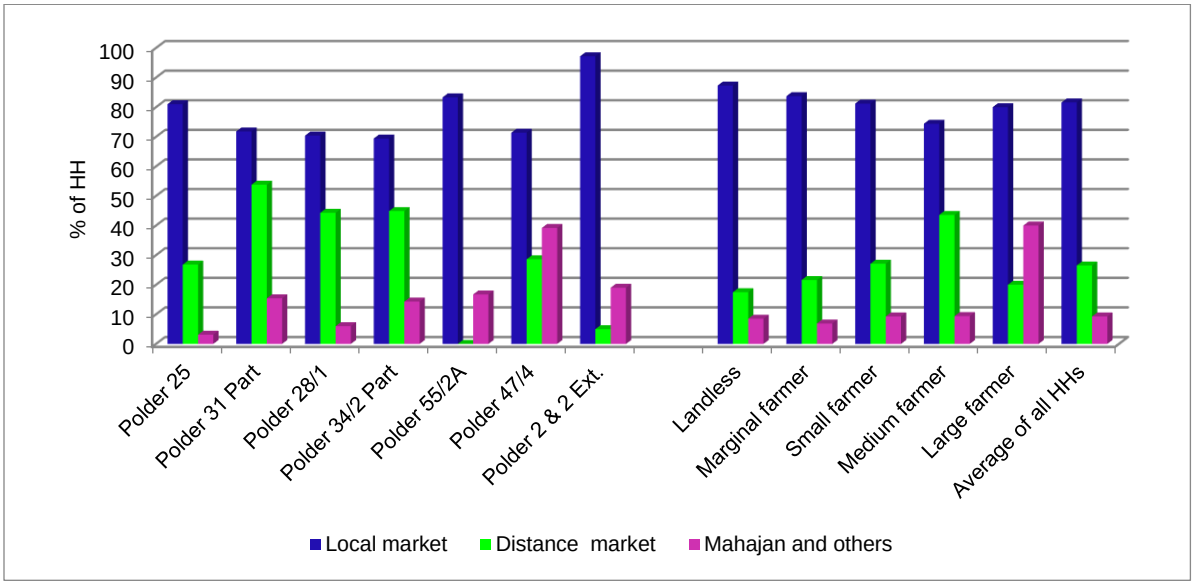

Figure 6-5: Level (%) of HHs reporting of selling of fish in different markets by polder and HH category

Households averaging 9.3% sold their fishes to Mahajan and others and the percentage of households of selling was significantly higher in polder 47/4 (39.2%) of Patuakhali zone compared to the other polders. The percentage was only 3.1% % in the polder 25 and 6% in the polder 28/1of Khulna zone.

Data explains that the local market was most popular place to sell fishes for all types of households. It was the highest (87.3%) within the landless farmer category and was least (74.4%) within the medium farmer household category. The proportion of households was very closely comparable among the other three household categories. Selling fish in the distance market was by far highest (43.6%) in the medium farmer category that was more than double compared to the landless, marginal and even large farmer household. The selling of fishes to mahajan and others was significantly higher in the large farmer category (40%).

Table 6-5: Level (%) of households reporting main problems of fish cultivation in different polders

Name of the Polder	Low fish price	High price of fish feed	High price of fingerlings/ input	Flooding during high tide	Quality of fingerlings	Theft of fish
Polder 25	71.7	61.9	44.7	30.5	24.8	25.4
Polder 31 Part	48.7	23.1	17.9	25.6	20.5	12.8
Polder 28/1	35.7	44.3	39.1	47.8	15.7	3.5
Polder 34/2 part	44.9	38.8	34.7	30.6	32.7	10.2
Polder 55/2A	8.3	41.7	50.0	41.7	16.7	33.3
Polder 47/4	21.4	60.7	46.4	60.7	25.0	17.9
Polder 2 and 2 Ext.	54.7	25.1	24.0	21.8	31.3	14.5
Total	58.5	48.7	38.1	31.9	25.1	18.8

Table 6-5 states the different problems faced by the producer households for fish cultivation (both for the pond and gher fisheries) in the different polders. The most reported problem of fish cultivation was the low fish price with average 58.5% of the households. This problem was most prominent in the polder 25 (71.7%) of Khulna but the percentage varied significantly across the polder with the lowest percentage (8.3%) in the polder 55/2A of Patuakhali zone. High price for fish feed was reported as the second most common problem among the polders which was reported by overall 48.7% of the households. This problem was observed more in the polder 25 (61.9%) of Khulna zone and the polder 47/4 (60.7%) of Patuakhali zone. The least (23.1%) percentage of households was noted in the polder 31 part of Khulna zone.

A total 38.1% of the households mentioned of high price of fingerlings and input that constrained them to fish cultivation. Around half of the households among the producers of the polder 55/2A and more than 40% of the households of the polder 47/4 and 25 reported regarding this problem. Overall one-third of the households mentioned of flooding during high tide as a problem for fish cultivation. The maximum response was recorded in the polder 47/4 (60.7%) and followed by the polder 28/1 Part (47.8%) and the polder 55/2A (41.7%). Around 30% of the households in the polder 25 and 34/2 Part also mentioned this problem. A total 25.1% of the households reported about the quality of fingerings as a problem of fish cultivation. The percentage was reported higher in the polder 34/2 Part and polder 2 and 2 Ext. with around 32% of the households. Overall 18.8% households viewed theft of fish also one of the main problems for cultivation and the response rate was significantly higher in the polder 55/2A of Patuakhali zone.

Household category wise data show that (see Annex-1 Table 9), though the low price of fish was identified as the most common problem for all of the categories of the household, the problem was reported most by the landless (66.7%) farmer households and followed by the medium farmer category (64.1%). The percentages of the households that mentioned this problem were varied from 50% to 57.8% among the other household categories.

High price for fish feed was reported as a problem by 48.7% of the households of which the highest percentage was observed in the medium farmer households (61.5%) subsequently the landless (58.7%) and small (49.1%) farmer category mentioned this problem. High price fingerlings and input was reported by the significant percentage of all of the categories but it was not varied across the polder by far. For the problem of flooding during high tide, the highest response was recorded in the large farmer category (40%) and the range of response varied slightly from 31.7% to 35.9% from the landless to the medium farmers.

One-fourth of the households reported about the quality of fingerings as a problem of fish cultivation. The percentage was reported higher among the landless and medium farmer category with more than 32% of the households. On the contrary, 25% of the large landholder households reported of theft of fish as a problem of fish cultivation.

Table 6-6: Information on gher fisheries by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
Having gher fisheries (% of HH)	3.9	40.6	17.8	23.9
Average size of gher (ha)	0.4	0.5	0.7	0.5
Average yield of shrimp fish (t/ha)	0.2	0.2	0.3	0.3
Average price of shrimp fish (Tk/kg)	494	601	535	556
Average yield of prawn fish (t/ha)	0.2	0.2	0.1	0.2
Average price of prawn fish (Tk/kg)	669	608	534	607
Average yield of white fish (t/ha)	1.7	0.6	0.9	0.7
Average price of white fish (Tk/kg)	134	132	110	126
Selling fish (% of HH)	100	96.6	100	94.1
Average sell(Kg/HH)	328	226	661	318
Average consumption (Kg/HH)	32	54.6	63	55
Average income (Tk/HH)	61,107	69,873	1,44,730	85,959

Table 6-6 describes zone wise gher related information that includes the percentage of households that reported of having gher, size of the gher, production and market price of prawn, shrimp, and white fish. Overall almost 24% households reported of having gher where 40% households of Khulna reported of having gher, while the percentage of households in Satkhira zone was less than half compared to Khulna zone. Many of the polders of Khulna and Satkhira zone have a gher based cropping system. On the other hand, the percentage was only around 4% in Patuakhali zone, Households of this zone were likely to practice pond fisheries and followed a crop-based agriculture system. On an average, the size of the gher rated 0.5 ha and the average size of gher varied significantly among the zone while it was 0.4 ha in Patuakhali zone and was 0.7 ha in Sathkhira Zone.

Yield of shrimp and prawn was almost same in Patuakhali and Khulna zone while the yield of shrimp was higher compared to the yield of prawn in Sathkira zone. On the other hand, the yield of white fish was highest in Patuakhali zone. The findings of three zones show that though the average yield of white fish was higher compared to the average yield of shrimp and

prawn, the average market price of shrimp and prawn were significantly higher compared to the average market price of white fish in each of the zone.

Findings show that households that practiced gher had a positive tendency to sell their produced fish as 100 of the household's form Patuakhali and Satkhira zone reported of selling the fish while the percentage was slightly lower in Khulna zone. In addition, the average quantity of selling fish and income per households also was by far the highest in Satkhira zone compared to Patuakhali and Khulna zone.

7. POULTRY AND LIVESTOCK

Poultry and livestock was one of the main sub-sector for the livelihoods of the people of the rural coastal areas especially for poor households and were potentially important for poverty reduction. These are one of the key elements of economic security for most households in rural Bangladesh. BGP encourages HH in the project areas to see poultry and livestock as a productive asset, so it is expected that the percentage of households of rearing poultry and livestock will rise over the lifespan of the project. The household survey included a series of questions designed to assess patterns of ownership of poultry and livestock, household income from them as well as the pattern of consumption of poultry and livestock products that they produced within the households.

7.1 Pattern of Poultry Rearing, Production and Income

Figure 7-1 and 7-2 explores respectively the percentage of households reported of having poultry and the average numbers of adult chicken, ducks, and geese owned per household in the study polders and different household categories. Poultry production was the most common practice of the households of the study areas and that was practiced by about 80 percent of surveyed households.

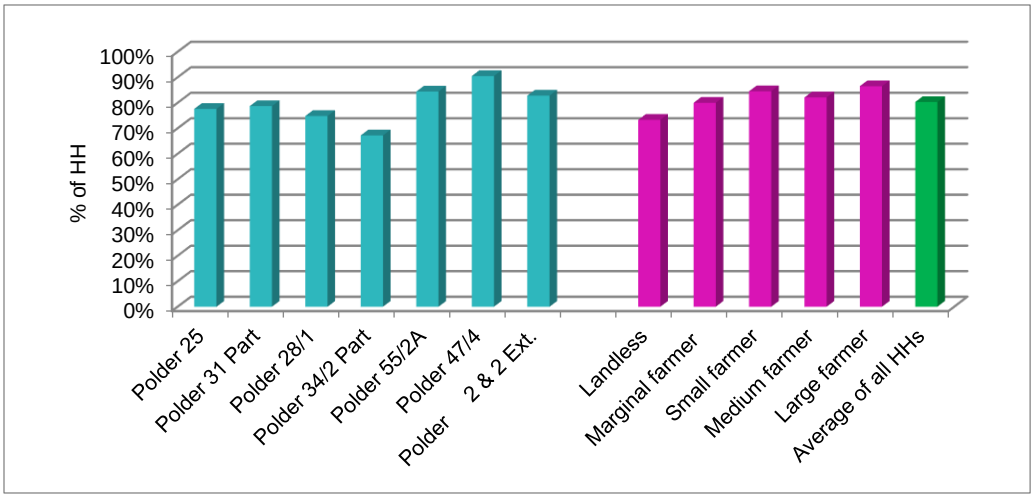

Figure 7-1: Level of (%) of HHs reporting of rearing poultry by polder and HH category

Among the polders, the highest proportion of households (90.5%) reared poultry in the polder 47/4 followed by polder 55/2A (84.4%) while the lowest percentage (67.2%) of households was reported in the polder 43/2 Part. In the study areas the average number of adult chicken, ducks and geese were 4.7, 4 and 1 per households with an average egg production 28 per month per household. The average number of adult chicken, duck and geese considerably varied among the polders. The average number of adult chicken was more than double in the polder 47/4 compared to the polder 34/2 Part while the average number of adult duck was around 5.5 for the polder 55/2A and 47/4 compared to the average number just over 3 in the polder 25 34/2 Part and polder 2 and 2 Ext.

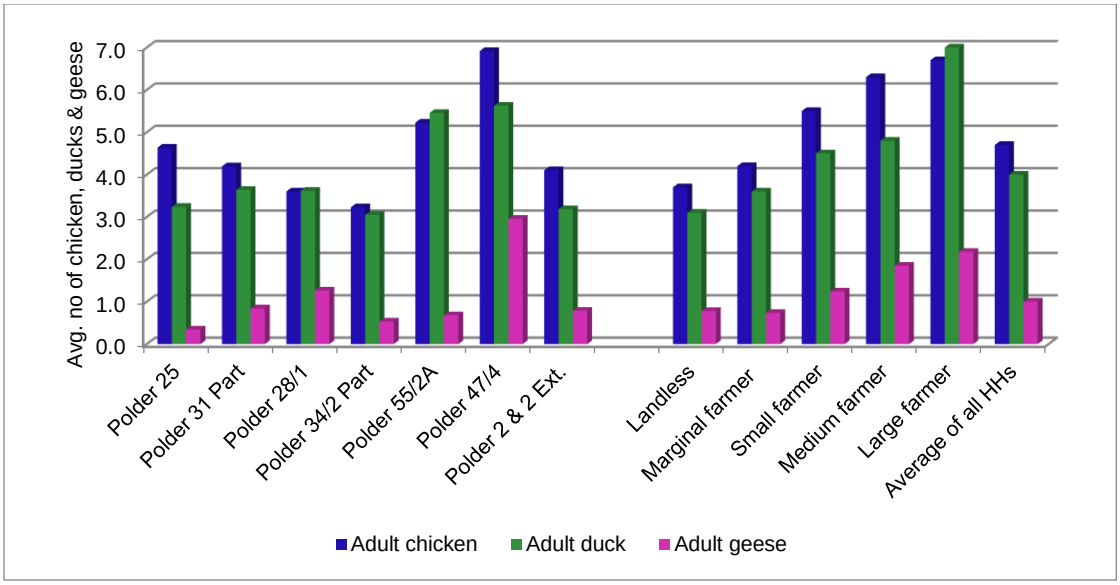

Figure 7-2: Average number of adult chicken, ducks and geese by polder and HH category

The household category wise scenario of rearing poultry shows that there was a positive correlation with possess of poultry and land ownership. In the large farmer households group, 86.5% households owned poultry with an average 6.7 adult chicken and 7 adult ducks compared to around 74% households of landless households had poultry with an average 3.7 adult chicken and 3.1 adult ducks. Ownerships of the adult chicken, ducks and geese were gradually increased with the increase of the size of land.

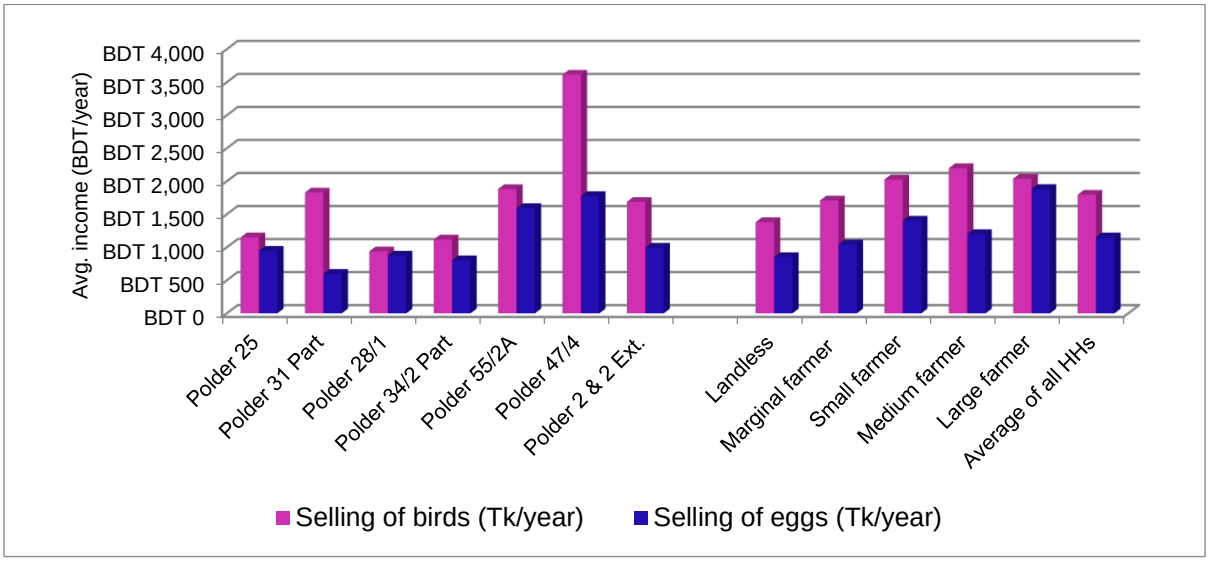

Figure 7-3: Average yearly income of the HHs from the selling of birds and eggs by polder and HH category

Figure 7-3 shows the income from poultry through the selling of birds and eggs. Households of the study areas reported that they had a regular income from poultry through the selling of poultry birds and eggs. The average yearly income from the selling of birds was 1796 Tk/Yr. This income varied significantly among the polders, households of the polder 47/4 reported the higher average income from both of the selling of birds (3615 Tk/Yr) and eggs (1776 Tk/Year) while income

from these two options was least in the polder 28/1 with 939 Tk/year for the selling of the birds and in the polder 31 part with 600 Tk/Yr for the selling of egg. Figure 7.1.3 illustrates also the household category wise scenario of income from this option. The income from poultry steadily increased from the landless to the medium category of households but dropped for the large household category. Though the large farmer households mentioned a higher average number for poultry, the medium farmer households reported of having the highest income (2200 Tk/Yr) from the selling of birds that was considerably higher than the average income of landless households from the selling of poultry birds. On the hand, the number of harvested eggs and the income from selling eggs increased steadily with the increase of the ownership of land.

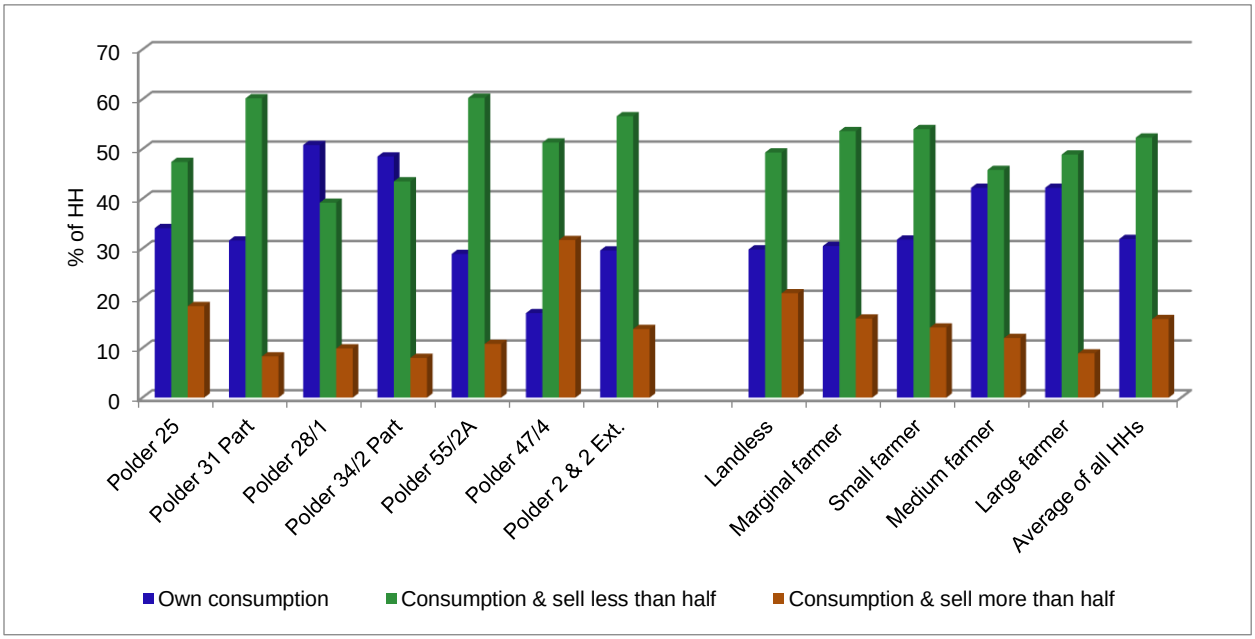

Figure 7-4: Level (%) of HHs reporting of reasons for rearing poultry by polder and HH category

Figure 7-4 explains the reasons for rearing poultry in the study polder among the different household category. The data explores that households of the study areas reared poultry mainly for household consumption as average 31% of the household mentioned that rearing poultry was for only for household consumption while 69% reported that they reared poultry for both consumption and selling where 51% households sold less than half of their productions while only 15% sold more than half of their productions. The poorer households were more tend to rear poultry for income while the well-off householder reared poultry for their household consumption. In the case of landless and marginal farmers households the income from selling of poultry bird and selling of egg were considerably less than the large, medium or even small farmer types while the well-off group tended to sell less proportion of their productions.

Table 7-1: Poultry rearing situation and income from poultry by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
Having Poultry (% of HH)	87.2	74.4	82.8	80.3
Average no of adult chicken (per HH)	6	4	4.1	4.7
Average no of adult ducks (per HH)	5.5	3.3	3.2	3.2
Average no of adult geese (per HH)	1.7	0.6	0.8	0.8
Average income from selling birds (Tk/Yr)	2,678	1,181	1,688	1,796
Average income from selling eggs (Tk/Yr)	1,679	861	996	1,152

Table 7-1 explores the picture of poultry rearing in the different zones. Among the zones, the highest proportion of households (87.2%) reared poultry in the Patuakhali zone followed by Satkhira zone (84.4%) while the lowest percentage (74.4%) of households was reported in Khulan zone. The average number of adult chicken, duck and geese considerably higher in Patuakhali zone compared to Khulna and Satkhira zone and these numbers were almost same in Khulna and Satkhira zone. The average numbers of adult chicken, ducks and geeses per household were 6, 5.5 and 1.7 compared to around 4, 3 and 0.8 respectively for both Khulna and Satkhira zone. The table also shows the income from poultry through the selling of birds and eggs. Households of Patuakhali zone also reported a higher income both for the selling of poultry birds and eggs followed by Satkhira zone. On the other hand, income from these two options was the least in Khulna zone. It is noteworthy that overall around 32% of the households reared poultry fully for the household's consumption while nearly 53% reported that they consumed more than half of their production (see the table 7-1)

7.2 Pattern of Livestock Rearing, Production and Income

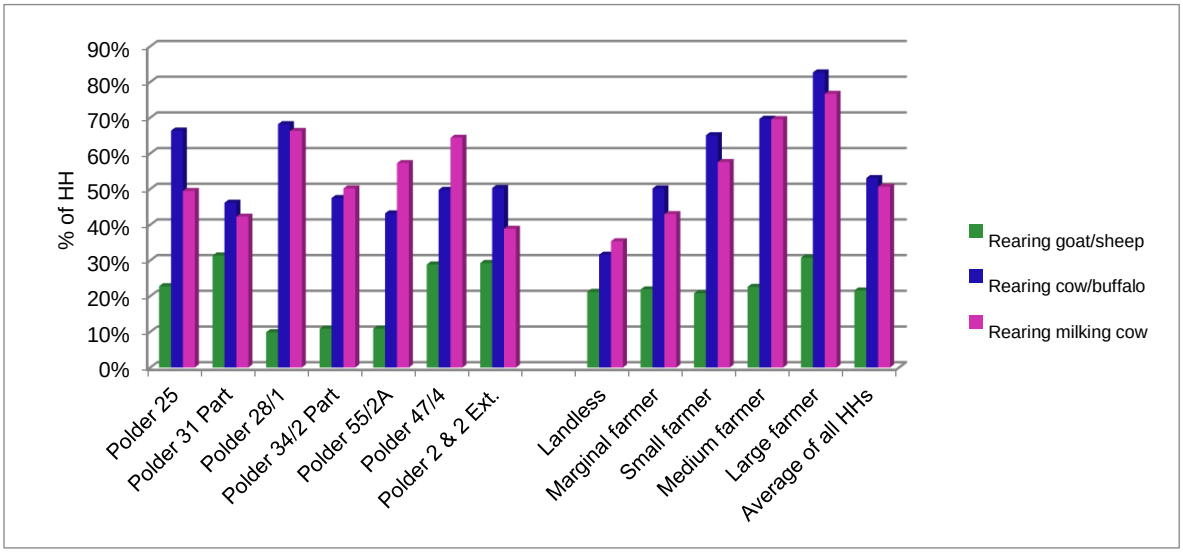

Figure 7-5: Level of (%) of HHs reporting of rearing livestock by polder and HH category

Figure 7-5 and 7-6 show respectively the percentage of households rearing different livestock that includes goat, sheep, cow and buffalo and the average number of different types of livestock by the study polders and household category. A lower percentage of households reported owning of goats/sheep compared to the percentage of households mentioned of having cows/buffaloes. The percent of households reared goats/sheep varied from 9.9% to 31.4% with on an average of 21.6% goats/sheep keeping households. The average number of goats/sheep in different polders was ranging from 2.7 to 4.0, with an average number 3.2.

On the other hand, more than 50% of the households reported of having cows/buffaloes in the study areas. The polder 25 had the highest proportion of households engaged in rearing cows/buffaloes with 68.2%, followed by polder 28/1 with 66.4%. The five other polders varied from 43.2% to 50.3% of the households. As like of having cows/buffaloes, around 51 % of the households reported of having milking cow where the polder 28/1 and 47/4 reported a higher percentage of household with around 65% compared to the nearly 39% of the households in the polder 2 and 2 Ext. Overall the average number of cows/buffalos was just over 3 but was not equally distributed among the polders where the polder 47/4 and 28/1 reported a higher average number with 4.2 and 4 respectively that was more than double compared to the polder 25 and 2 and 2 Ext.

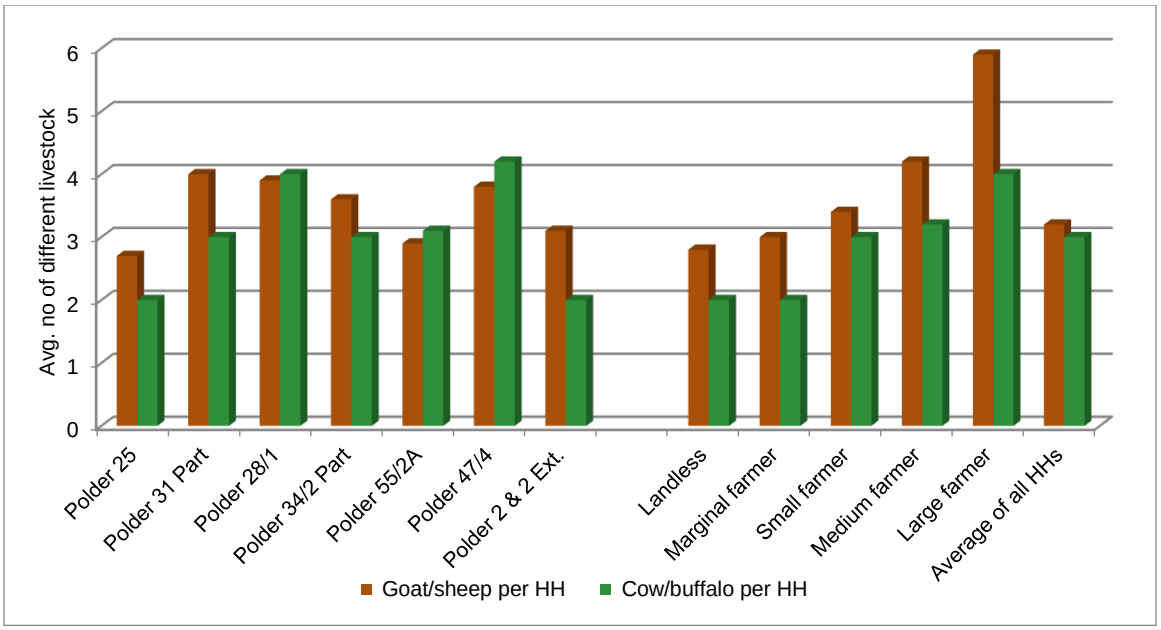

Figure 7-6: The average number of different livestock by polder and HH category

Household category wise variation was visible in term of belonging of different types of livestock. Among all types of the household, a higher percentage (30.8%) of large farm households mentioned of having goats/sheep with an average number around 6 compared to the percentage of other types of households (around 21%). The landless and marginal farmer households had almost half number of goats/sheep per household compared to the large farmer households.

The percentage of households reported of owning cows/buffaloes (including milking cows) was gradually increased with the economic status of the households. Compared to the average percentage (around 53 %) for all types of households, a higher percentage (82.7%) of the large farm households mentioned of having cows. The average number of cows/buffaloes of the landless and marginal farm households was just half compared to the large farmer households.

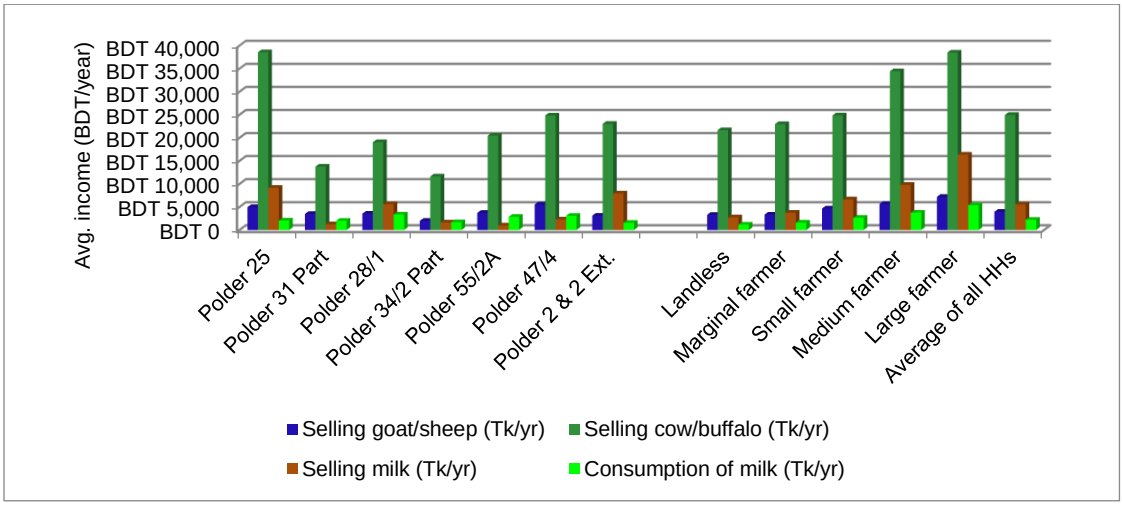

Figure 7-7: The average income from livestock by polder and HH category

Figure 7-7 explores the average income from different types of livestock in the study polders and the different types of households the average yearly earning from the of selling goats/sheep was average 3943 taka per household per year in the study areas where the polder 34/2 Part had the lowest average with 1996 TK/Yr compared to the highest average with 4954 TK/Yr in the polder 25.

Average yearly income from selling cows/buffaloes was 24952 Taka in the study areas, however, there was a significant difference of income among the polders. For example, the highest average income was in polder 25 with Taka 38522 that was more than three times compared to the lowest average yearly income in the polder 34/2. It indicates that income of having cows/buffaloes was much higher than the income of having poultry and goats/sheep.

The production of milk per year was considerably higher in the polder 25 and 2 and 2 Ext with 331 and 296 liter/year respectively and that was more than three times compared to the polder 31 Part with 81 liter/year that resulted a higher income. The data shows a considerable increase of the average household income from all types of livestock with the increase of the area of owned land. The large farm households had almost double income from all types of livestock compared to the landless and marginal farmer households. The large farm households had around six times higher production of milk and income from the selling of milk compared to landless households. Data shows that the differences regarding all aspect of livestock between the large landholder households and the marginal and small landholder households were also significantly noticeable.

Table 7-2: Livestock rearing situation and income from livestock by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
Having goat/sheep (% of HH)	19.2	18.5	29.3	21.6
Having cow/buffalo (% of HH)	46.2	59.3	50.3	53.1
Having milking cow (% of HH)	60.6	51.5	38.9	50.7
Average no of goat/sheep (per HH)	3.3	3.3	3.1	3.2
Average no of cow/buffalo (per HH)	3.6	2.7	2	3.1
Average income from selling goat/sheep (Tk/Yr)	4,546	3,766	3,097	3,943
Average income from selling cow/buffalo (Tk/Yr)	22,446	25,533	23,008	24,952
Average income from selling milk (Tk/Yr)	1,575	5,697	7,923	5,530
Consumption of milk (Tk/Yr)	2,953	2,131	1,553	2,209

Table 7-2 shows the percentage of households rearing different livestock that includes goat, sheep, cow and buffalo and the average number of different types of livestock by zone. A lower percentage of households reported owning of goat/sheep compared to the percentage of households mentioned of having cow/buffalo and milking cow in every zone. The percent of households reared goats/sheep was almost same in Patuakhali and Khulna zone while the percentage was by far higher in Satkhira zone compared to Patuakhali and Khulna zone. However, the average number of goats/sheep per households was similar in three zones. In addition, the average income from selling goat/sheep was the highest in Patuakhali zone while was the lowest in the Satkhira zone.

Khulna zone reported the highest proportion of households engaged in rearing cows/buffaloes with nearly 60% while the highest percentage of having milking cows was mentioned in Patuakhali zone but the proportion of households engaged in rearing cows/buffaloes was the lowest in this zone. The average number of cow/buffalo was not equally distributed among the zones where Patuakhali zone reported the highest average number followed by Khulna and then Satkhira zone.

Average yearly income from selling cows/buffaloes was not significantly varied among the zones. On the other hand, average yearly income from selling milk was by far higher in Satkhira zone and it was more than five times compared to Patukhali zone. However, the average yearly value of consumed milk per household of Patuakhali zone was around double compared to Satkhira zone.

8. CROP LOSSES, IRRIGATION FACILITIES AND COMMUNITY PARTICIPATION IN WATER MANAGEMENT

The households of coastal areas are vulnerable to climate variability and extreme climatic events like cyclone. In addition, the effects of tidal floods and surges, the people in the coastal polders are vulnerable to the intrusion of saline water, shortage of fresh water in the dry season. The consequences of sea-level rise have resulted saline water intrusion up coastal rivers and into groundwater aquifers, reducing the availability of fresh water and increased drainage congestion inside polders. On the other hand, siltation on river bed constrains drainage system of water that creates water logging inside the polders during the kharif-II season/rainy season and leads to losses of crop and income. So, the baseline survey consists of question related to crop losses, irrigation facilities during dry season and community participation in water management in the study polders.

8.1 Crop Losses

Table 8-1: Level (%) of HHs reporting of yearly crop losses and average loss per HH (in BDT) among the crop growers for the main crops by polder

	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 and 2 Ext.	Total
HH reported crop loss (%)	20.7	5.9	40.1	13.2	39.1	44.1	9.3	23.1
Average crop loss(BDT)								
Rice (BDT)	10,907	6,180	13,821	13,159	6,867	7,851	13,540	9,830
Vegetable (BDT)	3,340	3,500	2,436	0	23	371	409	1,084
Oil seeds (BDT)	0	1400	370	561	907	376	241	453
Mungbean (BDT)	0	0	166	0	7,328	5,207	0	3,209
Other pulses (BDT)	0	0	0	0	1,086	5,525	0	1,653

Table 8-1 explains the percentage of household reporting of yearly crop losses in different polders and also shows the average losses per households (BDT) of the study polders for the different types of crop. On an average, 23.1% of the households reported crop losses in the study polders and crop loss was recorded the most in Patuakhali zone followed by Khulna and Sathkhira zone. Crop loss was reported the highest with 44.1% of the households in the polder 47/4 follow by the polder 28/1 and 55/2A with 40.1% and 39.1% respectively while the least percentage of households mentioned crop loss (5.9%) in the polder 31 Part.

Among all the crops, loss of rice was reported most and the amount was also the highest with an average 9830 Tk/HH. The maximum amount (13821 Taka) of loss for rice was recorded in the households of the polder 28/1. A similar amount of loss was observed in the polder 2 and 2 Ext. (13540 Taka) followed by the polder 34/2 Part (13159 Taka). The second highest loss for the crop was recorded for mung bean with 3209 Taka per households. Only the two polders (polder 55/2A and polder 47/4) from Patuakhali zone reported the loss for mung bean with average losses with 7328 Taka and 5207 Taka respectively. The losses for other pulses also observed in these polders especially a loss of average 5525 Taka per household was recorded in the polder 47/4. None of the polders of Khulna and Sathkhira (excluding polder 28/1) zone reported of losses for mung bean and other pulses as the cultivation of mung bean and different pulses were very limited.

For vegetable cultivation, 1084 Tk/HH was lost on an average of which the maximum was recorded for the households of the polder 31 Part of Khulna zone. A similar amount of loss was observed in the other two polders (polder 25 and polder 28/1) of this zone. The households of the polders of Patuakhali and Sathkhira zone also experienced losses for vegetable cultivation but amounts were not very significant compared to the polders of Khulna zone that reported losses.

All the polders (excluding the polder 25) reported of losses for different types of oil seeds (including sesame and sunflower) cultivation while the average was highest in the polder 31 Part with 1400 Tk/HH households followed by the polder 55/2A with 907 Tk/HH.

Table 8-2: Level (%) of HHs reporting of crop losses and average losses for the main crops per HH (BDT) among the growers by HH category

Name of the crop	Landless Farmer	Marginal Farmer	Small Farmer	Medium Farmer	Big Farmer	Total
HH reported any crop loss (%)	7.7	19.1	33.4	39.8	40.4	23.1
Average crop loss (BDT)						
Rice (BDT)	7,506	8,482	9,181	14,715	20,776	9,830
Vegetable (BDT)	380	1,061	1,295	972	143	1,084
Oil seeds (BDT)	136	424	540	225	1,388	454
Mungbean (BDT)	2,148	1,988	3,295	5,457	10,570	3,209
Other pulses (BDT)	1,530	967	1,322	3,115	10,007	1,653

Table 8-2 explains the percentage of household reporting of crop loss and the average loss per households (BDT) among the growers for different crops of the different household category. A trend of rapid increase of crop loss was observed from the landless farmer to the large farmer category. The Large farmer households (40.4%) were highest in reporting of crop losses followed by the medium farmers (39.8%) and Small farmers (33.4%). The landless farmers (7.7%) were lowest for reporting loss of crop. The large farmer category mentioned the maximum amount (20776 Taka) of loss for rice production. Landless farmers indicated the minimum amount (7506 Taka) of loss. The crop loss regarding rice production for the households gradually increased from the landless to the large farmers. Similar trend was observed for the loss of mung bean, the large farmers had a loss of Taka 10570 on an average where the landless farmers indicated a loss of 2148 Taka which was almost five times lower compared to the large farmers.

The average rate of loss for vegetable cultivation was higher for the marginal (1061 taka) and small farmer (1295 taka) category. An increasing trend was observed from the landless to the small farmer category, although the rate decreased for the medium and large farmer category.

The loss for oil seed cultivation rated the maximum (1388 taka) in the large farmer category and the minimum in the landless farmer category (136 taka). Similar to the loss of the vegetable cultivation trend, the amount of loss showed an increasing trend till small farmer category and decreased significantly at the medium farmer level but increased again in the large farmer category.

For other pulse production, the loss was reported on an average 1653 Taka. A significantly higher rate of loss was observed among the large farmers comparing to the other farmer categories and the loss was 10007 Taka which was more than ten times higher compared to the marginal farmer households.

Table 8-3: Level (%) of HHs reporting of causes of crop losses by polder

Causes of crop losses	Water logging	Flooding	Salinization of land	Cyclone/ tornado	Pest/disease attack	Drought	Other
Polder 25	46.2	35.3	3.2	2.6	10.9	8.3	5.1
Polder 31 Part	20.0	10.0	10.0	0	50.0	10.0	10.0
Polder 28/1	62.9	60.8	2.1	0	16.5	6.2	4.1
Polder 34/2 Part	45.8	8.5	18.6	3.4	22.0	25.4	3.4
Polder 55/2A	80.3	33.0	0.5	34.9	7.3	3.2	0.9
Polder 47/4	41.1	19.6	52.2	11.0	10.5	8.6	2.9
Polder 2 & 2 Ext.	74.2	5.4	9.7	1.1	9.7	4.3	6.5
Total	58.4	28.3	16.4	12.6	11.6	7.6	3.4

Table 8-3 describes the percentage of households reporting of crop loss for various natural calamities in the different polders. The table represents that, water logging was reported by the maximum (58.4%) number of all households considering all the polders followed by flood (28.3%) and salinization (16.4%). Flood, waterlogging, drought, pest, and other disease affected the crop cultivation significantly in Khulna zone whereas the salinity and cyclone caused the crop loss more in Patuakhali zone.

On an average, water logging resulted in crop damage for the highest percentage (58.4%) of households. Crops were damaged significantly due to waterlogging in the polder 55/2A (80.3%) of Patuakhali zone, the polder 2 and 2 Ext. (74.2%) of Sathkhira zone and the polder 28/1 (62.9%) of Khulna zone. The minimum (20%) households indicated waterlogging as a cause of crop damage that was recorded in the polder 31 Part of Khulna zone.

On an average 28.3% of the households indicated flood for the reason of crop losses in all the polders while the highest percentage of households (60.8%) marked flood in the polder 28/1 of Khulna zone. The percentage was similar for the polder 25 (35.3%) of Khulna and the polder 55/2A (33.0%) of Patuakhali zone. A few households mentioned flood in the polder 2 and 2 Ext. of Sathkhira and the polder 34/2 Part of Khulna zone.

Salinization cyclone and pest/disease attack were also reported one of the main causes of crop damage in the different polders of the study areas. Salinization affected 16.4% of the total households and the rate was significantly higher (52.2%) in the polder 47/4 of Patuakhali zone. On the other hand, around 12% of the total households mentioned cyclone and pest/disease attack while the crop cultivation of around 50% of the households in the polder 31 Part of Khulna zone was affected by pest/disease attack.

Household category wise data shows (see Annex-1 Table 10). that water logging was observed the higher within the marginal (62.1%) and the large (61.9%) farmer categories. The percentages of households were similar for the small and medium farmer categories and the lowest (42.0%) rated for the landless farmer category.

Flood reported the highest (35.1%) by the small farmer category the reporting rates for this calamity were almost similar for the small, medium and large farmer categories with 35.1%, 31.2%, and 33.3% respectively.

Salinity was pointed out higher by far by the landless (32%) and large farmer (33.3%) category and the marginal farmers reported least (13.3%). In addition, 12.6% of the total households agreed that the cyclone/tornado affected crop production and the rates were comparable within the landless (12.6%), marginal (12.6%) and the small (12.2%) categories. The percentage was recorded slightly higher (14.7%) for the medium farmer category and the lowest (9.5%) for the large farmer category.

8.2 Irrigation Facilities

Table 8-4; Level (%) of HHs, average area (dec) under irrigation and sources of irrigation water in dry season by polder

Description	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 & 2 Ext.	Total
% of HH using irrigation	67.0	21.9	56.2	38.8	2.1	6.5	51.2	38.6
Average irrigated area (decimal).	73	43	80	86	1	5	90	56
Source of irrigation (% of HH)								
Canal	55.9	73.0	14.7	97.1	25.0	71.0	98.4	73.1
Beel	1.2	0	0	0.6	8.3		0	0.6
Pond	4.0	27.0	6.6	1.7	16.7	77.4	0.2	4.9
Deep Tube-well	58.3	48.6	11.0	96.6	0	0	99.8	71.6
Other means	3.8	0	1.5	0	0	0	0	1.5

Table 8-4 explores the information regarding the use of irrigation during dry season. Overall only 38.6% households in the study areas reported of using irrigation in the Rabi/dry season, but more than 67% of households of the polder 25 and half of the households of the polder 2 and 2 Ext. reported of using irrigation with an average irrigated land per household 73 and 90 decimal respectively. These two polders among the baseline study polders had significant Boro paddy cultivation in dry season and use of irrigation. In the polder 28/1 and polder 34/2 part had comparatively better irrigation facilities with an average irrigated land per household 80 and 86 decimal respectively. In every polder in Khulna and Sathkhira zone, most of the households use different means for irrigating their land though the area of land was limited. Among them deep tub-well and canal were the popular sources of irrigation. Two polders in Patuakhali, the households reported that most of them cultivated only the *Aman* paddy crop, and very limited number of households cultivated any dry season crops in very small amount of land. They reported that they used either the canal or pond to irrigate their small areas.

Moreover, household category wise variation of using irrigation in dry season was also visible in the study areas. A higher percentage of households from landless and marginal farmer households were reported of using irrigation compared to the other household categories. The wealth off households were likely to share crop out their land to the poorer households during the dry season. However, household category wise average area of land under irrigation was reported the lowest for the landless households which were considerably less compared to the large, medium or even the small farmer type households (See Annex-1 Table 11).

Table 8-5 explains the percentage of household reporting of yearly crop losses and their main cause in different zones. Overall, 23.1% of the households reported crop losses in the study areas and crop loss was recorded the most in Patuakhali zone followed by Khulna and Sathkhira zone. Crop loss was reported the least in Satkhira zone fooled by Khulna zone as they have a gher based cropping system and here fish is not included as a crop. The table represents that, water logging was reported by the maximum number of households considering all the polders followed by flood and salinization. Waterlogging, flood, salinity affected the crop cultivation significantly in all the zone while water logging was reported by the maximum number of households considering all the zones.

Table 8-5: Crop losses and irrigation facilities by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
HH faced crop loss (% of HH)	41	20	9.3	23.1
Main causes of crop loss reported by comforted HH				
Water logging	62	45.8	74.2	58.4
Flooding	26.8	29	5.4	28.3
Salinization of land	24.2	8	9.7	16.4
Having irrigation facilities (% of HH)	4.1	52.8	51.2	38.6
Average irrigated area of land(decimal) per HH	2.8	74.5	90	56

Table also explores the information regarding the use of irrigation during dry season. Overall only 38.6% households in the study areas reported of using irrigation in the Rabi/dry season, but more than 50% of households of the Khulna and Satkhira zone reported of using irrigation with an average irrigated land per household 75 and 90 decimal respectively. Most of the polders of these two zones have significant Boro paddy cultivation in dry season with gher based cropping system. The households of these zone used irrigation though the average area of land under irrigation was limited.

8.3 Participation in Water Management

Table 8-6: Level (%) of HHs reporting of having membership in WMG and participation in different O& M activities by polder

	Polder Number							
Description	25	31 Part	28/1	34/2 Part	55/2A	47/4	2 & 2 Ext.	Total
Membership in WMG (% of HH)	0.1	50.3	14.1	0.2	29.6	0	47.4	20.9
Average no of HH members participation in WMG	1	1.2	1.2	1.00	1.10	0	1.1	1.1
Average no of female member participation in WMG	0	0.5	0.4	0	0.7	0	0.5	0.5
No of HH participation in O& M activities	0	0	3	0	2	0	9	14
Average contribution in O& M activities/HH	0	0	225	0	300	0	1727	0
No of HH participate in collective actions	3	0	1	0	0	6	13	20

This table 8-6 explores the membership in water management group (WMG), household participation in water management activities and collective actions. The data shows polder wise variation in term of household membership in the WMGs. It is noteworthy that all of the polders that were selected for the baseline study were the new polders for BGP where the program has started recently and was introducing its activities to the communities. Among the polders, polder 31 Part and polder 2 (but not polder 2 Ext.) were comparatively older than other polders. Polder 31 part reported highest percentage (50.30%) of household membership in WMGs, followed by polder 2 and 2 Ext. (47.36%), polder 55/2A (29.57%) and then polder 28/1(14.05%). The data shows that average just over one person was member of the WMG while the membership of

women was half compared to the average number of the member. It is noteworthy that none of the households of the polder 47/4 was member of WMG within the surveyed households as BGP has started their program just before the data collection for the baseline study. The table also shows missing or very insignificant number of households were engaged in operation and maintenance (O &M) activities of water management as well as collective actions. It is hoped that through the Blue Gold Programs the members of WMGs will participate more in O & M activities of water management and collective actions that will support them to have more livelihood options as well as better economic conditions.

9. FOOD SECURITY

BGP objectives aim to improve the food security situation of the people in the coastal areas by enhanced productivity of crops, fisheries and livestock. Multiple aspects of food security were explored by the survey, including the number of days of consumption of fish, meat and egg within a month, the number of occurrence within the last month and the last year when respondents felt that their households had inadequate food. The households also indicated the months when food was not sufficient. Each of these aspects has been discussed in detail below.

9.1 Food Consumption Pattern

Figure 9-1 summarizes the frequency of monthly household consumption of fish, meat and egg in the different study polders by the different types of households. Polder wise variation of fish, meat and egg intake was not so evident. Fish, meat and egg are the main sources of protein but these were not eaten very frequently in the study areas. Among the three food items, fish was consumed more compared to the consumption of meat and egg while meat was least frequently eaten. The findings show that, in most of the polders, households consumed fish nearly 4-5 days and consumed egg 2-3 days in a week while meat was available rarely to them like 2-3 days within a month. Fish was consumed comparatively higher in the polder 31 Part and 28/1 with around 19 days in a month while the households of the polder 47/4 and 2 and 2 Ext. reported of having meat and egg relatively more days in a month with around 3 days and 11 days respectively.

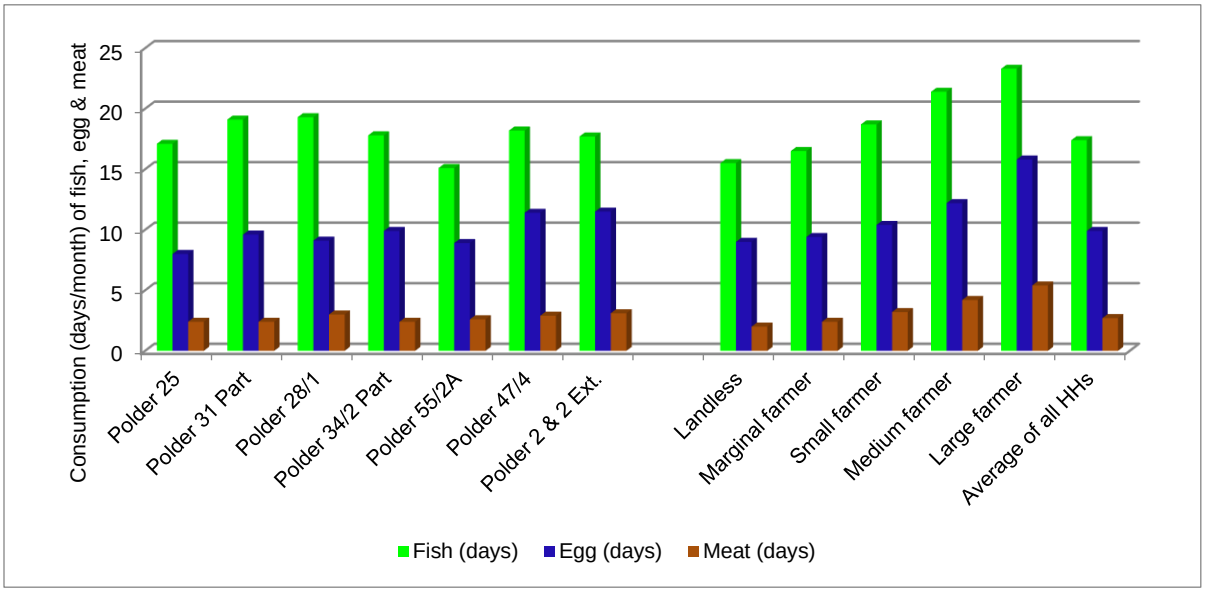

Figure 9-1: Monthly fish, meat and egg consumption patterns (days/month) by polder and HH category

The findings show a steady increase of the number days of taking fish, meat, and egg from the landless households to the large farm households. It is likely that well-off households were financially more stable to having more days of taking fish, meat, and egg within a month. Households classified as landless and marginal farm households were less likely than the other types of households to have had these food items. For example, the average number of days of having meat in the medium and the large farmer households was almost double compared to the landless and the marginal farmer households.

On an average monthly fish, egg and meat consumption were 17.4, 9.9 and 2.7 days respectively. The consumption of fish for the landless and the marginal farmer households was around 16 days while it was just over 21 and 23 days for the medium and the large farmer households respectively.

The landless and marginal households reported that they consumed egg only around 9 days in a month while the medium and the large farmer household consumed about 12 and 16 days respectively. The consumption of meat was considerably low for all of the categories of the households ranging from 2 days for the landless households to just over 5 days in a month for the large landholding households.

9.2 Inadequate Household Food Provisioning

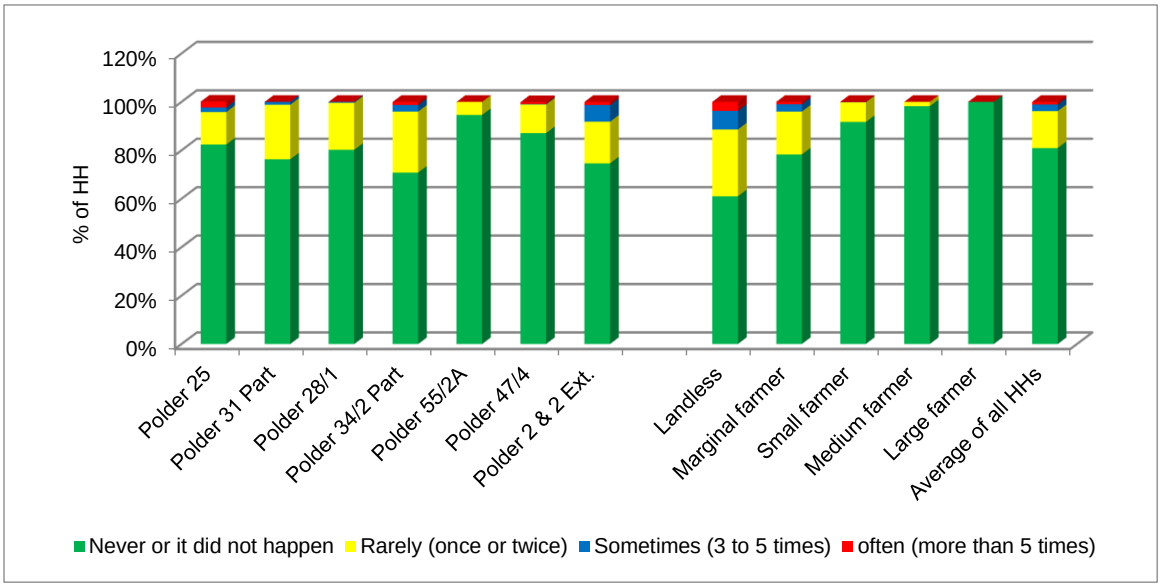

Figure 9-2: Level (%) of HH reporting of food shortage (not having enough food) in the last month by polder and HH category

Figure 9-2 explores the data related to how often households felt food shortage (not having enough food) in the last months. It is noteworthy that the data was collected in the month of May-June, 2017. Overall 80.9% households mentioned that they never had this problem and it was varied among the different polders, ranging from 70.8% in the polders 34/2 Part to 94.6% in the polder 55/2A. The households that reported of having shortage of food were around 19 % that were further asked how frequently this happened in the last month, 1-2 times termed 'rarely', 3-5 times termed 'sometimes' and more than 10 times termed 'often'. Among the households that responded yes, around 15 % households indicated that they rarely experienced of food shortage. These frequencies were also varied only slightly by polder but were more frequent in the polder 34/2 Part and were less likely in the polder 55/2A. This question, analyzed by the well-being category, that followed a predictable pattern of the landless households had the highest frequency and the well-off households experienced less, both for the proportion of households experiencing a food security issue and those experiencing it the most often. It is worthy to mention that 98.2% and 100% of the medium and large farmer households never had food shortage.

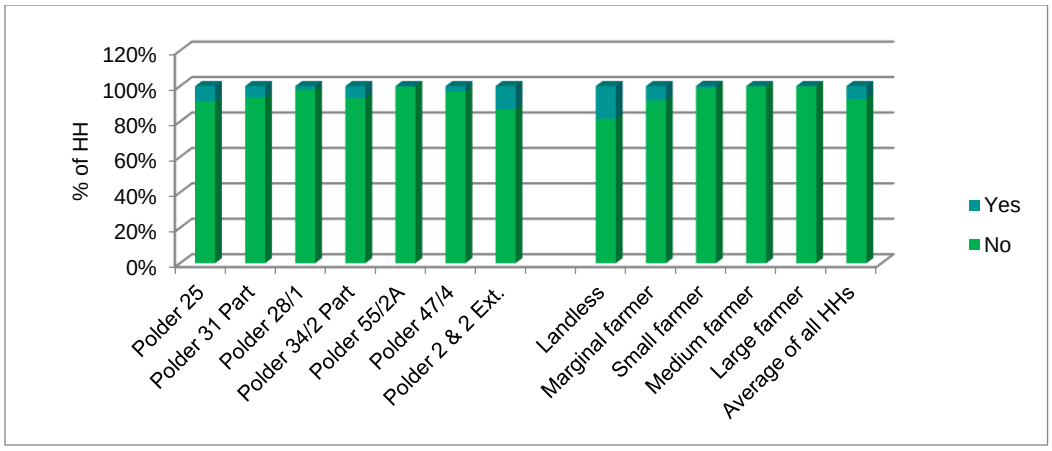

Figure 9-3: Level (%) of HHs reported of having insufficient food (food less than two times) at any time in the last year by polder and HH category

Figure 9-3 shows whether the households ate insufficient food (less than two times in a day) at any time within the last year or not, the households that responded yes were further asked to indicate the months of the year in which they experienced of having food less than two times in a day.

Overall, nearly 7% households reported there were some months when food was not sufficient in the last year to eat at least two times in a day. This varied by polder, for example the polder 55/2A reported the lowest proportion (0.4%) and the polder 2 and 2 Ext. recorded the highest proportion (13.1%) followed by the polder 25 with 8.9%.

When this data was analysed according to household categories, all the medium and large landholder households and 99% of the small landholder households reported that they never experienced of insufficient food (food less than two times). In the landless and marginal farmer households nearly 18% and 8% households respectively reported of insufficient food.

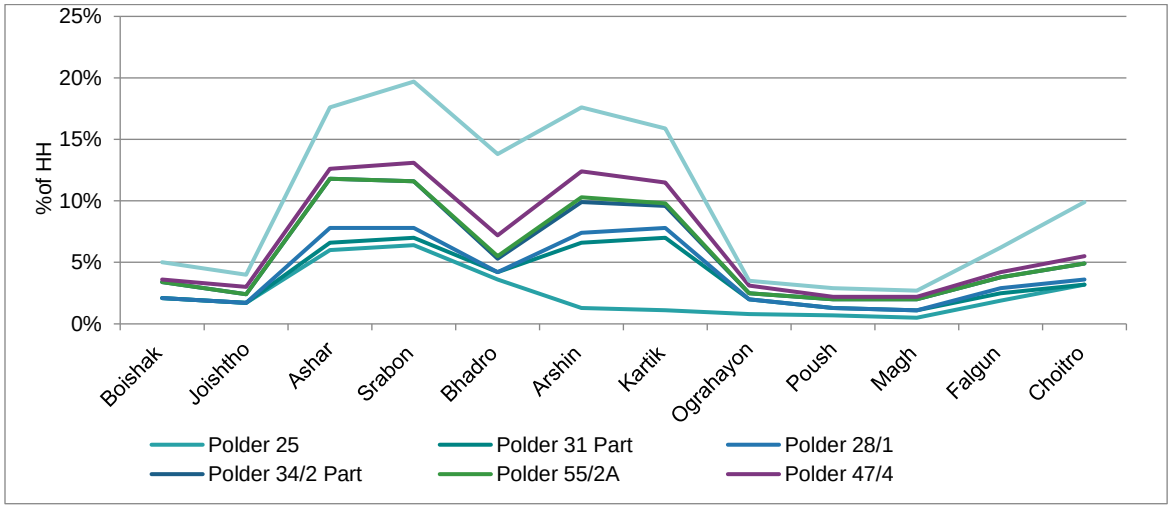

Figure 9-4 Level (%) of HHs reporting of month wise insufficient food (food less than two times a day) at any time in the last year by polder

Though only 7.2% household indicated of having insufficient food, Figure 9-4 shows that these findings were vividly varied by polder. In the polder 25, more households were likely to indicate Ashar–Bhadro (mid-June-mid September) and households in the polder 34/2 Part indicated Ashar- Srabon (mid-June- mid August) while the polder 2 and 2 Ext. reported more long time from Ashar-Kartik (mid-June-mid November). Among the polders, the households of the polder 55/2A and 28/1 were less likely to face food insufficiency problem. The figure shows an overall pattern of a lean period in terms of

insufficient food, with the months of food insecurity falling between Ashar-Kartik (mid-June-mid November). It is noteworthy that the lean periods of coastal regions are not same as another region of Bangladesh as in the coast region there is one pronounced crop production season.

It is clear that the majority of households did not experience a food security problem. However, the households experienced food insecurity did not vary significantly by month of the year by well-being category. Mostly the landless and the marginal farmer households indicated some months which were also between Ashar-Kartik (mid-June-mid November) when food was not sufficient. None of the households from the medium and the large farm households had experience of food insufficiency (see Annex-1 Table 12).

Table 9-1: Consumption pattern of some selected food items and (days/month) and inadequate household food provisioning by zone

	Patuakhali (N=1032)	Khulna (N=1614)	Satkhira (N=1005)	Total (N=3651)
Having fish (days/month)	16.5	17.8	17.7	17.4
Having egg (days/month)	10	8.9	11.5	9.9
Having meat (days/month)	2.7	2.5	3.1	2.7
Food shortage (not having enough food) in last month (% of HH)	8.8	21.8	25.5	19.1
Food insecurity (having meal less than two times a day) in last year (% of HH)	1.6	7.1	13.1	7.2

Table 9-1 firstly analyses the frequency of monthly household consumption of fish, meat and egg in the different zones. Zone wise variation of fish, meat and egg intake was not so evident. Fish was consumed comparatively higher in three zones with around 17 days per month while meat was available rarely to them like 2-3 days within a month.

The table also explores the data related to how often households felt food shortage (not having enough food) in the last months and food insecurity (having meal less than two times a day) in any times of last year. Households of Patuakhali zone were less likely to positively respond on these two issues compared to Khulna and Satkhira zone. In Patuakhali zone, nearly 9% households mentioned that they had food shortage in last month while the percentages were around two and three times higher in Khulna and Satkhira zone respectively. Similarly, only 1.6% households of Patuakhli zone had food insecurity (meal less than two times) in any period in last year while the percentages were 7% and 13% for Khulna and Satkhira zone.

10. WOMEN EMPOWERMENT

The status of women is an important input and an equally important outcome of livelihood strategies. The status of women has a bearing on the economic wellbeing of the households, the importance of the status of women in a society/community has a positive impact on the overall status of a community. Since women comprise half of the total population, it is necessary to know their status in the community. Gender inequality is recognised as a key constraint to pursuing secure livelihoods. Baseline survey gathered data on the status of women in BGP areas, by a combination of gender-disaggregated questions relating to indicators for women participation in economic activities, food consumption pattern within the households, community participation, and access to services, their decision-making power; loan taking behaviour and mobility of women. It is worthy to mention that these questions were answered by the women of the respective households.

10.1 Food Consumption Pattern within the Households

Figure 10-1 shows the pattern of consumption of some selected food like meat, fish and egg between male and female members within the households by polder and household category. A considerable percent (around 75%) of households reported equal consumption of different foods among male and female members. This was highest by far in the polder 25 with around 90% and lowest by far in the polder 55/2A with nearly 60%. On the other hand, on average 24% households mentioned that male and female members both consumed these foods but male members consumed more compared to the female members of these households.

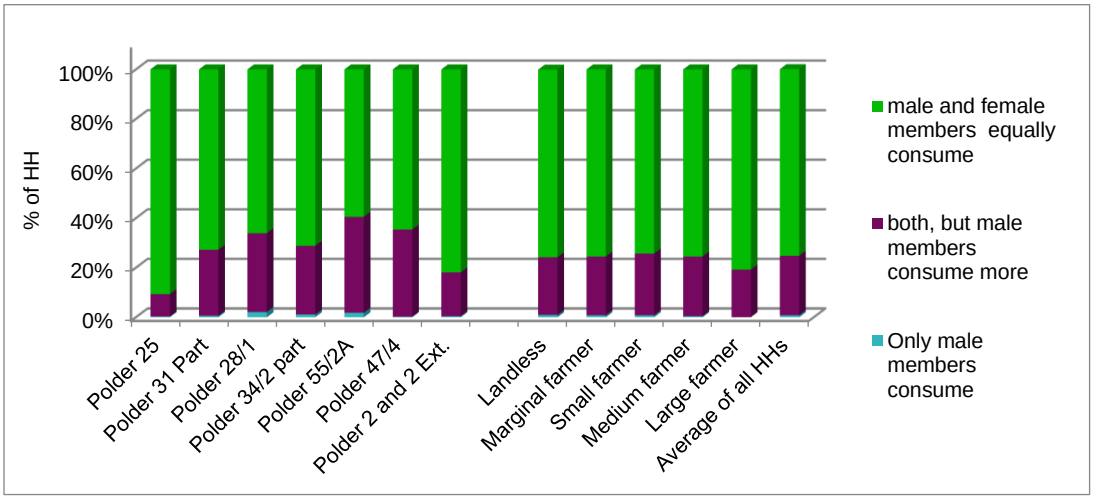

Figure 10-1: Food (meat, fish and egg) consumption behaviour between male and female members within the HH by polder and HH category

More than 35% households from both polders of Patuakhali zone (polder 55/2A and polder 47/4) mentioned this trend, followed by the polder 28/1 with 31.8% households. Overall, .8% households reported that only male members consumed these foods in their households, this percentage raised to 2.1% in polder 28/1, followed by polder 55/2A and polder 34/2 with 1.8 and 1.1 respectively.

The pattern of consumption of these foods was not noticeably diverged among the different types of the households. The percentage of households reported that male and female members equally consumed these foods were roughly the same among the different types of households with around 75%, but the large farmer households showed a higher percentage with nearly 81%. On the other hand, the households reported unequal consumption pattern among the male and female members also gradually decreased with the better economic status of the households.

10.2 Participation in Income Generating Activities

Table 10-1 represents polder wise women participation in some activities that contribute to improving household income. It is important to note that participation in these activities did not ensure income for women but their labour in these household income strategies supported to increase household income. Data shows that the women were more engaged in homestead cultivation, post-harvest agricultural activities, poultry and duck rearing, livestock rearing in all the polders of study areas. It is noteworthy that women were more engaged in these activities as these were performed inside the household. Households in the polder 55/2A and 47/4 mentioned a widespread women engagement in the homestead cultivation with 90/3% and 81.4% while it was almost half with only 45.3 % in the polder 25.

Table 10-1: Level (%) of HHs reporting of women participation in income generating activities by polder

Income generating activities	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 Part	Polder 55/2A	Polder 47/4	Polder 2 & 2 Ext.	Average of all HH
Homestead cultivation	45.3	69.2	69.0	66.1	90.3	81.4	58.2	65.7
Post-harvest agriculture activities	66.3	38.5	67.4	48.7	62.9	56.3	44.9	55.2
Poultry and duck rearing	79.0	79.3	74.8	68.1	85.1	91.4	82.5	80.9
Livestock rearing	70.4	55.0	69.8	50.4	41.6	52.7	58.0	57.1
Aquaculture	4.6	8.3	23.6	5.4	1.6	5.7	3.1	5.4
Non-farm economic activities	5.4	7.1	9.9	15.6	2.7	1.3	4.1	5.7
Wage labour	5.3	4.7	8.7	3.8	0.5	0.4	8.4	4.8
Field crop farming	4.9	7.1	36.8	15.2	5.9	3.2	1.7	7.4
Salaried employment	1.3	1.8	9.1	2.0	0.7	1.1	0.5	1.6
Not engaged	3.1	5.9	1.7	6.5	2.3	2.3	4.3	3.6

More than 60% households in the polder 25, 28/1 and 55/2A reported of having the engagement of women in the post-harvest agricultural activities. On an average 57% households mentioned of participation of women in livestock rearing with a higher percentage in the polder 25 and 28/1 with around 70% for both while the percentage was lowest in the polder 55/2A.

On the other hand, there were limited participations of the women in the activities like aquaculture, non-farm economic activities, wage labour, field crop farming, salaried employment that urge working outside the household. On an average, only around 6% households mentioned of women engaged in aquaculture and non-farm economic activities while the percentages were 23.6% and 15.6% respectively in the polder 28/1 and 34/2 Part. The polder 28/1 and 34/2 Part showed a significant percentage (36.8% and 15.2% respectively) of households that mentioned the participation of women in field crop farming whereas it was only 1.7% for the polder 2 and 2 Ext. It is noteworthy that more than 9% of the households reported that women were engaged in the salary-based job in the polder 28/1 and overall 3.6% households in all the polders reported that women from their households were not engaged in any economic activities.

The participation of women in the income generating activities was not vividly varied among the household categories (see Annex-1 Table 13). However, the women from the medium and the large farm households were more likely to engage in

the activities that were related to the farm households or the agricultural activities compared to the marginal and the landless households. On the other hand, women from the marginal and landless households in study areas were more engaged in the non-farm activities/work outside the household as they have a better mobility and they were culturally less bounded. Women of 11.1 % of the landless households reported that women from their households were engaged as wage labour whereas 7.7 % of the large farmer households mentioned that women from their households were engaged in salary-based job.

10.3 Decision-Making Authority

Figure 10-2 reports on the degree to which women were able to make decision on spending the money that they earned. Women were asked to report whether they or their counterpart decided alone, male member decided but women only had control on their own income, male and female decided jointly. The table shows that women's decision-making power within their households differs little across polders. The data shows that it was most common for decisions to be made by male and female jointly with around 70% of the households regarding this issue. Overall, nearly 7% households replied that they can decided on their own. However, in polder 31 part, 28/1 and 34/2, around 18% -19% households reported that the female members had the authority on spending the money that they earned. Around 15% households mentioned that male members decided within the households but female members controlled their own income but this finding varied among the polders with the highest (24.2%) in the polders 47/4 while the percentages were about 4-6% in the polder 31 Part, 28/1 and 34/2 Part. On an average woman of the 7% households replied that only the male member had the authority to decide while it was highest in the polder 25 with 12.2% while was the lowest in the polder 31 Part with 3.1%.

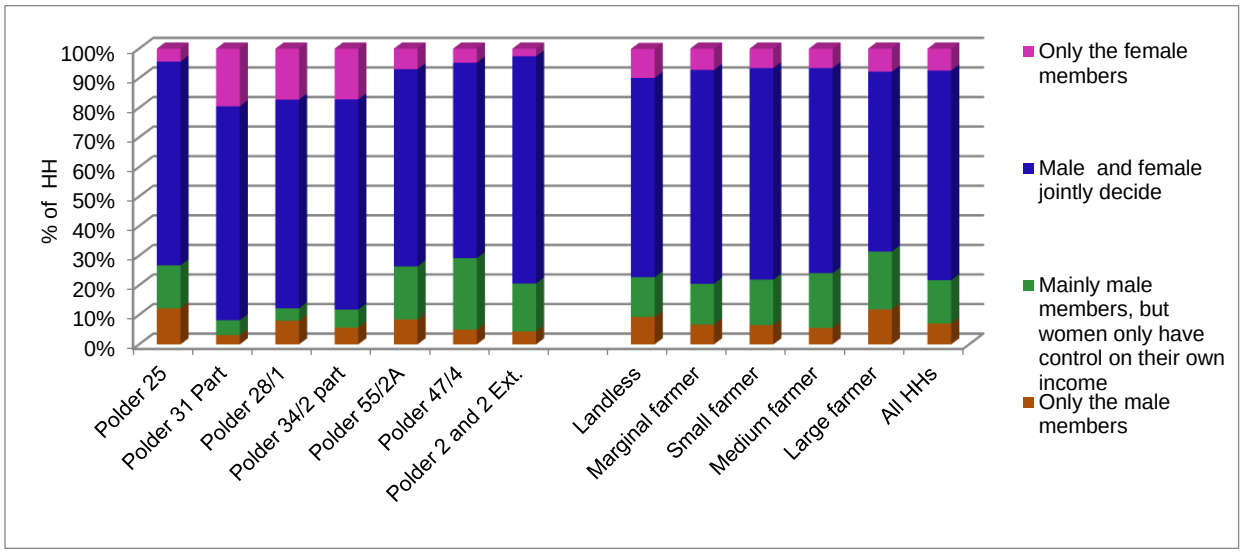

Figure 10-2: Level (%) of HHs reporting of decision-making authority of women on spending the money that they earned by polder & HH category

The variation regarding decision-making authority within the households was visible among the household categories based on land holding but it did not follow any trend. As mentioned in the above table that 7.4 % of the households reported of female dominance of decision making while it was higher in the landless household with 9.8% and the large landholder households with 7.8%, the percentage for the rest of the household categories was around 7%. The same trend was also visible when households replied only males took the decision. The percentage of the households that replied that mainly male member decided but the female had some control over their own income was increased with the increase of the ownership of the land size ranging from 13.4% for the landless households to 19.6% for the large farmer households. Around

70% of the households from the marginal, small and medium farmer households reported of joint decision making while it dropped to 60% for the large farmer households.

The survey also included the question that explores purposes of spending money if the women who had authority to decide on spending the money they earned. Regardless of different polders and household categories based on land holding, the variation regarding spending money on different items was visible significantly but it was difficult to indicate a trend for a polder or a certain household category. However, most of the households indicated that they spent on buying of personal items like clothes, ornaments, cell phone, etc (74.9%), followed by spending on the education of children (57%), and then on the treatment (51.5%). On an average, one-third of the households mentioned spending on the special food items, improving housing and visits where they also spent their own earning (See Annex-1 Table 14 and 15).

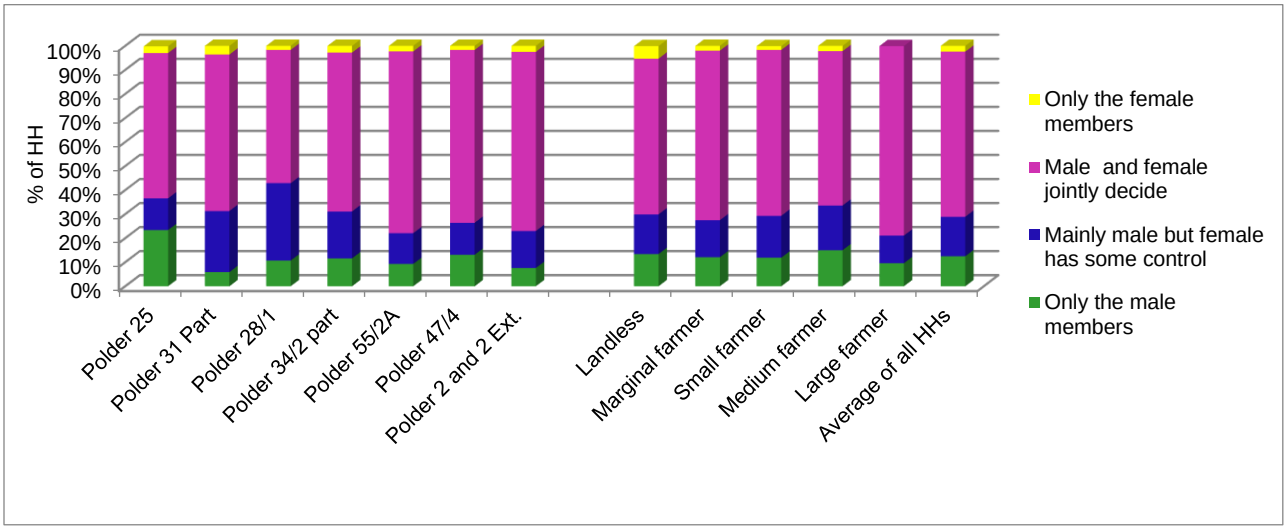

Figure 10-3: Level (%) of women's decision-making authority on purchasing and selling the assets by polder and HH category

Figure 10-3 explores on the degree to which women are able to make various types of decisions particularly decision-making authority on purchasing and selling the assets. Very few households (2.5%) mentioned female decided on purchasing and selling household assets on their own, the percentage was not diverged noticeably across the polder. On an average, 7.6% households mentioned only the male members took the decision on their own but this varied significantly across the polders with the highest in the polder 23.4% that was four times higher compared to the polder 31 Part. The percentage was around 10% or more in the other polders. A significant percentage (74.5%) mentioned that male and female jointly took the decision but this percentage was considerably lower with around 55% in the polder 28/1. In this polder the highest percentage of households (32.2%) reported that mainly male took the decision but female has some control in some regards like in their production like rearing poultry or homestead vegetable cultivation.

Household category wise data shows that it was difficult to find out a trend on the authority of decision making regarding assets purchasing and selling. In all types of households most of the households reported of joint decision-making tendency while only landless category households mention around 5% of them has sole female control on decision making as they have more female headed households. However, the highest percentage (13.4) of this category households reported of full male control decision making tendency, the percentage were slightly lower for the marginal and small household categories.

10.4 Mobility of Women

Table 10-2: Level (%) of HH reporting female members have mobility (can go on their own) to different formal and informal institutions

Institutions/places	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 and 2 Ext.	Avg. of all HH
Local market/hat	47.3	46.2	73.6	49.8	41.0	34.6	41.1	45.0
Health center/clinic	84.6	89.3	83.9	84.2	53.6	53.8	91.1	77.8
Hospital	57.2	72.2	79.8	65.2	73.8	74.7	84.8	72.8
NGO/CBO office	49.8	21.9	33.1	27.0	30.8	19.8	44.0	36.2
Children' school	41.5	63.3	63.2	62.9	63.6	59.3	36.7	50.9
Union Parishad	12.5	49.1	21.1	35.3	21.7	15.0	37.4	26.1
National festival	18.5	14.8	2.9	8.9	4.7	3.6	11.3	10.1
Upazila social welfare office	1.5	4.7	2.9	4.0	0.5	0.2	1.8	1.8
District level offices	1.1	11.2	3.7	7.6	0.5	0.6	0.5	2.2
Upazila Livestock/ agriculture/ fisheries office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Never visit any of these places alone	6.5	8.3	10.7	12.3	9.0	10.8	5.9	8.3

Table 10-2 reports polder wise percentage of women who can go to various formal and informal institutions for different types of services either in their local areas as well as upazila and district level. Findings show that on an average 45% of women had access to the market, a very public place, while the percentage was the highest in the polder 28/1 with 73.6% and was the lowest in the polder 47/4 with only 34.6%. Note that nearly 50 percent of women reported that they were not able to go to children school alone while only just over 36% percent went to NGO/CBO office alone. Very small percent of women reported that they can go to upazila welfare office and district level offices and none of them mentioned that they went to upazial agriculture/livestock/fisheries office by their own. Around 8% women reported that they never went any of these places alone. In term of union parishad, around one fourth of the women mentioned that they went there while nearly half of the households in the polder 31 Part replied positively while the percentage was only 12.5% in the polder 25. On the other hand, women mobility to the health center/clinic or hospital was significantly higher compared to their mobility to other formal and informal institutions with an average more than 70%. It is difficult to identify any polder where women had more freedom to go to various formal and informal institutions for different types of services by their own but in most of the issues the women from the polder 47/4 reported least freedom to go alone.

The findings show some variations by well-being category depending on different institutions/places. In term of visiting to the health clinic/center, NGOs, union parishad were highest among the landless fallen steadily, were the lowest among the large farm households. Usually women from the marginal and landless households in study villages have a better mobility within the community as they are culturally less bounded and this is due to lack of choice rather than empowerment. In addition, it was likely these areas that the male members from the poorer households migrate to other places for income generating activities and nearly 22 percent of the landless households were headed by female (see Annex-1 Table 16).

10.5 Loan Holders within the Households

Figure 10-4 explores the data on the loan holders within the households from the formal institutions like NGO and bank. Around 60% households reported that they took loans from the formal institutions and the female members were predominantly the loan holders in all the polders with more than 38% households. As the formal institutions included NGOs and women were likely the members of NGOs that reflected with a higher percentage of women borrowers from the formal institutions. When comparing across the polders regarding women borrowers, the percentage was significantly higher in the polder 31 Part with 46/7% and in the polder 25 and 34/2 with more than 43% compared to the polder 47/2 with 17.7%. On the contrary, overall 13.8 % households reported that the loan borrowers were male members, it was likely that these households borrowed mainly from the bank as women have less access to the bank due to lack of the land ownership. On an average, 9.7% households reported that they took loan jointly but the percentage varied considerably across the polder, it was highest in the polder 25 with 14 % compared to only 1.2 % in the polder 31 Part. It is noteworthy that around 40% households mentioned that they did not take any loan from any formal institutions.

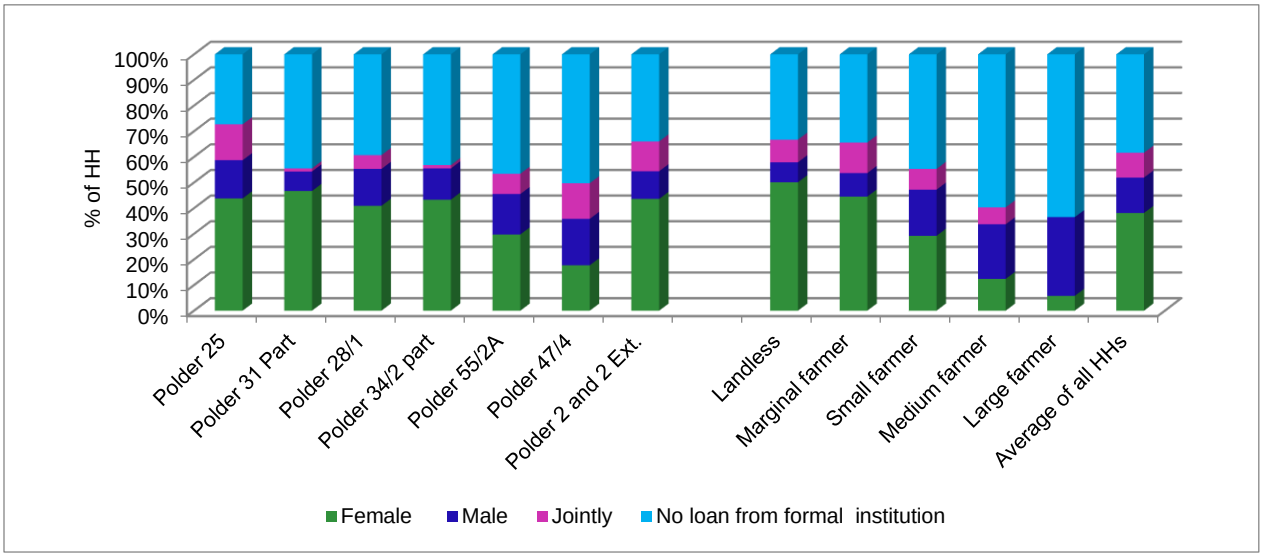

Figure 10-4: Level (%) of households reporting on loan holders from the formal institutions by polder and household category

There was considerable variation the loan holders among household categories. Female members of the households were likely the main borrowers for the landless and marginal farm categories and the percentage significantly decreased with the increase of land ownership while men were the main borrowers from the well-off categories. There was a positive correlation between having no loan from the formal institutions and the household's wealth categories, In large farmer households group, 67.3% households had no loan compared to 34.9% households of the landless categories. Though bank was included as a source of the loan within the formal institutions access to the bank for the rural people was very limited as well as more difficult for landless to smallholder households due to the lack of ownership of a certain amount of land and education to fulfil the required documentation.

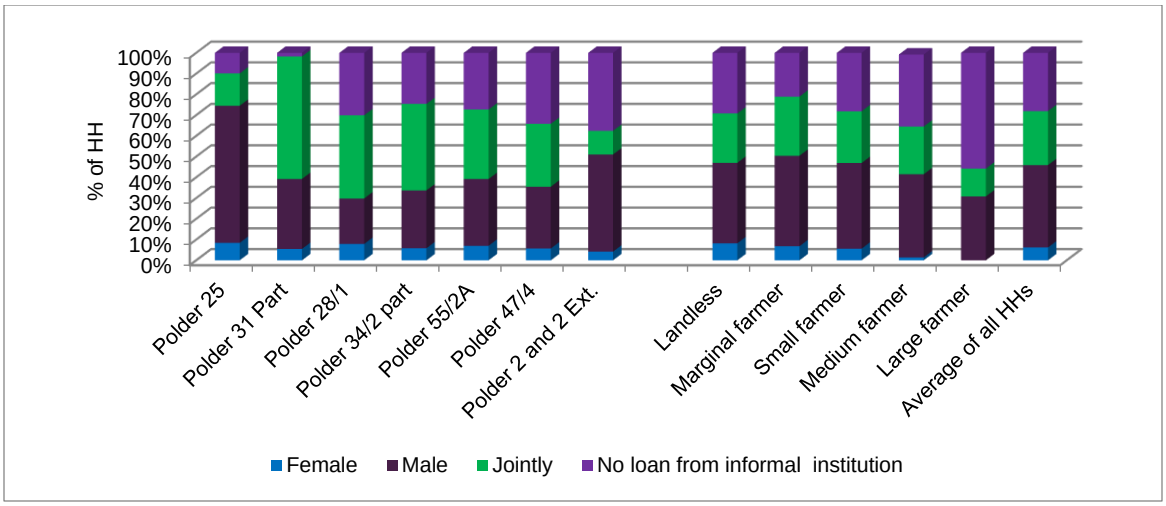

Figure 10-5: Level (%) of HHs reporting on loan holders from informal institutions (friends and relatives) by polder and HH categories

Figure 10-5 shows the loan holders within the households from the informal sources (mainly friends and relatives) in different polders. Inversely to the formal source, male were the main borrowers with an average 42% households in the study areas when the source of loan was informal. However, there was significant variation among the polders ranging from nearly 66% in the polder 25 to 22% in the polder 28/1. Females were less likely to take a loan from the informal sources with overall only 6.2% households in the study areas. However, the cases of male and female jointly borrowed were increased in term of borrowing from the informal sources with 26.0% households, this was the highest by far in the polder 31 Part with around 59.1% and was lowest by far in the polder 2 and 2 Ext. with nearly 11%. Overall 29% households reported of not having any loan from the informal sources and the percentages were varied across the polders with highest (39.7%) in the polder 2 and 2 Ext. and the lowest (10.7%) in the polder 31 Part.

When comparing across the household categories, there were substantial variations in term of who was the loan holder within the households. The large farm households were less likely to take the loan from the informal sources compared to the other categories of the households; around 56% of the households had no loan from the informal sources. None of the households from this category reported of taking loan where the female member was the borrower and it was lowest in percentage when the loan was taken jointly (13.4%) or by the male members of households (30.8%). Taking loan by the female members of the households from the informal sources was less likely with an average only 6.2% and showed a steady decrease with the increase of the land size of the households. Male members were predominantly the loan holders for all types of the households when the loan was taken from the informal sources, around 40% of the households from the landless to the medium landholder households reported of having a loan from the informal sources by the male member of the households. Average 26% of the households reported of having a joint loan and it was not significantly varied among the landless to the medium farmer households.

10.6 Vote Casting Behaviour of Women

The women empowerment section also included a question regarding the casting of their vote in the local and the national elections as well as how they decided whom to vote. Figure 10-6 shows that the vote casing behaviour among the women in the study areas was significantly positive regardless of polders and household categories, almost 99% households reported that women casted their vote in the local election. This trend was slightly lower in term of the national election with an average more than 97% in most of the study areas, the percentage was slightly lower for only the polder 2 and 2 Ext More than 5o% households in the study areas reported that the male and the female members jointly decided whom to vote compared to 15.4% households where female members had to depend on the decision of the male member of the family

and 32.3% of the households reported of female members were able to decide on their own. Among the polders, polder 28/1 had the highest percentage of the households (48.8%) reported that female members decided on their own while it was almost half in the polder 25.

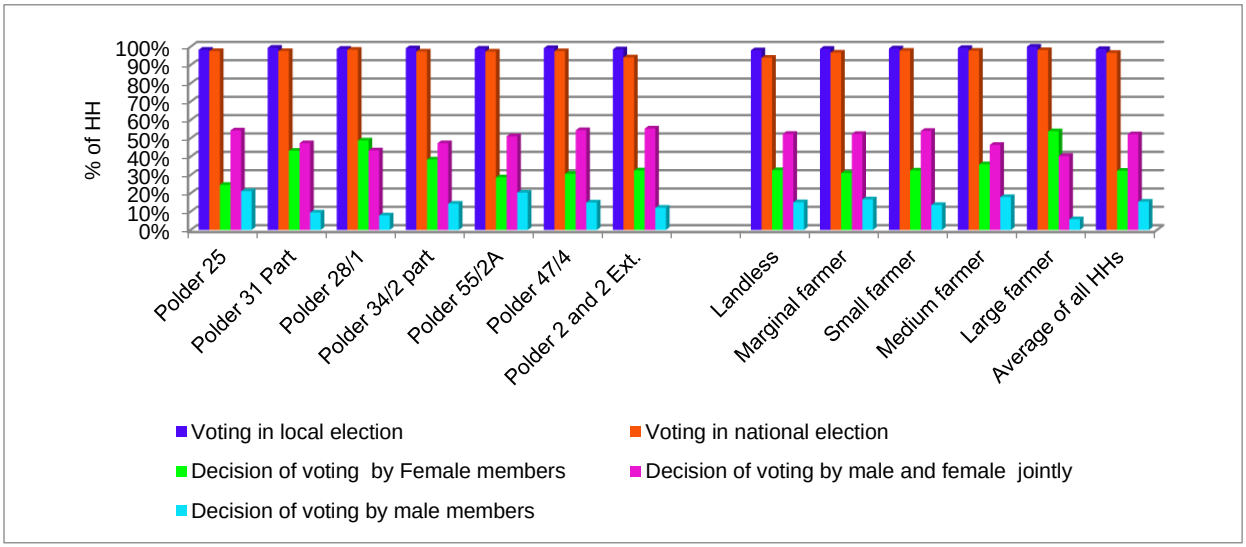

Figure 10-6: Level (%) of HH reporting of female HH members cast their vote in local and national elections and taking decision regarding whom to vote by polder and HH category

There was also variation among the household categories, female members from well of households were more likely to had their own decision on casting vote, especially in the large farm household category with 53% households. In term of casting vote in the local and national election, there was slight variation when comparing across the household categories.

11. HOUSEHOLD INCOME AND ASSETS

Income flow of the households and the stock of household assets are the important components of the rural people livelihood, in that it can be converted into other forms of capital or used for the direct achievement of livelihood outcomes. Income-earning sectors identify the income flows into the household, such as from crop cultivation and business. The aggregate household income provides a useful indicator of economic security. The asset and poverty index data offer an opportunity to cross-check the reporting bias and to examine the balance struck by households between consumption pattern, investment in agricultural and non-agricultural sectors and pursuing different livelihood strategies for a secure livelihood. As such, its availability is directly related to the capacity of a household to withstand or buffer livelihood shocks, and to achieve improvements in overall well-being. The household survey gathered information on income-earning episodes over the previous year, the value of different types of assets of the households and poverty index related questions.

11.1 Household Income

Table 11-1 explains the income (BDT) from the agricultural and non-agricultural sector and their share in the total income by polder. Total earnings from non-agricultural (82974 BDT) sector was reported to be more than earnings from agricultural sector (76865 BDT) considering all study polders. Traditionally, rural livelihood strategies have been viewed as based upon various forms of agricultural production. However, there is an increasing recognition of the extent and diversity of the strategy portfolios developed by the rural people, in response to changing needs or to control risk. Polder 55/2A of Patuakhali zone had the maximum earnings (65.7%) from non-agricultural sector but least (34.3%) from the agricultural sector.

Table 11-1: Average household income (BDT) from agricultural and non-agricultural sector and their percentage of the total income by polder

	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 & 2 Ext.	Avg. of all HH
Agricultural sector (BDT)	96,245	63,907	87,205	63,083	50,581	91,518	75,821	76,865
% of income from agri. sector	54.5	40.8	47.7	40.6	34.3	55.1	51.2	48.1
Non-agri. sector (BDT)	80,251	92,694	95,647	92,426	96,745	74,697	72,377	82,974
% of income from non-agri. sector	45.5	59.2	52.3	59.4	65.7	44.9	48.8	51.9

A total of 76865 BDT was earned from agricultural sector considering all study polders with 48.1% of income. The maximum amount was recorded in polder 25 (96245 BDT) of Khulna zone and polder 47/4 (91518 BDT) of Patuakhali zone with 54.5% and 55.1% respectively. The minimum amount from the sector was recorded in polder 55/2A (50581 BDT) of Patuakhali zone with 34.3% income. The percentage of income ranged from 34.3% to 55.1% in the study polders.

A total 82974 BDT was earned from non-agricultural sector with a percentage of 51.9. The maximum amounts were recorded in polder 31 Part (92694 BDT), polder 28/1 (95647 BDT), polder 34/2 part (92426 BDT) of Khulna zone and polder 55/2A (96745 BDT) of Patuakhali zone with 59.2%, 52.3%, 59.4% and 65.7% respectively. The income percentage ranged from 44.9% to 65.7%.

The household category wise analysis shows that large farmers earned maximum (71.7%) of their income from the agricultural sector but the least (28.3%) from the non-agricultural sector. On the other hand, the landless farmers had in the maximum (62.2%) of their income from non-agricultural sector rather than agricultural sector (37.8%) (See Annex-1 Table 17).

Data follows the general assumption that larger farmer earned the maximum amount (312516 BDT) and (123192 BDT) both from the agricultural and the non-agricultural income sector. A gradual increasing trend in earnings from the agricultural and the non-agricultural sector was observed from the landless to the large farmer category. The landless farmers earned the minimum (40924 BDT) from the agricultural sector but the earning was comparatively higher (67480BDT) from the non-agricultural sector. Household category wise percentage of income from the non-agricultural sector shows the reverse propensity compared to the agricultural income, as the percentage in total income from the non-agricultural sector gradually increased from the landless to the large land holding category. Income from both sectors for the medium and large landholders was by far higher compared to the other household categories.

Table 11-2: Level (%) of income from different sectors by polder

	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 & 2 Ext.	Avg. of all HH
Agricultural Sector	54.5	40.8	47.7	40.6	34.3	55.1	51.2	48.1
Crop production	12.2	10.5	16.5	13.3	14.4	24.9	13.1	11.7
Livestock and poultry	20.2	6.9	11.4	5.5	9.4	12.9	13.1	12.9
Fisheries	13.7	11.2	9.9	10.0	5.3	10.7	10.8	10.5
Agricultural labour	5.5	9.1	6.5	8.2	3.5	4.7	9.0	6.6
Lease/Mortgage/Share out land & others	2.9	3.1	3.2	3.4	1.7	1.8	5.2	3.3
Non-Agriculture sector	45.5	59.2	52.3	59.4	65.7	44.9	48.8	51.9
Business & self-employment	14.4	21.0	19.1	20.5	18.9	16.8	16.4	17.9
Non-agricultural services	12.7	12.4	20.3	16.1	11.7	8.7	9.3	12.1
Non-Agricultural labor	6.9	12.1	3.1	11.5	24.2	8.6	13.6	11.8
Transport operation/renting	5.1	11.5	5.6	6.2	4.4	7.3	6.4	6.1
Others	3.5	2.2	4.2	5.1	6.4	3.7	3.2	4.0
Household income	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 11-2 explores the income share of the different sectors of the total household income by polder. A total of 48.1% of income was earned from the agricultural sector considering all the study polder of which the households of the polder 25, 47/4 and the polder 2 &2 Ext reported more than 50% of their income from the agricultural sector. The households of the polder 55/2A earned the lowest from the agricultural sector. Within the agricultural sector, livestock and poultry, crop production and fisheries contributed the maximum to the income while the non-crop production like agricultural wage labour represented only 6.6% while the income from land through lease or mortgage or share crop out land was just half with 3.3 % compared to the income from agricultural labour. Data shows that income from the different sector of agriculture was not varied very significantly across the polder. However, some of the polders reported by far higher income percentage from some sectors like the polder 47/4 showed around 25% of their income from agriculture that was more than double or around double compared to the polder 24, 31 Part, 34/2 Part, 2 and 2 Ext.

A total of 51.9% of income was earned from the non-agricultural sector while it was slightly higher compared to the agricultural sector. Business and self- employment, non-agricultural services and non-agricultural labour contributed the maximum to the income for the non- agricultural sector in all the study polders. 17.9% of the total income was recorded from being engaged in business and self-employment of which the maximum (21.0%) was recorded in the polder 31 Part. Non-agricultural services and non-agricultural labour contributed around 12% of the total income and also varied significantly across the polder. For example, non-agricultural labour represents around 24% of total income which was by far higher compared to the other polders. Income from transport operation/renting sector rated the maximum (11.5%) in the polder 31 Part of Khulna.

Household category wise income share of the different sectors of income discovered a considerable variation among the different category of the households (See Annex-1 Table 18). All the percentage of the income from the different agricultural sectors (except agricultural labour and livestock and poultry) gradually increased with the increase of land ownership. The percentage of income from livestock and poultry represented the maximum (14.7%) for the small farmer category and the minimum (9.6%) rated for the landless farmer category. Income from agricultural labour recorded the maximum (14.1%) for landless farmer category followed by the marginal and small landholder households and the minimum (0.2%) was reported in the medium farmer category and no observation for the large farmer category. On the other hand, from the lease/mortgage/share out land the large farmer category reported the highest percentage of income with 20.3% what was double and ten times higher compared to the medium and small landholder households.

Among the non-agricultural sector, business and self- employment was reported the highest (19.8%) for the marginal while for the non-agricultural service, the income percentage was recorded maximum for the medium farmer households with 16.6% and followed by the small (15.2%)and large landholder households (11.1%). A significantly higher income percentage was recorded from non-agricultural labour and transport operation/renting sector for the landless farmer category with 24.2% and 15.3% respectively and that steadily declined with the better wealth of the households. It is noteworthy that none of the large landholders reported of income from the agriculture and the non-agriculture labour.

11.2 Household Assets

The table (see Annex-1 Table 19) and figure 11-1 explore the value (BDT) of different types of assets of the households and their percentages in the total value of these assets by polder and HH category. Data shows that when the asset value and their percentage in the total value of assets were calculated by polder, the variation was not significantly noticeable but when it was measured by the household category there was considerable variation visible among the different types of household categories. The average value of the cultivable land (including gher) was BDT 740765 that embodied 56.4% of the total value of the asset and it was not varied significantly across the polders ranging from 52.3% in the polder 2 and 2 Ext to 60.5%in the polder 55/2A. The second valuable asset was homestead land with an average of BDT 426074 that represented the nearly one-third of the total asset value. It also did not diverge across the polders. The other assets comprised around 12% of the total asset value of which the value of house covered around 6%. A maximum of 101574 on an average value of the house was recorded in the polder 2 and 2 Ext. of Sathkhira zone consisted 9.6% of the total value while it was three times higher compared to the polder 31 Part and 28/1.

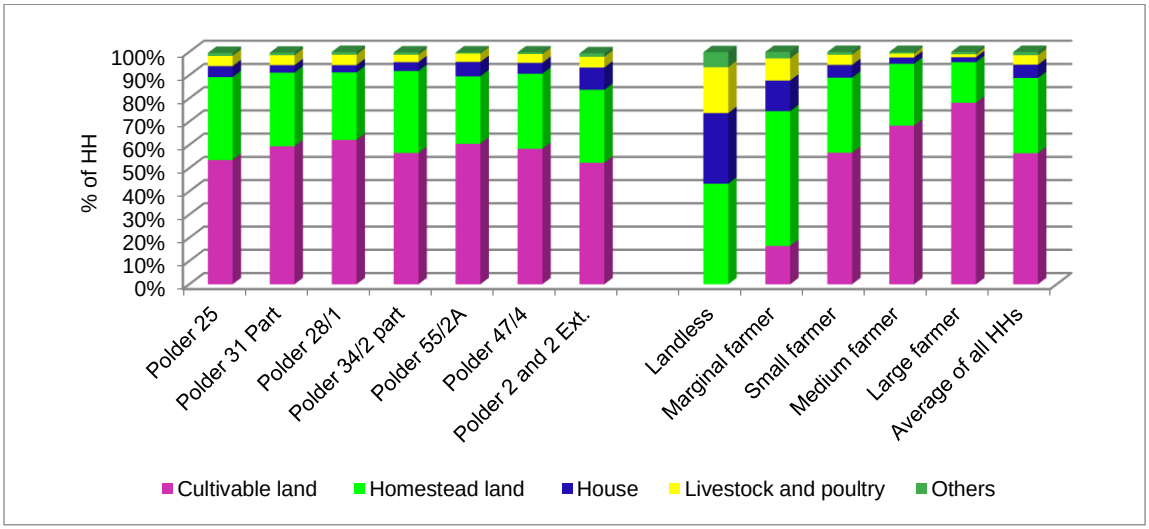

Figure 11-1: The share (%) of different types of assets in the total value of these assets by polder and HH category

There were clear differences visible among the different types of households when the asset value and their percentages within the total value were compared. The landless had no cultivable land while the value of cultivable land and their percentages of the total value were gradually rose from the marginal to the large landholder households. On the other hand, in the case of other assets, the value of asset increased from the landless to the large landholder but their proportion in the total value was significantly declined from the large landholder households to the landless households. It is noteworthy to mention that the value of homestead land comprised around 43% and 58% of the total value of the assets for the landless and the marginal farmer households while it was only 17% for the large landholder households.

11.3 Poverty Index Results

The Poverty Index[1] (PI) shows the chance that a household earns less than a certain income. Based on the PI score, HHs have been divided into four equal categories. Higher scores mean a higher chance of a HH earning more income, e.g. the first group has the highest chance of being poor.

Figure 11-2 explains the level (%) of households in the different polders according to the PI score percentile. The majority (50.9%) of the household was recorded in between 50th to 75th percentile according to PI score and the least amount of household (1.9%) rated below the 25th percentile.

A total of 1.9% households were in the lower quartile in all study polders according to the PI score. The highest percentage under this quartile was in the polder 34/2 part (4.5%) of Khulna zone followed by the polder 55/2A (3.4%) of Patuakhali zone and the polder 31 Part (3.0%) of Khulna zone. Only 0.7% households were in this quartile in the polder 25 of Khulna zone which was also the lowest percentage. The 25th percentile ranged from 1.1% to 3.0% in other polders. A total 34.5% households belonged to 25th to 50th percentiles/2nd quartile according to PI score. The maximum percentage (50.3%) rated in the polder 31 part and a minimum of 16.9% households in the polder 28/1 of Khulna zone. Most of the surveyed

[1] The PPI determines the chance of a household belonging into a certain income category based on ten simple questions. The PPI is used as a replacement for measuring income since estimations from HHs are not reliable enough. For more information on the questions and calculations, please see: http://www.progressoutofpoverty.org/.

households belonged 50th to 75th percentiles with around 51% households but the percentage varied significantly across the polder with the highest in the polder 28/1 (62.4%) and the lowest with 39.3% households in the polder 34/2 Part. Both polders are in Khulna zone. A total 12.7% household in all polders rated above the 75th percentile/last quartile according to PI score. The percentage of households in this quartile was by far higher in the older 25 with 21.1% followed by the polder 28/1 (19.4%) and 2 and 2 Ext. (16.3%) while it was around 3-8% in the other polders.

The percentage of households according to PI score percentile varied considerably among the land-based household category. In general, the well-off households were more likely to belong in the higher percentile of the PI score. Among them 1.9% of the households rated below the 25th percentile, the landless and the marginal farmer households represent 4.3% and 2.2 % respectively. Within the 25th to 50th percentile, the landless households recorded around 60% and it gradually decreased with the increase of the land ownership. On the other hand, only one-third of landless belonged to the 25th to 50th percentile and it steadily rose up to the small landholder category and slightly dropped for the medium and large landholders. However, the medium and large landholders were more likely to belong within above 75th percentile with around 37% and 39% households respectively.

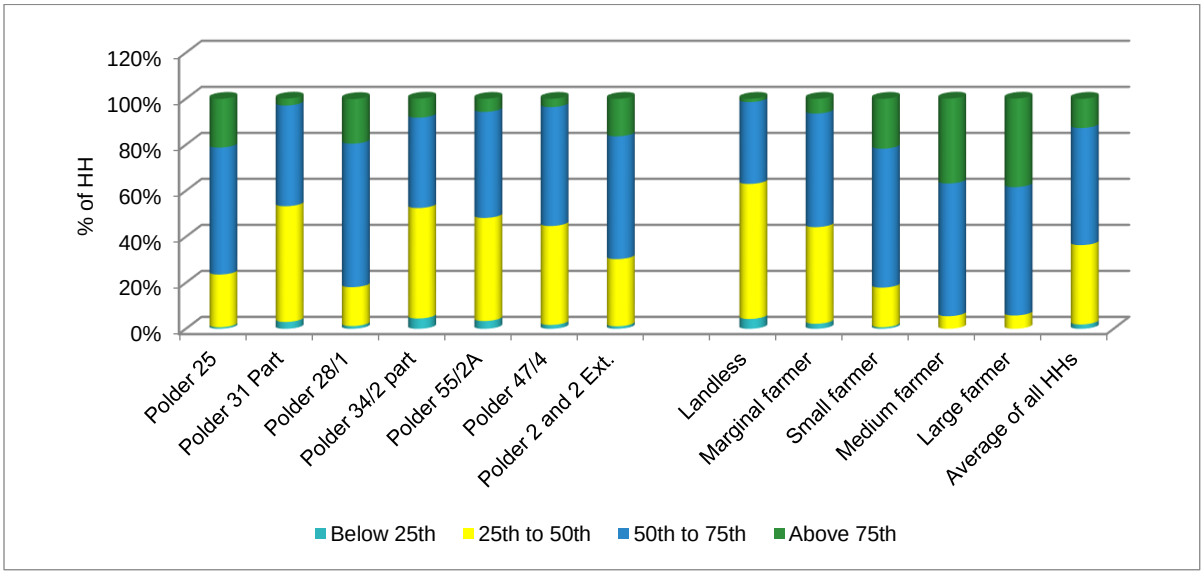

Figure 11-2: Level (%) of households according to PI score percentile by polder and household category

Figure 11-3 explains the average income in BDT according to the PI score percentile by polder and household category. The average income within each percentile was not significantly varied across the polders but the average income among the different landholding category varied significantly within each percentile. In each of the percentile, it was likely that the income steadily increased from the landless to the large farmer households. This data supported the general trend or amputations that the households belong to the lower percentile were likely to be poorer while upper percentile households tend to had more income compared to the lower percentiles.

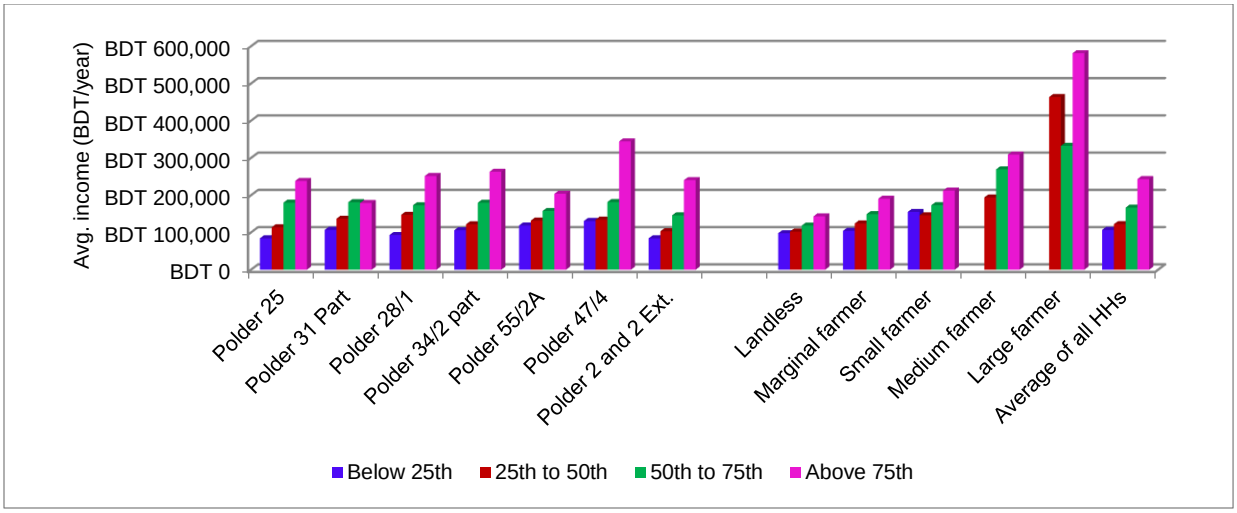

Figure 11-3: Average income in BDT according to PI score percentile by polder and HH category

12. CONCLUTION AND RECOMANDATIONS

The preceding chapters of this report present a series of descriptive analyses of the cross-sectional survey data collected for the baseline household survey, designed to measure a set of discrete and quantitative socio-economic indicators as the basis for an up-to-date assessment of livelihoods in seven selected polders for the Baseline study of BGP. It must, however, be recognised that this report cannot and should not be considered an exhaustive analysis of the household survey dataset. There is considerable scope for more in-depth exploration of the data, along with the linkages and relationships between the different indicators and components of the socio-economic situation, production of agriculture, fisheries and livestock and water management practices, and income and asset ownership of the rural coastal people. Reading this report in conjunction with the Polder Development Plan, the Half-Yearly Progress Report will provide more in-depth information regarding the livelihood of the people of these polders.

The investigation focused on the land and water resources and their possible utilization for improving land uses. This investigation had a major focus on the crop production system of the study polders but other livelihood options like fisheries and livestock were also been highlighted. The agro-ecosystem of the study polders also varied over locations even within the same zone and improvement of cropping pattern depends on appropriate utilization of land and water resources. Findings show that cropping systems of these study polders were divided majorly two categories, agriculture-based cropping system and gher based cropping system. In some polders, both of the cropping systems are visible.

The polders that have practice agriculture-based cropping system, the polder dwellers cultivated *Aman* paddy in the wet season (July/August-November/December). Due to the scarcity of fresh water and the increase in soil salinity, more than 80% of the area remained fallow in the dry season (December-March) and 90% in the early-wet season (April-July). They cultivated some less-water-demanding crops like mung bean, other pulses like check pea, felon, and sesame in the dry season and Aus paddy and Jute in the early-wet season. A number migrated to other areas in Bangladesh and for works (both agriculture and non-agriculture), particularly in the Rabi and Karif-I season. On the other hand, in the gher based cropping system polder dwellers practiced shrimp/prawn cultivation from May to December and then practiced Boro paddy from December/January to April/May. However, many of them keep their land fellow in Rabi season. The other sources of livelihood were the pond and gher-fish culture, poultry and livestock rearing, business, rickshaw or tricycle pulling, driving a motorcycle or motorised cart, and agriculture and non-agriculture wage labour.

Data shows the extremely inequitable distribution of land resources in the studied polders, whereby the landless households do not own any agricultural land at all and the marginal farmer households have a very insignificant area of cultivable land (they represent more than 60% of the households and with 9% of land). The small landholder households depend on sharecropping, leasing and mortgaging arrangements along with their small patches of land to become involved in agricultural production. The large farmer households have three times as much or more land compared to the other household types which could be a good vehicle for their livelihood development. Nonetheless, the households of coastal areas are not able to use their land up to optimal level due to different natural calamities. The survey data revealed widespread household vulnerability to different hazards like soil and water salinity, waterlogging, cyclone and pest and disease attract have a severe impact on the households' agricultural production and income. The efficient use of land is also constrained by the lack of fresh water for irrigation. These hazards are negatively related to crop production. So, they have a direct impact on the livelihoods of the people of these areas, as they are mainly dependent on agriculture.

There are important differences in cropping patterns, livelihood strategies and livelihood outcomes across the studied polders due to the geographical location, natural calamities like salinity, waterlogging and condition of the embankments and related infrastructures. Proximity to urban areas suggesting that they have more favourable condition to shift away from an agriculture-dominated economy to more diversification of economic activities. In addition, findings reveal marked differences in the allocations of socio-economic assets and livelihood strategies between the households of different socio-economic categories. It is likely that different types of assets are strongly inter-linked and any change in one asset directly influences the magnitude of change in other assets. Therefore, the variability in different assets governs the livelihood

options of the households in rural areas. Thus, poorer households report markedly lower educational attainments, lower community participation and options to use of services from external providers (both government and private sector), smaller or negligible holdings of land, livestock and ponds, and limited access to the formal institutions.

Geographical location, cropping system and different asset-holdings of the different household categories present significantly different options for the occupations and income-generating activities open to them. Due to limited assets holding of small and landless households, they are obliged to rely on low-paid, high-risk, labour-intensive activities such as agricultural and non-agricultural labour as the basis for their livelihoods, and so have very limited time or resources to engage in asset-building like investment in children's education or participation in community institutions, engagement with external service providers. Small landholders and landless households also have agriculture on their own small patches of land or shared land. Households in these categories will, therefore, have different challenges and options for livelihood strategies than the large and medium households, who are more dependent on agriculture.

BGP activities provide important mechanisms for community participation for different types of households including poor and landless households. These households are largely marginalised and denied access to other formal community institutions. Their lack of formal social linkage is a cause for concern in terms of the constraints it puts on the participation of such households in the economic development process. The well-off households like the large and medium farmer households have more access to service providers like the department of agriculture extension and banking which is clearly important vehicles for improved livelihood.

The growing importance of the non-agricultural sector and diverse non-farm activities are providing a pathway and can be an opportunity for the smallholders and the landless households for better livelihoods. The data shows however that the agricultural sector remains a key component of livelihoods and patterns of socio-economic differentiation in the studied areas. There has been little change regarding the dominance of agriculture-based occupations over the period whereby the poorer households are primarily agricultural labourers, while the agricultural production including the fisheries and livestock is still dominated by the large and medium farmer households.

Findings show that there is a range of areas in which the women of the studied polders remain disadvantaged and disempowered relative to men. Women have limited mobility and are still largely excluded from participation in community institutions except the groups nurtured by NGOs and so on. They have very limited access/engagement with institutions beyond the community, as is consistent with the restrictions on women's mobility within and outside the community. Women in the studied polders have an extremely limited economic role, both in terms of the range of income-generating activities that they engage in, and the returns they receive from their activities. Thus, when women report that they are engaged in many income-generating activities like post-harvest work and livestock husbandry that are not necessary ensure their own income, it reflects no relation with economic returns from these activities for their own. Notably, women from the large and medium households are less likely to be involved in the economic activities and have limited mobility. This finding is consistent with the socio-cultural pressure in rural Bangladesh on wealthier women to keep away from these economic activities and social participation. In addition, they also represent a limited authority to take decisions in household matters as well as their personal income.

It is found that embankment system of coastal areas promoted cultivation of different varieties of crop along with high-yielding paddy varieties. However, due to lack of adequately maintain the embankments and others structures of the embankments, the polder dwellers encountered waterlogging and increasing soil and water salinity. Nonetheless, still, there are many scopes for diverse land use and improving yield potentials of crops by introducing new crops/varieties and improved management practices with an improved water management system. Considering these, some recommendations have been made based on the information and facts collected during the investigation.

1. Proper maintenance and operation of each of the components (embankment, sluice and canal) of the coastal embankment is the fundamental issue for the sustainable livelihood of polder dwellers. The embankment should be adequately high and strong enough to protect the coastal people from natural calamities like storm surge and river erosion. Proper maintenance and operation of different components of embankments are necessary for fresh water

2. Sluice gates need to be properly functioning all the time and in the wet season, it is necessary to open the gate more frequently and it can be opened for longer periods if necessary to maintain preferred water levels for optimum crop growth. On the other hand, the sluice gates need to keep close during the dry season to prevent intrusion of saline water. It is necessary to have certain rule and regulation of the operation of sluice gate particular in shrimp areas.

3. Excavation and re-excavation of canals and developing drainage systems need to be done for proper crop management.

4. There are huge options to grow the diversified crops in different crop seasons in the southern and south-western coastal region of Bangladesh under a proper water management system. So, it is necessary to consider these diversified crops options in the program to more involve the farming communities of coastal areas with the program that will increase the interest of them towards the program as well as create opportunities for them for a better livelihood.

5. The coastal areas have a relatively flat land; however, data shows elevation differences. Though most of the lands are medium high, there are high and low lands as well that results in different depths of standing water in the field. Careful selection of suitable paddy varieties based on the water depth in the field will support the farming communities to a better production. In addition, selection of more salt-tolerant varieties and improve management system of different crops could provide better production options.

6. In Patuakhali zone, farmers are tended to cultivate a late variety of Aman, therefore they cannot cover the time to cultivate Rabi season crops like maize and wheat. As a result, practice of early and short duration HYV Aman could open more option to taking diversified crop option in the Rabi season.

7. Boro cultivation is limited in the coastal areas that follow a full agriculture-based cropping system. However, under gher based cropping system farmers are practicing the Boro rice in the dry season. Gher structure and some extent of irrigation facilities allow them to cultivate the Boro paddy. Cultivation of Boro paddy depends on proper maintenance of sluice gate as the gher owners want to keep the saline water as much as they can for more profit. Due to high investment and more care, large farmers are not motivated to cultivate boro rather they keep their land fallow or share out the land to smallholders in this season. By regulating saline water through proper maintenance of sluice gate could bring more area of land under Boro cultivation.

8. Aman is the main crop of coastal areas (except gher based system) and this crop is very vulnerable to the natural calamities that are a great threat to the food security of farmer households. In this situation increase, the cultivation of the Rabi season cropping is essential, even introduction of a second rabi crop could a great support for farmer households and could increase cropping intensity in the coastal areas. Cowpea, grass pea, felon, chick pea, mustard as relay cropping with Aman Paddy could be extensively practiced. Proper water management and improved crop management mechanism are necessary to practice relay crops as well as for second Rabi season crop.

9. For efficient use of land in the Rabi and Kharif-I season, it is necessary to ensure the availability of fresh water in this season and build the capacity of rural households to use new technologies and modern agricultural machineries that would ensure the maximize crop production in the region.

10. Promotion of low water demand crops like watermelon, maize, sunflower, sesame, mung bean and other pulses and pumpkin will support the coastal communities to properly utilize their land in the Rabi and Aus/Kharif-1 season.

11. Fish culture could be a good alternative livelihood strategy for rural farmer households. Proper extension program, dissemination of new technologies regarding fish culture and credit facilities for marginal farmers could help to practice more fish culture for the rural farmer households. Training should be arranged for fish farmers to enrich practical knowledge and make awareness towards fish farming as well as environment-friendly new technology should be developed for sustainable aquaculture. Proper water management system will help to reluctant the communities which are practicing environment unfriendly brackish water shrimp.

12. Most of the fish farmers sell fishes in the local market, there is poor communication system between fish farmers and distant markets and transportation system of fish is also traditional. Good communication system and development of

infrastructure and transport system are necessary for an improved livelihood of the fish farmers of coastal areas. The high quality of fingerling and reasonable price of fingerling and fish feed should be ensured to have a better production.

13. Poultry and livestock rearing could be one of the main livelihood strategies for farming communities along with their farming activities. Lack of veterinary services, drugs, operation, livestock services (DLS), feeds, vaccines and breeding materials, marketing system, breed development that hinder better management and productivity of livestock. In addition, rural households have lack training and financial capacity to take poultry and livestock rearing commercially or broader than household level.

14. Market potential is a necessary aspect to emphasize for introduction new crops in the existing cropping pattern. Some of the areas have started new crops like mung bean, sesame, vegetable, jute, maize and other pulses and oilseeds but they do not have proper marketing facilities due to a little amount of produces.

15. For a better livelihood of the coastal farming communities, they need help both for the improved production practices and market access. It is necessary to help them to build linkages with service providers that support them to get access to appropriate and affordable agricultural service that in turn results to adopt new technologies/practices, increase productivity, reduce costs and improve quality.

16. Support the coastal community to be collective and utilize their collective capacity to manage coastal water management system, raise voice, negotiate, and achieve their rights and getting services.

17. Income generation training for women is an effective strategy to increase the participation of women in income-generating activities. Women's control and access to resources and different formal and informal institutions need to be addressed in all aspects of rural livelihoods. Without this their ability to engage in income generating activities, access to loan and be proactive in other decisions would be limited that affect their lives are compromised. Support them to participate in income and skill development program would be helpful to improve their livelihood.

References

BBS, 2016, 'Homepage, Bangladesh Bureau of Statistics,'http://www.bbs.gov.bd/ (Accessed 20 July 2017).

BBS, 2012, *Statistical Yearbook of Bangladesh-2011*, Dhaka: Bangladesh Bureau of Statistic, Statistics and Informatics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.

MoWR, 2006, *Coastal Development Strategy*, Dhaka: Ministry of Water Resources, Government of the People's Republic of Bangladesh.

MoWR, 2005, *Coastal Zone Policy*, Dhaka: Ministry of Water Resources, Government of the People's Republic of Bangladesh.

World Bank, 2016, *World Development Indicators 2016,* Washington DC: World Bank,

https://issuu.com/world.bank.publications/docs/9781464806834?e=0/35179276

Annex -1: Additional Tables

Table 1: Level (%) of education of HH head by HH category

Level of education	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total (n=3651)
Illiterate	11.5	11.4	6.4	2.6	0.0	9.2
Can sign only	34.3	29.4	18.6	6.6	7.7	25.1
Primary	31.0	30.1	26.0	20.8	9.6	28.1
Secondary	16.3	18.9	27.1	26.3	28.8	21.5
SSC	2.6	4.2	9.8	13.1	25.0	6.5
HSC	1.5	2.0	5.8	12.4	13.5	3.9
Graduate& above	0.9	2.0	4.4	15.7	13.5	3.7
Other	1.9	2.0	1.9	2.6	1.9	2.0
Total	100	100	100	100	100	100

Table 2: Land utilization, yield and price of different verities of Kharif-II (Aman) season paddy by HH category

Land ownership	LV T-Aman		HYV T-Aman		Selling status	
	Land (ha)	Yield (t/ha)	Land (ha)	Yield (t/ha)	Selling (% of HH)	Average price (Tk/m)
Landless	14.9	2.3	39.7	3.8	52.2	715
Marginal farmers	103.5	2.3	167.2	3.6	45.8	718
Small farmers	164.8	2.3	183.9	3.6	53.5	714
Medium farmers	62.5	2.2	92.3	3.7	73.3	726
Large farmers	32.4	2.3	57.1	3.6	85.3	740
Total use of land & yield	378.1	2.3	540.3	3.6	53.5	718

Table 3: Land utilization, yield and price of different varieties of paddy in the Boro season by HH category

	HYV Boro		Hybrid Boro		Selling status	
Categories of households	Land (ha)	Yield (t/ha)	Land (ha)	Yield (t/ha)	Selling (% of HH)	Average price (Tk/m)
Landless	37.7	5.3	2.7	6.5	46.3	694
Marginal farmers	163.5	5.3	7.7	6.7	45.3	696
Small farmers	203.2	5.5	16.9	6.3	57.9	703
Medium farmers	84.3	5.4	5.2	4.7	77.6	691
Large farmers)	16.8	5.9	1.2	7.2	94.4	697
Total land and yield	504.2	5.4	33.7	6.3	53.8	698

Table 4: Land utilization, yield and price of different verities of paddy in Kharif-I (Aus) season by HH category

	LV T-Aus		HYV T-Aus		Selling status
Categories of households	Land (ha)	Yield (t/ha)	Land (ha)	Yield (t/ha)	Average price (tk/m)
Landless	0.5	1.9	1.2	4.3	618
Marginal farmers	2.7	2.8	5	2.5	663
Small farmers	4.5	2.5	3.3	2.6	688
Medium farmers	2.2	3	0.5	2.9	800
Large farmers)	0	0	0	0	0
Total use of land and yield	9.9	2.5	10	2.7	676

Table 5: Level of (%) homestead vegetable and fruit cultivation in different by HH categories

	Homestead vegetable cultivation				Homestead fruit cultivation			
	Production		Sale (among producers)		Production		Sale (among producers)	
	% HH	Value (Tk)	% HH	Value (Tk)	% HH	Value (Tk)	% HH	Value (Tk)
Landless	47.3	1378.0	21.1	142.0	64.1	1765	12.5	733
Marginal farmers	71.5	2554.0	29.3	415.0	92.7	3040	26.0	1324
Small farmers	77.0	4002.0	33.8	905.0	97.3	5328	35.8	2234
Medium farmers	83.6	5730.0	35.4	1476.0	99.3	9862	45.2	3781
Large farmers)	92.3	7828.0	39.6	1967.0	100.0	13919	51.9	7069
Total (N=3651)	70.0	3257.0	30.5	663.0	89.5	4338	29.4	1831

Table 6: Level (%) of households reporting of having pond fisheries and average size of pond by HH category

	Average size of pond (dec)	Yield (t/ha)	Price (tk/kg)
Landless	3.0	6.0	110
Marginal farmers	5.2	3.3	120
Small farmers	9.6	2.9	123
Medium farmers	16.4	2.6	125
Large farmers	31.5	2.3	124
Total (N=3651)	9.7	3.0	122

Table 7: Level (%) of households reporting of having gher and production of fish from gher by HH category

Description	Having gher (% of HH)	Size of gher (ha)	Shrimp		Prawn		White Fish	
			Yield (t/ha)	Price (Tk/kg)	Yield (t/ha)	Price (Tk/kg)	Yield (t/ha)	Price (Tk/kg)
Landless	9.7	0.4	0.2	526.0	0.2	599	0.6	117
Marginal farmers	18.6	0.4	0.3	522.0	0.2	593	0.7	125
Small farmers	35.3	0.5	0.3	572.0	0.2	616	0.7	128
Medium farmers	42.7	0.7	0.3	612.0	0.2	621	0.6	126
Large farmers	38.5	1.4	0.1	589.0	0.1	522	0.8	117
Total (N=3651)	23.9	0.5	0.3	556.0	0.2	607	0.7	126

Table 8: Fish selling and consumption pattern from the gher fish production in last twelve month by HH category

HH category	Selling fish (% of HH)	Average sell (Kg/HH	Average consumption (Kg/HH)	Average earing from fish selling (BDT)	Average earing (BDT) from vegetables and fruits from the bank of ghers
Landless	98.4	214	46	48368	6321
Marginal farmers	95.3	236	48	59901	5262
Small farmers	95.4	304	54	83399	8790
Medium farmers	99.1	485	67	158351	9250
Large farmers	95.0	1163	108	220810	4400
Total	96.1	318	55	85959	7358

Table 9: Level (%) of households reporting of the main problems of fish cultivation by HH categories

Land ownership	Low fish price	High price of fish feed	High price fingerlings/ input	Flooding during high tide	Quality of fingerlings	Theft of fish
Landless	66.7	58.7	46.0	31.7	34.9	15.9
Marginal farmers	57.8	42.5	31.9	31.2	23.6	18.6
Small farmers	56.3	49.1	38.9	30.8	22.3	18.2
Medium farmers	64.1	61.5	47.9	35.9	32.5	21.4
Large farmers	50.0	30.0	35.0	40.0	25.0	25.0
Total	58.5	48.7	38.1	31.9	25.1	18.8

Table 10: Level (%) of households reporting of the causes of crop losses by HH category

Land ownership	Water logging	Flooding	Salinization of land	Cyclone/ tornado	Pest/ disease attack	Drought	Other
Landless HH	42.0	16.0	32.0	12.0	10.0	12.0	6.0
Marginal farmer HH	62.1	21.0	13.3	12.6	9.4	7.4	3.9
Small farmer HH	57.8	35.1	15.0	12.2	14.2	6.8	2.3
Medium farmer HH	56.9	31.2	19.3	14.7	10.1	8.3	4.6
Large Farm HH	61.9	33.3	33.3	9.5	14.3	9.5	4.8
Total	58.4	28.3	16.4	12.6	11.6	7.6	3.4

Table 11: Level (%) of households reported of using irrigation in dry season, average area (dec) and sources of irrigation water among the users by HH category

Description	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total (N=3651)
% of HH using irrigation	25.3	35.9	50.1	50.3	38.5	38.6
Average irrigated area (decimal)	44	45	58	95	113	56
Type of irrigation (%)						
Canal	15.3	23.3	32.7	32.6	30.0	26.9
Beel		0.7	0.8			0.6
Pond	4.3	3.6	6.0	5.7	10.0	4.9
Tube-well	81.6	73.8	66.0	72.3	70.0	71.6
Other means	1.2	1.4	1.7	1.4		1.5

Table 12: Level (%) of HHs reporting of month wise insufficient food (food less than two times a day) in the last year by HH category

Name of the month	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total (N=3651)
Boishak	2.9	1.1	0.1	0	0	1.0
Joishtho	2.2	0.9		0	0	0.8
Ashar	9.5	3.5	0.3	0	0	3.3
Srabon	10.6	4.3	0.3	0	0	3.9
Bhadro	7.4	3.6	0.2	0	0	3.0
Ashin	6.6	3.0	0.5	0	0	2.6
Kartik	5.5	2.5	0.5	0	0	2.2
Ograhayon	1.2	0.6		0	0	0.5
Poush	1.4	0.4	0.1	0	0	0.5
Magh	0.8	0.6	0.1	0	0	0.4
Falgun	2.6	1.5	0.1	0	0	1.2
Choitro	4.3	2.9	0.3	0	0	2.1

Table 13: Level (%) of households reporting of women participation in income generating activities by HH category

Income generating activities	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total (n=3651)
Homestead cultivation	43.4	66.7	73.7	78.4	78.8	65.7
Field crop farming	3.5	6.6	11.0	7.7	9.6	7.4
Post-harvest agri. activities	29.7	47.5	77.1	74.4	69.2	55.2
Poultry rearing	72.0	81.1	85.3	82.1	88.5	80.9
Livestock rearing	39.8	54.7	67.6	68.9	71.2	57.1
Aquaculture	1.7	4.3	8.4	8.8	5.8	5.4
Non-farm activities	7.2	6.2	4.6	4.0	1.9	5.7
Wage labour	11.1	5.6	1.1	0.0	0.0	4.8
Salaried employment	0.5	1.1	2.2	4.0	7.7	1.6
Not engaged	10.8	2.9	0.9	1.5	3.8	3.6

Table 14: Level of (%) households reporting of purposes of spending money that they earned by polder

Purpose of spending money	Polder 25	Polder 31 Part	Polder 28/1	Polder 34/2 part	Polder 55/2A	Polder 47/4	Polder 2 and 2 Ext.	Total
Personal items (clothes, ornaments, cell phone, etc)	81.5	83.4	84.3	87.5	57.0	56.3	79.3	74.9
Children's education	48.1	64.5	68.6	68.5	70.3	67.3	42.4	57.0
Treatment	44.4	48.5	60.3	54.9	37.8	57.2	58.7	51.5
Special food items	52.7	10.7	14.5	10.5	50.2	46.4	14.9	31.4
Improvement of housing	36.4	43.2	38.0	32.1	25.4	22.4	30.8	31.3
Visits (relatives, religious places, cinema, mela etc.	21.6	37.3	43.8	33.5	22.6	26.2	32.8	29.1
Gift	7.3	0.6	6.2	5.6	0.4	8.4	9.3	6.3
Improving toilet and drinking water facilities	5.2	8.9	14.0	5.6	1.6	3.2	5.8	5.3
Other	11.3	1.2	1.2	2.2	6.1	2.1	0.7	4.1

Table 15: Level of (%) households reporting of purposes of spending money that they earned by HH category

Purpose of spending money	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total (N=3651)
Personal items (clothes, ornaments, cell phone, etc)	67.9	73.9	79.1	79.6	84.6	74.9
Children's education	44.2	60.3	59.7	58.0	55.8	57.0
Treatment	46.9	50.0	55.4	57.3	48.1	51.5
Special food items	21.4	31.2	35.7	41.6	25.0	31.4
Improvement of housing	28.4	32.0	33.0	29.2	23.1	31.3
Visits (relatives, religious places, cinema, mela etc.)	23.3	27.2	32.2	37.6	51.9	29.1
Gift	4.9	5.4	6.2	13.5	19.2	6.3
Improving toilet and drinking water facilities	5.5	4.3	6.3	8.8	0.0	5.3
Other	4.8	3.5	4.3	5.5	7.7	4.1

Table 16: Level (%) of HH reporting female members have mobility (can go on their own**) to different formal and informal institutions by HH category**

Institutions/places	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total
Local market/hat	46.7	46.0	43.2	41.6	46.2	45.0
Health center/clinic	82.2	78.4	75.2	75.5	67.3	77.8
Hospital	73.6	72.8	72.6	71.2	73.1	72.8
NGO/CBO office	44.4	41.7	29.9	14.2	5.8	36.2
Children' school	47.6	54.2	49.4	46.0	48.1	50.9
Union Parishad	33.6	27.4	21.6	20.8	13.5	26.1
National festival	9.8	9.8	9.2	16.1	11.5	10.1
Upazila social welfare office	1.7	1.5	1.5	4.7	1.9	1.8
District level offices	1.8	1.7	2.1	5.1	9.6	2.2
Upazila Livestock/ agriculture/ fisheries office	0.0	0.0	0.0	0.0	0.0	0.0
Never visit any of these places alone	6.1	7.3	9.9	11.7	17.3	8.3

Table 17: annual household income (BDT) from agricultural and non-agricultural sector and their percentage in total income by HH category

	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total
Agricultural Sector (BDT)	40924	58436	91653	169370	312516	76865
% of income from agri. sector	37.8	41.7	51.8	60.5	71.7	48.1
Non-Agricultural (BDT)	67480	81776	85237	110505	123192	82974
% of income from non- agri. Sector	62.2	58.3	48.2	39.5	28.3	51.9

Table 18: Level (%) of income from different sectors by HH category

	Landless HH	Marginal farmer HH	Small farmer HH	Medium farmer HH	Large farmer HH	Total
Agricultural Sector	37.8	41.7	51.8	60.5	71.7	48.1
Crop production	7.5	11.4	18.8	19.1	24.7	14.9
Livestock and poultry	9.6	12.2	14.7	13.4	12.7	12.9
Fisheries	6.3	7.8	12.0	17.8	14.0	10.5
Agricultural labor	14.1	9.7	3.4	0.2	0.0	6.6
Lease/Mortgage/Share out land	0.22	0.6	2.96	9.89	20.3	3.26
Non-Agricultural income	62.2	58.3	48.2	39.5	28.3	51.9
Business &self employemnt	14.2	19.8	18.6	15.8	13.6	17.9
Non-agricultural services	5.7	10.2	15.2	16.6	11.1	12.1
Non-Agricultural labour	24.2	16.8	6.9	0.9	0.0	11.8
Transport operation/renting	15.3	8.0	3.0	1.3	0.0	6.1
Others	2.9	3.7	4.5	5.0	3.6	4.0
Household income	100.0	100.0	100.0	100.0	100.0	100.0

Table 19: Average value (BDT) of different types of HH assets by polder and HH category

Polder name	Cultivable land including gher	Homestead land including orchards, ponds, ditches	House	Livestock and poultry	Others	Total
Polder 25	774,381	516,859	68,574	64,118	22,965	1,446,897
Polder 31 Part	616,538	329,178	33,506	45,004	13,507	1,037,732
Polder 28/1	1,163,074	544,938	58,413	83,692	24,152	1,874,269
Polder 34/2 part	697,922	435,514	46,459	39,688	14,774	1,234,357
Polder 55/2A	728,455	349,617	74,238	43,060	8,590	1,203,961
Polder 47/4	970,148	537,523	77,820	63,613	13,566	1,662,670
Polder 2 and 2 Ext.	552,449	331,224	101,574	48,733	21,383	1,055,362
HH category						
Landless	0	48,455	34,018	22,065	7,339	111,894
Marginal farmer	72,478	255,526	57,904	41,950	12,470	440,328
Small farmer	990,921	565,500	96,938	76,170	20,921	1,750,449
Medium farmer	3,715,734	1,446,126	147,511	95,031	39,759	5,444,160
Large farmer	10,052,317	2,253,962	272,308	163,304	131,871	12,873,761
Total	740,763	426,074	74,714	54,014	17,747	1,313,312

Annex 2: Present Condition of Water Resource Management and Infrastructure

Polder 25

In the main characteristics of the water resource management and infrastructure of polder 25 are highlighted at Table 1 and Figure 1 shows the locations of existing infrastructure and khals in polder 25.

Table 1: Main features of Water Resource Management and Infrastructures of Polder 25

Features			
Length of embankment (in km)	46 km		
No of drainage/flushing sluices	17 (11 active and 6 inactive)	Good conditioned: 0	Poor conditioned: 11
No of inlets	00	Good conditioned: N/A	Poor conditioned: N/A
No of (drainage) outlets	00	Good conditioned: N/A	Poor conditioned: N/A
No of khals	114 (main khals are 45, and secondary and tertiary khals are 69)		
Length of khals (in km)	About 299 km (main, secondary and tertiary)		
Main outfall rivers, major drainage khals and sluices	**Main out fall rivers:** Hari river on the west and southwest, Hamkura river on the southeast (part, dead), Bhadra river on the south (part, dead) and upper Sholmari on the east (part). **Sluices (active):** Chahera Sluice, Shoilgati Sluice. Keoratola Sluice-1, Keoratola Sluice-2, Dahakhola Sluice, Beel Salatia Sluice, Solua Sluice, Amvita Sluice, Thukra Sluice, Modhugram Sluice, Khornia Sluice. **Sluices (inactive):** Katenga Sluice, Mikshi Mill Sluice, Chailor Sluice, Balikhali Sluice, Pasura Sluice, Pachpotapota Sluice.		
Situation of tidal and river flooding	There is no tidal and river flooding in this polder.		
Locations with water logging and siltation.	Beel Dakatia, Baruna beel, Dohakhola beel, beel Tawalia, beel Salatia, Gonali beel, Beeldar beel and Modhugram beel are very much prone to water logging. The duration of water logging is around 3-6 months (July to December).		
Most river erosion prone area	Most river erosion prone area is Khornia Bridge to Bhadradia Mosque reach and Khornia bazar to Mery Bricks reach, total 1.5 km.		
Other relevant water issues	Hamkura and Bhadra rivers are totally silted. Many parts of Bhadra river are occupied for paddy cultivation and fish cultures (gher). Upper Sholmari river is partially silted up. The sluice downstream of the upper Sholmari river is controlled by influential because of which water flow from Beel Dakatia and Thukra areas coming down through Modhugram, Thukra, Amvita and Solua sluices cannot pass easily. It can be solved only if the sluice operated jointly by all polder WMAs or		

	by WMF. Some main khals are blocked by cross dams which also cause internal drainage problems.
Key challenges in effective water management	Siltation of outfall rivers, control of Sholmari sluice by influential, fishing nets and fences in drainage channels, congestion due to water hyacinth, leasing of khals, changing river morphology, cross dams across canals, non-functioning slice gates, cultivation of seed beds along the drainage channel etc.
Current internal polder water management practices	Currently there are no systematic water management practices. Usually, the polder inhabitants used to go to chairman while required and the chairman takes decision regarding operation of the infrastructures.
Overall condition of internal polder water management	Water management is not satisfactory because existing WMOs are not functional or active.

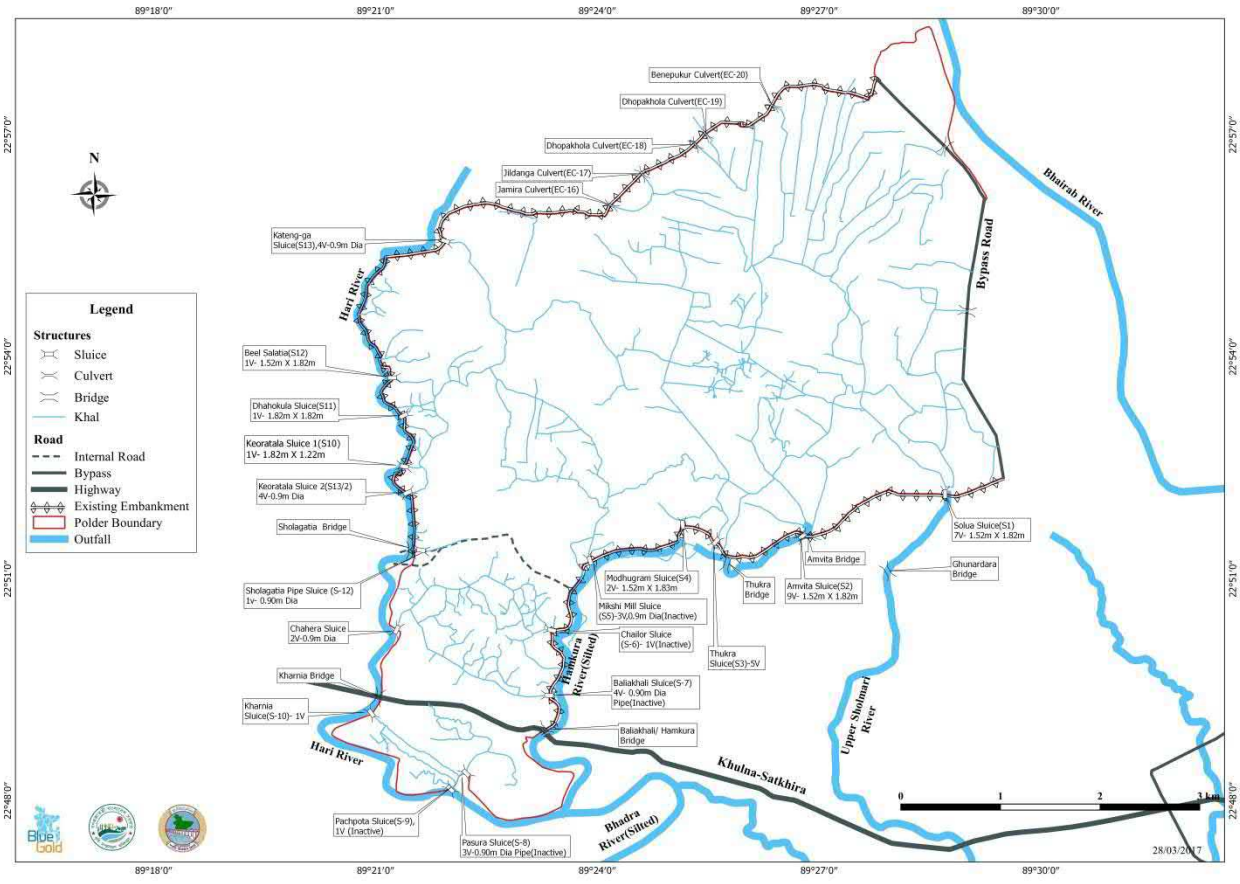

Figure 1: Map of Polder 25 showing the existing Khals and Water Management Infrastructure

Polder 28/1

In the main characteristics of the water resource management and infrastructure of polder 28/1 are highlighted at Table 2 and Figure 2 shows the locations of existing infrastructure and khals in polder 25.

Table 2: Main Features of Water Resource Management and Infrastructure in Polder 28/1

Features			
Length of embankment (in km)	23.18 km (including road embankment)		
No. of drainage/flushing sluices	07	Good condition: 00	Poor condition: 07
No. of inlets	0	Good condition: N/A	Poor condition: N/A
Water Retention Structure (WRS)	01	Good condition: 00	Poor condition: 01
No. of (drainage) outlets	01	Good condition: 00	Poor condition: 01
No. of major khals	34 (7 major and 27 secondary)		
Length of major khals (in km)	72 km		
Main outfall rivers, drainage khals and sluices	**Main rivers:** Moury on the east, Upper Sholmari on the west and Sholmari River (through polder 28/2). **Main drainage khals:** Koiyar khal, Panchur khal, Nalar khal, Pashkhali khal, Rayer Mahal khal and Kuloti khal. **Sluices:** Kalighat sluice, Khoiramari sluice, Nalar sluice, Pashkhali sluice, Punchur sluice, Kuluti sluice, Rayermohol sluice and Rajband WRS.		
Situation of tidal and river flooding	There is no tidal and river flooding effect in polder 28/1. There was no evidence overtopping of the embankment. But there are internal floods due to heavy rainfall in monsoon and upland flow through bridges and culverts in the north and north-eastern boundary.		
Locations with water logging and siltation.	Northeast and middle part of this polder (major part Beel Pabla Mouza, Char Kalipur, Shibpur, Chak Ashankhali and Kuloti), are waterlogged due to less drainage facilities, cross dams, private structures, land grabbing etc.. Most of the sluice gates are poorly functioning because of interventions and poor condition of gates. Two sluices are inactive because of private cross dams on the river side channel.		
Most river erosion prone area	No such area was reported.		
Other relevant water issues	Sometimes sewage from Khulna city area enters the polder through Aronghata bridge and some other small bridges and pollutes the water in the polder, which badly affects the fish culture and other household activities.		
Key challenges in effective water management	• Rapidly growing the urban area on the eastern side is now big challenge for improvement of the internal water management; • Influential people are already occupied many khals and fully control the sluice gates; and • Silted khals and inactive as well as poorly functioning sluice gates.		

Features	
Current internal polder water management practices	Sluice gates are fully controlled and operated by Union Parishad and some influential people.
Overall condition of internal polder water management	Very poor

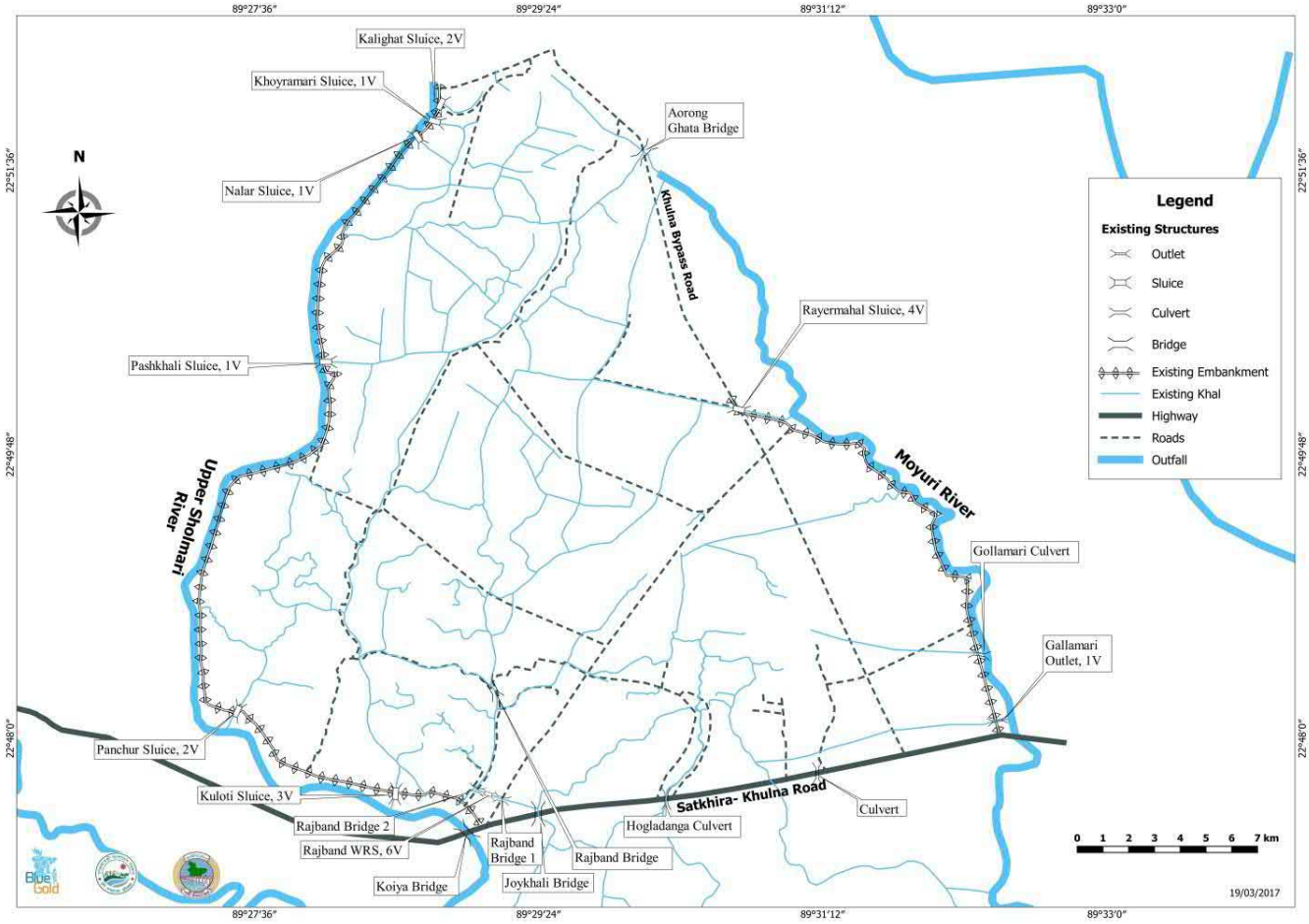

Figure 2: Map of Polder 28/1 showing the existing Water Management Infrastructure

Polder 31 Part

In the main characteristics of the water resource management and infrastructure of polder 31-Part are highlighted in Table 3 and Figure 3 shows the existing infrastructure and khals in polder 31-Part.

Table 3: Main Water Resource Management and Infrastructure characteristics of polder 31-Part

Features			
Length of embankment (in km)		30.00	
No of drainage/flushing sluices	10	Well-conditioned: 10	Bad conditioned: Nil
No of inlets	02	Well-conditioned: 01	Bad conditioned: 01
No of (drainage) outlets	01	Well-conditioned: Nil	Bad conditioned: New Construction
No of canals		17 (Main-11 and Secondary-7)	
Length of canals (in km)		50	
Main outfall rivers and khals		Mouga (More Active), Bhadra (Dead), Lower Salta (Active), Jhapjhapia (Nearly Dead).	
Situation of tidal and river flooding		There is no tidal flooding in polder 31-Part. River flooding takes place in monsoon. Expected depth of inundation is about 0.60m to 1.50m in monsoon. The duration of inundation about 2 to 3 months.	
Locations with water logging and siltation.		Water logging locations are Rajakhar beel, Gariardanga, Sapa, Barobhuyan Sluice area and Ralia, Chardanga, Thandamari khal area.	
Most river erosion prone area		Barobhuiyan two places, Bhagobatipur and Keshorabad area.	
Other relevant water issues		Polder 31-Part falls in the minor wind risk zone	
Key challenges in effective water management		1. To be removed water logging and Protect erosion point.	
Current internal polder water management practices		During this year 2016, there is one Community Agricultural Water Management areas in Ghatarkhal.	
Overall condition of internal polder water management		Partially Good.	
Opportunities for internal polder water management		Horizontal Learning between Ghatarkhal WMG with other WMGs.	

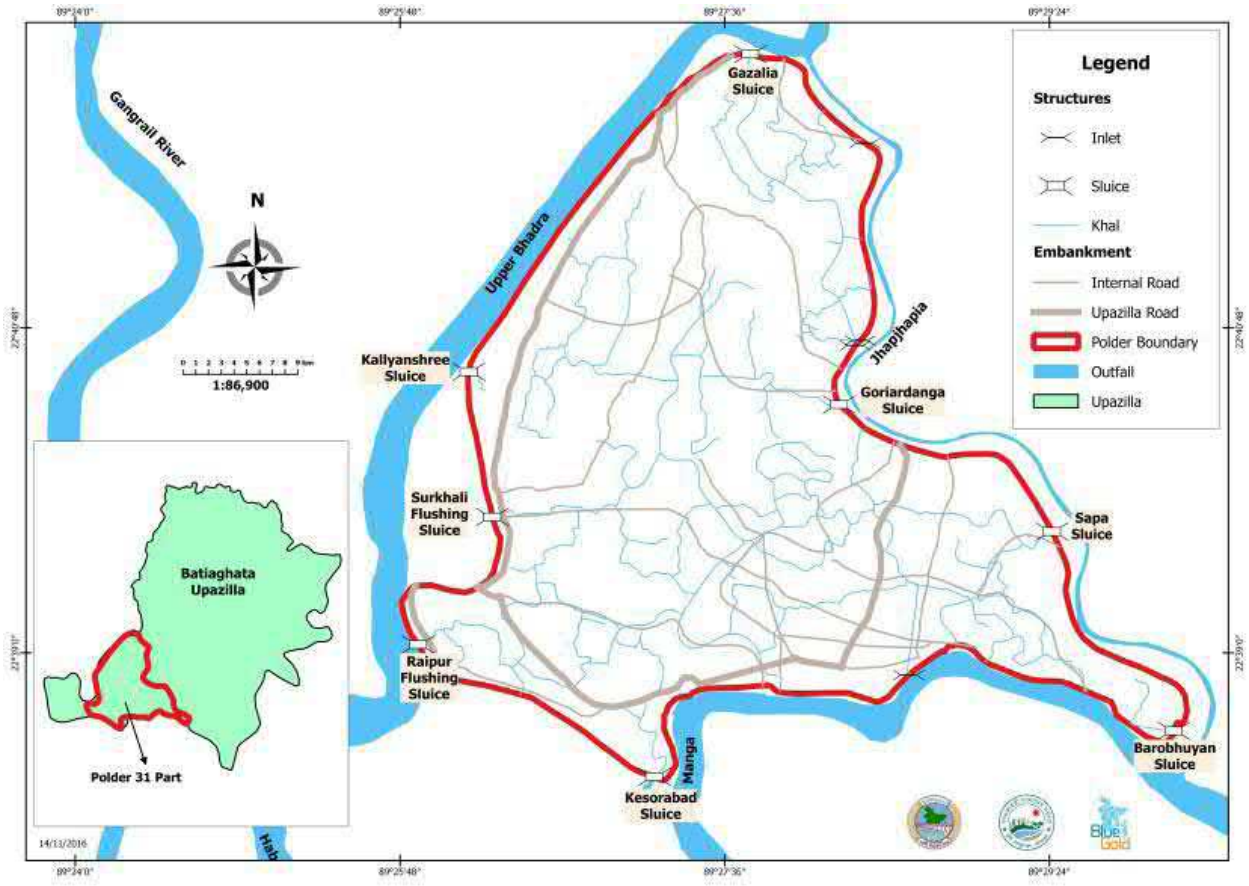

Figure 3: Map of Polder 31-Part showing the existing Khals and Water Management Infrastructure

Polder 34/2 Part

Main features of the water resource management and infrastructure in polder 34/2 Part are highlighted in Table 4. Figure 4 shows the existing water management infrastructures including khals in polder 34/2 Part.

Table 4: Main Features of Water Resource Management and Infrastructure in Polder 34/2 Part

Features			
Length of embankment (in km)		40.00 km	
No. of drainage and flushing sluices	31 (11 nos. DS sluice and 20 nos. flushing sluice)	Good condition: 18	Poor condition: 10 Damaged: 3
No. of inlets	02	Good condition: 00	Poor condition: 02
No. of (drainage) outlets	01	Good condition: 01	Poor condition: 00
No. of khals		33 (11 main and 22 secondary)	
Length of khals (in km)		50 km	
Main outfall rivers, drainage khals		**Main rivers:** Matha Bhanga on the North, Rupsha on the North- West, Kazibacha on the West, Matha Vanga (dead) on the North- East, Poshur River on the South and Poshur River(dead) on the East side. **Main drainage khals:** Nalua (River) khal, Halia khal, Thakrunbari khal, Goger khal, Zabberkhali khal, Baroikatakhali khal, Peermaikhali khal, Nangladoho khal, Kalukati khal and Doani khal	
Situation of tidal and river flooding		There is no tidal and river flooding that effects polder 34/2 Part. There is also no evidence of overtopping of the embankment. But there are internal floods due to heavy rainfall in monsoon.	
Locations with water logging and siltation.		There is no water logging in the polder area.	
Most river erosion prone area		There are three erosion prone zones which are Koria, Bujbunia and Shealidanga in Amirpur, Baliadanga and Vanderkote UP respectively.	
Other relevant water issues		There are no other relevant water issues in the polder area.	
Key challenges in effective water management		Most of the khals are silted up which resulted in poor drainage and internal flooding during monsoon and due to budget constraint, some of these khals may not be re-excavated from BGP rehabilitation fund; and	
Current internal polder water management practices		Sluice gates are fully controlled and operated by Union Parishad and some influential people.	
Overall condition of internal polder water management		Very poor	

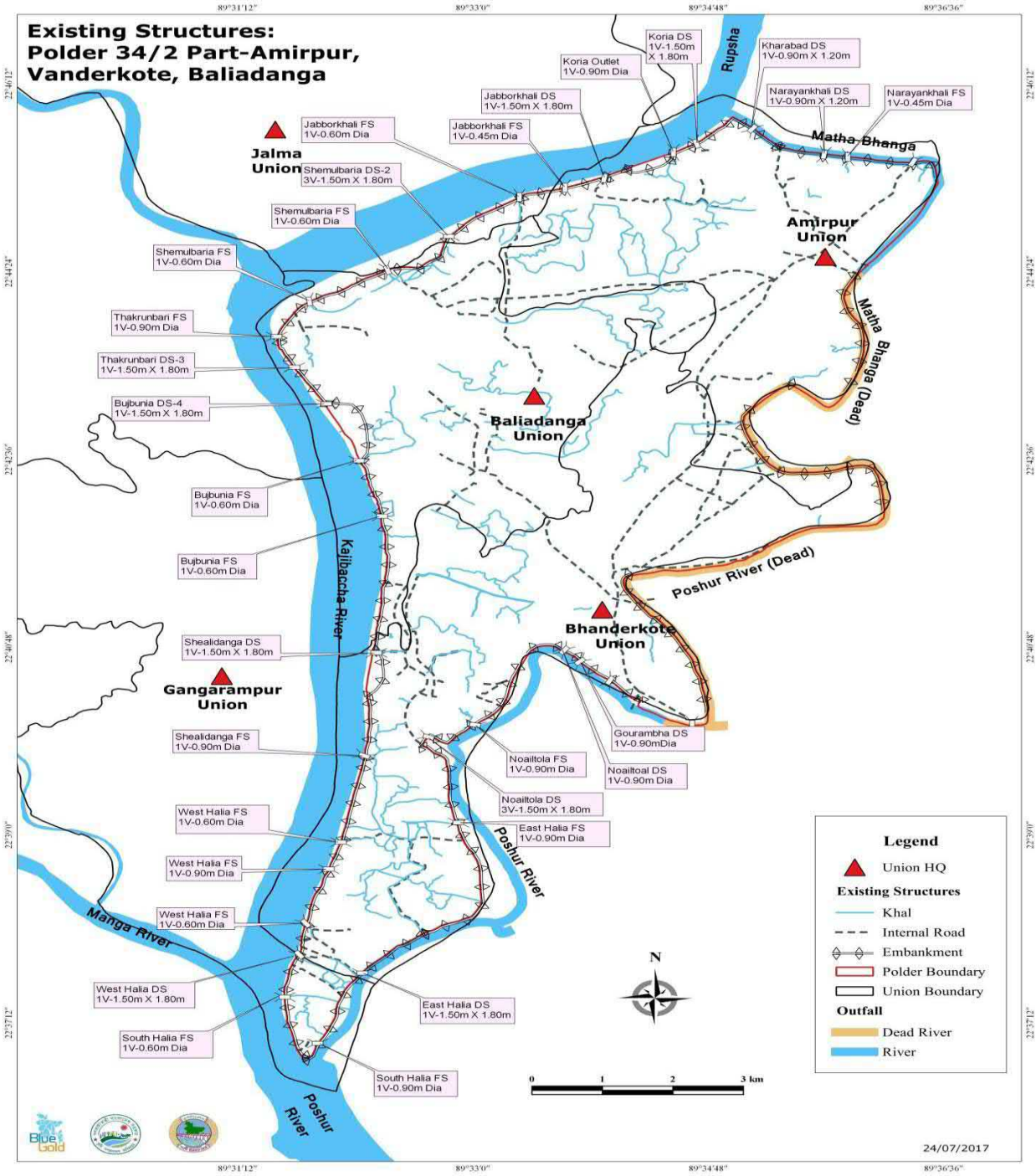

Figure 4: Map of Polder 34/2 Part showing the existing Khals and Water Management Infrastructure

Polder 55/2A

In Table 5 the main characteristics of the water resource management and infrastructure of polder 55/2A are highlighted and Figure 5 shows the existing infrastructure and khals in polder 55/2A.

Table 5: Main Water Resource Management and Infrastructure characteristics of polder 55/2A Characteristics

Features	
Length of embankment (in km)	45
No of drainage/flushing sluices	13
No of inlets	10
No of (drainage) outlets	5
No of canals	61
Length of canals (in km)	211
Main outfall rivers and khals	Bhuria river, Joinkati river, Kalagachia and Baloikati *(partially silted up),* Patabunia khal (highly silted up), Mohisdanga khal, Kharizza Betagi *(partially silted up),* Moishadi and Nawmala khal *(partially silted up).*
Situation of tidal and river flooding	There is no tidal flooding in polder 55/2A. River flooding takes place in monsoon. Expected depth of inundation is about 0.60m to 0.75m in monsoon. The duration of inundation about 1 month.
Locations with water logging and siltation.	In Adabaria, Atoshkhali, Shaplaza, Mohathradi, Nawmala, Chaddabhuria, Char Moishadi, Maddya Dharandi and Akhoibaria the drainage congestion is slightly higher than other areas. In these areas, drainage congestion affects the transplantation period of the Aman season. In the dry season, scarcity of irrigation water effects Rabi crop cultivation.
Most river erosion prone area	Slightly erosion in Char Moishadi and near Bhuria launch ghat but not affect the embankment to till now.
Other relevant water issues	Polder 55/2A falls in the wind risk zone which possesses some vulnerability to strong winds and surge heights associated with cyclones. Three major cyclones have hit this polder during the recent years; Sidr in 2007, Aila in 2009 and Mohasen in 2013.
Key challenges in effective water management	- Ten khals and two outfall rivers have been silted up. One sluice and two outlets have been damaged to a minor extent. This leads in Adabaria, Atoshkhali, Saplaza and Akhoibaria area to drainage congestion and water stress. - Poor operation and maintenance (O&M) of structures. Not much maintenance of structures, except routine maintenance, after Sidr and Aila cyclones in 2007 and 2009 respectively though these structures were damaged to a certain extent. - Extensive presence of water hyacinths in many water bodies.
Current internal polder water management practices	There is no internal Polder Water Management system practices in the Polder
Overall condition of internal polder water management	Very Poor

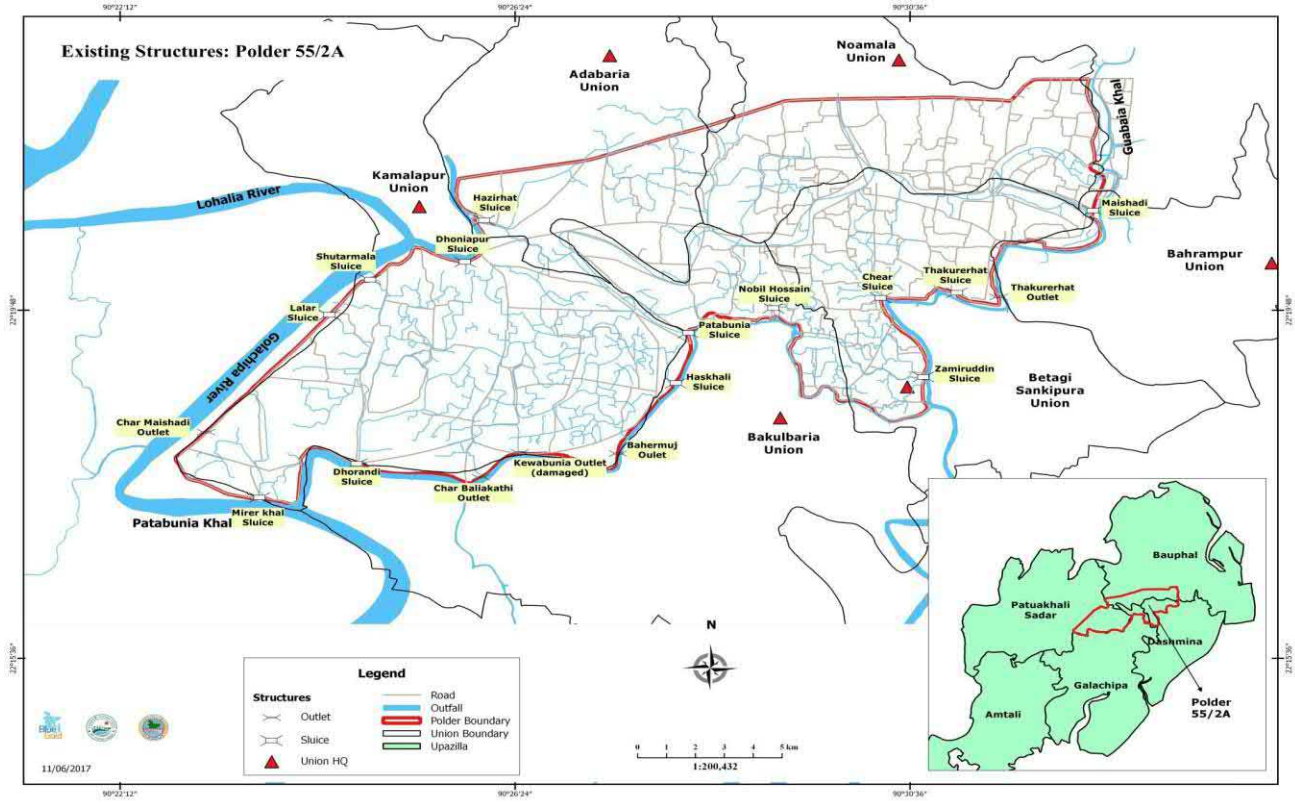

Figure 5: Map of Polder 55/2A showing the existing khals and Water Management Infrastructure

Polder 47/4

Main features of the water resource management and infrastructure in polder 47/4 are highlighted in Table 6. Figure 6 shows the existing water management infrastructures including khals in polder 47/4.

Table 6: Main Features of Water Resource Management and Infrastructure in Polder 47/4

Features			
Length of embankment (in km)	59.00		
No. of drainage and flushing sluices	27 (Flushing-7, Drainage- 15 and Drainage -cum-flushing-5)	Good condition: 05	Poor condition: 21 Damaged: 01
No. of inlets	02	Good condition: 02	Poor condition:00
No. of (drainage) outlets	00		
No. of khals	49 (28 main and 21 secondary khals)		
Length of khals (in km)	190		

Features	
Main outfall rivers, drainage khals, Drainage sluices, Surface Drainage sluices and Several sizes Flushing Sluices	**Main rivers:** Andtharmanik on the North, Charchapli and Dhulasar on the South-West, Rabnabad and Tiakhali on the East side. **Main drainage khals:** Shanirvor khal, Pakhyapara bazar khal, Pakhyapara khal, Baiddopara khal, Purba Madhukhali khal, Baliatali khal, Karamjapara khal/Companypara khal, Amtali khal, Uttor Lemupara khal, Charbaliatali khal, Bablatala khal, Noyapara khal, Anantapara- 1/Modiar khal, Anantapara- 2/Hetalboniar khal, Koralia khal **Drainage and Surface Drainage Sluices:** Pakhyapara bazar Sluice, Pakhyapara Sluice, Baiddopara Sluice, Purbo Modhukhali Sluice, Kabira khal Sluice, Kathakhali Sluice, Baliatoli-1 Sluice, Baliatoli-2 Sluice, Char Nazir Sluice, Karamjapara/Companypara Sluice, Karamjapara Sluice, Amtoli Sluice, Uttar Lemupara Sluice, Char Baliatoli Sluice, Bablatola Sluice, Bablatola Bazar Sluice, Anantopara-1 Sluice, Anantopara-2 Sluice, Koralia Sluice, Borkatia Sluice, Monoshatali Sluice and Shikdar khal/ Adamali Sluice. **Flushing Sluices:** Madhukhali Sluice, Aiumpara Sluice, Choto Baliatoli Sluice, Char Dhulasar Sluice, Bablatola Old Sluice. **Inle**t: Mithaganj inlet and Monashatli inlet
Situation of tidal and river flooding	There is no tidal and river flooding that affects polder 47/4. The Char Dhulasar village area (near anantapara sluice) is prone to overtopping which is under repairing. But there are internal floods due to heavy rainfall in monsoon.
Locations with water logging and siltation.	There is a little bit water logging in the char Baliatali beel, Madhukhali beel, Nayapara beel, Dakshin Barabaliatali beel and Karamjapara beel of this polder area during the post monsoon (August-November).
Most river erosion prone area	There are five erosion prone zones which are Banglabazar (near Mithaganj), Katakhali (near Monoshatali village), Paschim Dhulasar School Ghat, Char Dhularsar and Char Baliatali.
Other relevant water issues	Polder 47/4 is a saline prone area. Due to salinity, land remains fallow in the Rabi season. This polder is also susceptible to tropical cyclone and tidal surge. Three major cyclones have hit in this polder during the recent years i.e. Sidr in 2007, Aila in 2009 and Mohasen in 2013.
Key challenges in effective water management	1. Most of the khals are silted up which resulted in poor drainage and internal flooding during monsoon. 2. Many khals are used for fish culture. For fish culture the local powerful leaders establish cross dam in the khals.
Current internal polder water management practices	Most of the sluice gates are controlled by few local influential people. Now there is no proper Internal Polder Water Management system are being practices in the polder
Overall condition of internal polder water management	Very poor

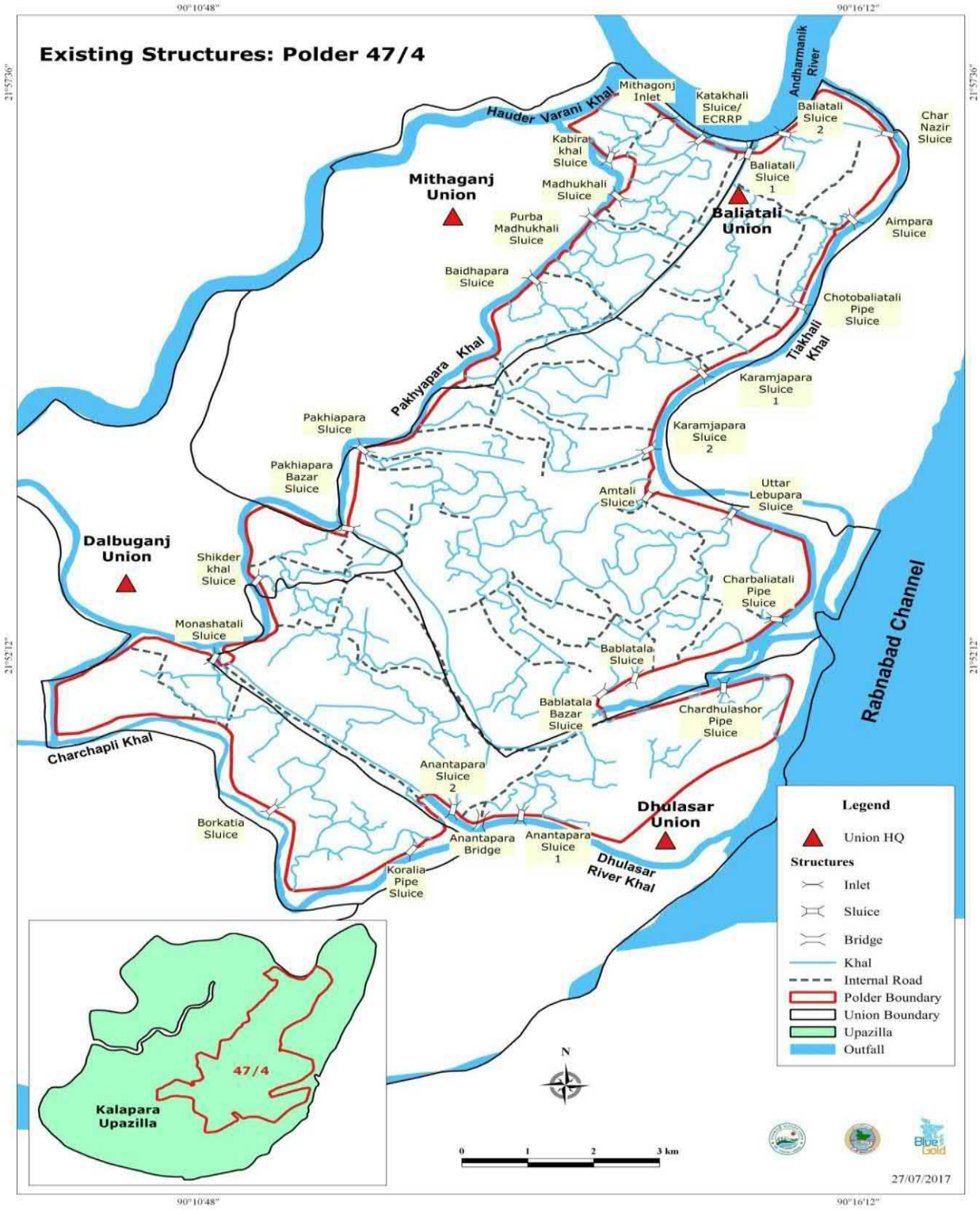

Figure 6: Map of Polder 47/4 showing the existing Khals and Water Management Infrastructure

Polder 2

In the main characteristics of the water resource management and infrastructure of Polder 2 and Extension are highlighted in Table 7 and Figure 7 shows the existing infrastructure and khals in Polder 2 and Extension.

Table 7: Main Water Resource Management and Infrastructure characteristics of Polder 2 and Extension

Features			
Length of embankment (in km)		52.554km (Polder 2) and 6.990km (Extension), Total=59.544km	
No of drainage/flushing sluices	23	Well-conditioned: 0	Bad conditioned: 23
No of inlets	0	Well-conditioned: 0	Bad conditioned: 0
No of (drainage) outlets	0	Well-conditioned: 0	Bad conditioned: 0
No of canals		46	
Length of canals (in km)		96.272 km (Approx.)	
Main outfall rivers and khals		Betna River, Morichap River & Satkhira Khal.	
Situation of tidal and river flooding		There is no tidal flooding in Polder 2 and Extension. Northern part of Betna river and Morichap river is Badly siltedup. Satkhira khal is also connected with outfall Morichap river. There fore some water drain out in Kolikata khal and Tiket khal from Morichap river and finally fall in the Ichamoti river.	
Locations with water logging and siltation.		There is huge water logging area in the Polder 2 and Extension. 5525 ha area inundate for 4 to 5 months every year and 2792 ha area inundate all the year round.	
Most river erosion prone area		Bhdhhata, Noapara and Chapra in connection with Betna river	
Other relevant water issues		Polder 2 and Extension falls in the minor wind risk zone.	
Key challenges in effective water management		Drainage of water is main challenges in the polder	
Current internal polder water management practices		Up to 2016, there are no Community Agricultural Water Management (CAWM) areas in this polder. Having also plan for CAWM.	
Overall condition of internal polder water management		Not good	

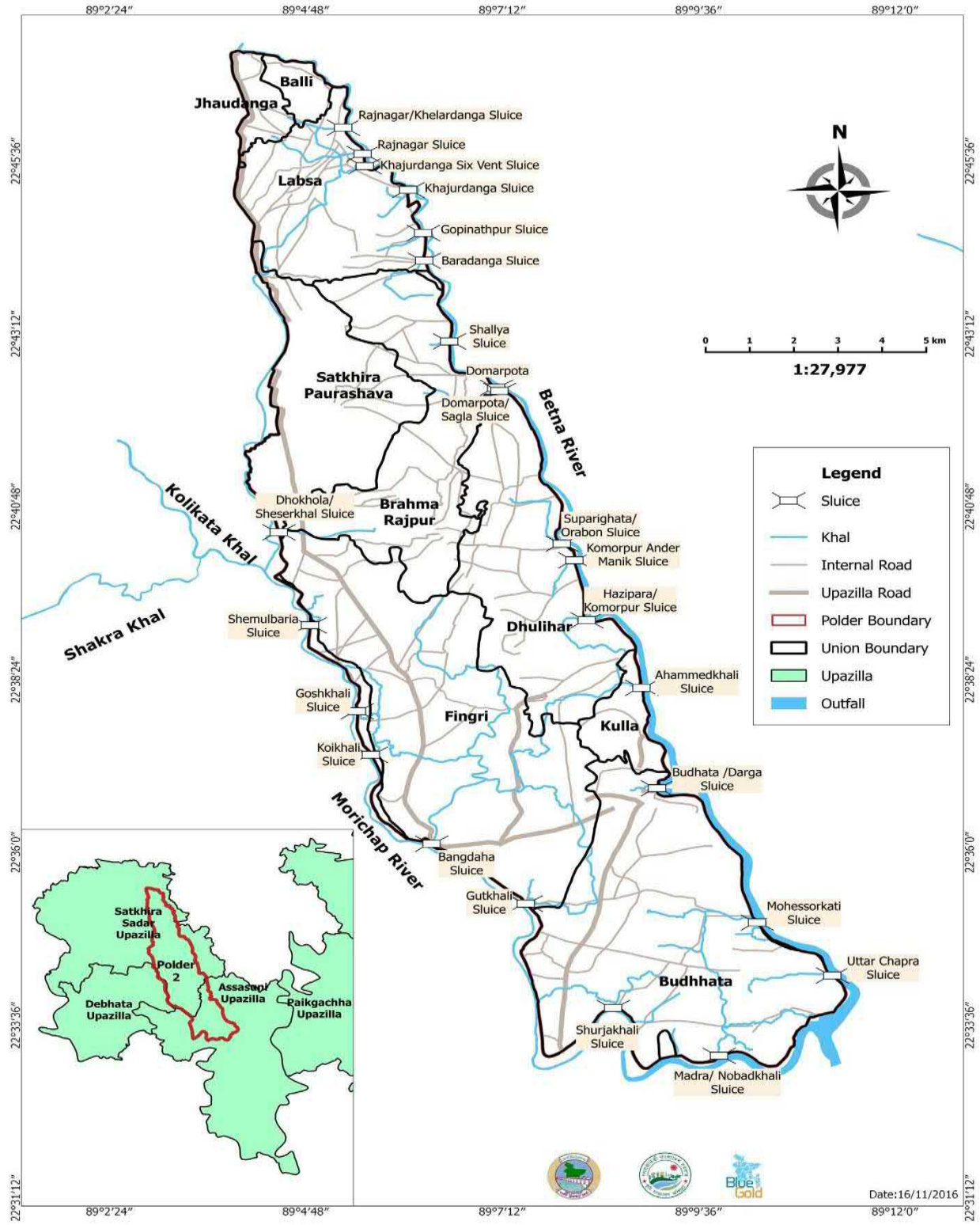

Figure 7: Map showing the existing Khals and Water Management Infrastructure in Polder 2 and Extension

Annex-3: BASELINE SURVEY QUESTIONNAIRE

Section I: Introduction and general data পরিচিতি এবং প্রাথমিক তথ্য

Enter Date আরম্ভ করার তারিখ:

Start Time শুরুর সময়:

End Time শেষ হওয়ার সময়:

Phone/TAB Serial No. মোবাইলে অথবা টেবের সিরিয়াল নাম্বার:

HH Identification Number খানা প্রধানের পরিচিতি নাম্বার:

Enumerators' Identification Name তথ্য সংগ্রহকারীর নাম:

Name of water management group পানি ব্যবস্থাপনা দলের নাম:

Village Name গ্রামের নাম:

Para/Moholla/Somaj পাড়া/মহল্লা/সমাজ:

Mouza মৌজা:

Union ইউনিয়ন:

Upazila উপজেলা:

Polder no পোল্ডার নাম্বার:

Household Phone Number খানায় ব্যবহৃত মোবাইল নাম্বার:

A – HOUSEHOLD INFORMATION & DEMOGRAPHICS A - খানার সদস্যদের তথ্য		
A1	Name of Household Head: খানা প্রধানের নাম:	
A2	Sex of Household Head খানা প্রধানের লিঙ্গ:	1= male পুরুষ; 2= female মহিলা
A3	Formal education of household head: খানা প্রধানের শিক্ষাগত যোগ্যতা:	1= Illiterate নিরক্ষর; 2= Can sign only শুধুমাত্র স্বাক্ষর করতে পারেন; 3= Can read only শুধুমাত্র পড়তে পারেন; 4=Can read and write পড়তে ও লিখতে পারেন; 5= Primary প্রাথমিক (১-৫ শ্রেণী পাশ); 6=Secondary মাধ্যমিক (৬-৯ শ্রেণী পাশ); 7= SSC এসএসসি পাশ; 8= HSC এইচএসসি পাশ; 9= Graduate and above স্নাতক এবং তদুর্ধ্ব; 10=other অন্যান্য
A4	Name of respondent: উত্তরদাতার নাম	
A5	Sex of respondent: উত্তরদাতার লিঙ্গ	1= male পুরুষ; 2= female মহিলা

A6	Age of respondent: উত্তরদাতার বয়স	Age ….. (year) বয়স: ..... বছর
A7	Marital status of respondent: উত্তরদাতার বৈবাহিক অবস্থা:	1=Married বিবাহিত; 2=Unmarried অবিবাহিত; 3=Divorced তালাকপ্রাপ্ত/তালাকপ্রাপ্তা; 4=Separated আলাদা বসবাস করেন; 5=Widow/widower বিধবা/বিপত্নীক; 6=Never married কখনো বিয়ে করেন নি;
A8	Total number of HH members খানার মোট সদস্য সংখ্যা	…. (number) ..... জন
A9	Number of male HH members খানায় পুরুষ সদস্য সংখ্যা	…. (number) ..... জন
A10	Number of female HH members খানায় মহিলা সদস্য সংখ্যা	…. (number) ..... জন
A11	How many household members are 12 years old or younger? খানায় ১২ বছরের কম বয়সী মোট সদস্য সংখ্যা কত? **[Note for enumerator:** If 1,2,3,4 go to A12 If 0, go to B1]	1= 1 member; ১ জন সদস্য 2= 2 member; ২ জন সদস্য 3= 3 member; ৩ জন সদস্য 4= 4, more than 4; ৪ জন বা তার বেশী সদস্য 0= 0 member; ১২ বছরের কম বয়সী কোনো সদস্য নাই
A12	Do all household members ages 6 to 12 currently attend a school/educational institution? খানায় ৬-১২ বছর বয়সের শিশুরা কি শিক্ষা প্রতিষ্ঠানে যায়?	1= Yes 2= No 3=Not applicable প্রযোজ্য নয়
B: MAJOR CROPS, LIVESTOCK AND FISHERIES GROWN AND ITS PRODUCTIVITY (TONS / HA FOR CROPS AND FISH, ANIMALS PER HOUSEHOLD FOR LIVESTOCK) প্রধান ফসল, প্রাণী সম্পদ ও মৎস সম্পদের উৎপাদন: উৎপাদিত শস্য ও মৎস এবং খানা প্রতি প্রাণী সম্পদ (টনে/হেক্টর প্রতি)		
B1	How much homestead land does your household own (including ponds, ditches, Orchards etc.)? আপনার খানার নিজস্ব বসতবাড়ির জমির পরিমান কত? (পুকুর,ডোবা, বাগান ইত্যাদি সহ)	…. Decimals ……. শতক
B2	How much cultivable land, including gher, does your household own আপনার খানার নিজস্ব আবাদি জমির (ঘের সহ) পরিমান কত?	…. Decimals ……. শতক
FIELD CROPS: RABI / BORO SEASON		
B3	Did your household cultivate paddy in the last Boro season? গত বোরো মৌসুমে আপনি কি ধানের আবাদ করেছিলেন?	Y/N/Don't know

	[Note for enumerator: If Yes, go to B4 If No or Don't know, go to B16]	
B4	How much land does your household cultivate for growing field crops during the Rabi / Boro season? রবি/বোরো মৌসুমে আপনি কি পরিমান জমিতে ধান আবাদ করেছিলেন?	…. decimals
B5	How much own land does your household cultivate for growing field crops during the Rabi / Boro season? রবি/বোরো মৌসুমে আপনি কি পরিমান নিজস্ব জমিতে ধান আবাদ করেছিলেন?	…. decimals
B6	How much land did you cultivate for LV boro in the last Boro season? গত বোরো মৌসুমে আপনি কি পরিমান জমিতে দেশি বোরো ধান আবাদ করেছিলেন?	…. decimals
B7	How much land did you harvest of LV boro in the last Boro season? গত বোরো মৌসুমে আপনি কি পরিমান দেশি বোরো ধান উৎপাদন করেছিলেন/পেয়েছিলেন?	…. maund
B8	How much land did you cultivate for HYY boro production in the last Boro season? গত বোরো মৌসুমে আপনি কি পরিমান জমিতে "উচ্চ ফলনশীল বোরো" আবাদ করেছিলেন?	…. decimals
B9	How much HYV boro did your harvest in the last Boro season? গত বোরো মৌসুমে আপনি কত মন উচ্চ ফলনশীল বোরো ধান উৎপাদন করেছিলেন?	…. maund
B9_1	How much land did you cultivate for Hybried boro production in the last Boro season? গত বোরো মৌসুমে আপনি কি পরিমান জমিতে হাইব্রিড ধান আবাদ করেছিলেন?	…. decimals
B9_2	How much Hybried boro did your harvest in the last Boro season? গত বোরো মৌসুমে আপনি কি পরিমান হাইব্রিড ধান উৎপাদন করেছিলেন/পেয়েছিলেন?	…. maund
B10	Did your household sell paddy in the last Boro season? আপনি গত বোরো মৌসুমে কি ধান বিক্রি করেছিলেন? **[Note for enumerator:**	Y/N/Don't know

	If Yes, go to B11 If No or Don't know, go to B16]	
B11	How much paddy did your household sell in the last Boro season? গত বোরো মৌসুমে আপনি কত মন ধান বিক্রি করেছিলেন?	..... maund
B12	How much money did your household earn per maund of paddy in the Boro season? (Tk. Per maund) গত বোরো মৌসুমে বিক্রি করা মন প্রতি ধানের মূল্য?	…… Tk
B13	Where did your household sell the paddy? ধান কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ/না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না Government purchase center সরকারি ক্রয় কেন্দ্র – Yes/No হ্যাঁ / না Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local miller স্থানীয় মিল মালিকের নিকট–Yes/No হ্যাঁ/না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B14	Did your household face any problems when selling paddy? ধান বিক্রি করার সময় আপনি কি কোনো সমস্যার সম্মুখীন হয়েছিলেন? **[Note for enumerator:** If Yes, go to B15 If No or Don't know, go to B16]	Y/N/Don't know
B15	Which of the following problems did your household face when selling paddy? ধান বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে? **Note For Enumerator:** Ask each of the options as a Y/N question to the respondent তথ্য প্রদানকারীকে প্রতিটি বিকল্পের হ্যাঁ/না উত্তর জিজ্ঞাসা করুন	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম; 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয়;

		8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা); 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব; 11=other, specify অন্যান্য (নির্দিষ্ট করুন)
B16	Other than paddy, did you grow any field crops during the Rabi/Boro season? আপনি কি রবি/বোরো মৌসুমে ধান ছাড়া অন্য কোনো ফসলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B17 If No or Don't know, go to B52]	Y/N/Don't know
B17	Did your household cultivate maize in the last Rabi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি ভুট্টার আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B18 If No or Don't know, go to B21]	Y/N/Don't know
B18	How much area did you use for maize cultivation? আপনি কত শতক জমিতে ভুট্টার আবাদ করেছিলেন?	……decimals
B19	How much maize did you harvest? আপনি কত মন ভুট্টা উৎপাদন করেছিলেন?	…….maund
B20	How much money did your household earn per maund of maize? মন প্রতি ভুট্টার মূল্য কত?	…… Tk
B21	Did your household cultivate sesame in the last Rabi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি তিলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B22 If No or Don't know, go to B27]	Y/N/Don't know
B22	How much land did your household use to cultivate sesame? আপনি কত শতক জমিতে তিলের আবাদ করেছিলেন?	1) ….. decimals HYV শতক (উচ্চ ফলনশীল জাত) 2) ….. decimals LV শতক (দেশি জাত)
B23	How much sesame did your household harvest? আপনি কত মন তিল উৎপাদন করেছিলেন?	1) …... maund HYV শতক উচ্চ ফলনশীল 2) …... maund LV শতক দেশী

B24	Did your household sell sesame in the last Rabi/Boro season? আপনি গত বোরো মৌসুমে কি তিল বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B24 If No or Don't know, go to B27]	Y/N/Don't know
B24_1	How much money did your household received per maund of sesame sold মন প্রতি তিলের মূল্য কত?	…… Tk per maund
B25	Where did your household sell sesame? তিল কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B26	Did you face any problems when selling sesame seeds? তিল বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না; 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না; 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম; 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয়; 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা); 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব; 11=other, specify অন্যান্য (নির্দিষ্ট করুন) 12=high moisture content উচ্চ আদ্রতার পরিমান – Yes/No হ্যাঁ/না
B27	Did your household cultivate sunflower in the last Robi/Boro season? গত রবি/বোরো	Y/N/Don't know

	মৌসুমে আপনি কি সূর্যমুখীর আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B28 If No or Don't know, go to B31]	
B28	How much land did your household use to cultivate sunflower? আপনি কি পরিমান জমিতে সূর্যমুখীর আবাদ করেছিলেন?	….. decimals
B29	How much sunflower did your household harvest? আপনি কত মন সূর্যমুখীর উৎপাদন করেছিলেন?	…... maund
B30	How much money did your household earn per maund of sunflower? মন প্রতি সূর্যমুখীর মূল্য কত?	…... Tk
B31	Did your household cultivate other oil seeds (other than sesame and sunflower) in the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি অন্য কোনো তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B32 If No or Don't know, go to B35]	Y/N/Don't know
B32	How much land did you use to cultivate other oil seeds? আপনি কত শতক জমিতে অন্য তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) আবাদ করেছিলেন?	….. decimals
B33	How much oil seeds (other then sesame and sunflower) did you harvest? আপনি কত মন অন্য তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) উৎপাদন করেছিলেন?	…... maund
B34	How much money did your household get for other oil seeds per maund? মন প্রতি তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) মূল্য কত?	…... Tk
B35	Did your household cultivate watermelon in the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি তরমুজের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B36 If No or Don't know, go to B39]	Y/N/Don't know

B36	How much land did you use to cultivate watermelon? আপনি কত শতক জমিতে তরমুজের আবাদ করেছিলেন?	….. decimals
B37	How much watermelon did you harvest? আপনি কত মন তরমুজের উৎপাদন করেছিলেন?	…... maund
B38	How much money did your household get for watermelon per maund? মন প্রতি তরমুজের মূল্য কত?	…... Tk
B39	Did your household cultivate vegetables as a cash crop in the last Robi/Boro season? আপনি কি গত রবি/বোরো মৌসুমে বিক্রির জন্য সবজির আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B40 If No go to B41]	Y/N/Don't know
B39_1	How much land did you use to cultivate vegetables as a cash crop? আপনি কত শতক জমিতে সবজির আবাদ করেছিলেন?	….. decimals
B40	How much vegetables did your household sell? মোট কত টাকার সবজি বিক্রি করেছিলেন?	..... Tk
B41	In the last Robi/Boro season, did your household cultivate pulses? গত রবি/বোরো মৌসুমে আপনি কি ডালের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B42 If No or Don't know, go to B52]	Y/N/Don't know
B42	In the last Boro season, did your household cultivate mung bean? গত বোরো মৌসুমে আপনি কি "মুগ ডালের" আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B43 If No or Don't know, go to B50]	Y/N/Don't know
B43	How much land did your household used during the last Robi/Boro season for mung bean cultivation? গত রবি/বোরো মৌসুমে কত শতক জমিতে "মুগ ডালের" আবাদ করেছিলেন?	1) …. Decimals HYV শতক (উচ্চ ফলনশীল জাত) 2) …. Decimals LV শতক (দেশি জাত)
B44	What was the harvest of mung bean during the last Robi/Boro season?	1) ….. Maund HYV মন (উচ্চ ফলনশীল জাত) 2) ….. Maund LV মন (দেশি জাত)

	গত রবি/বোরো মৌসুমে আপনি কি পরিমান মুগ ডাল উৎপাদন করেছিলেন?	
B45	Did your household sell mung bean in the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি "মুগ ডাল" বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B45 If No or Don't know, go to B50]	Y/N/Don't know
B46	How much mung bean did your household sell in the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনি কত মন "মুগ ডাল" বিক্রি করেছিলেন?	1) ….. Maund HYV মন (উচ্চ ফলনশীল জাত) 2) ….. Maund LV মন (দেশি জাত)
B47	How much did you earn by selling per mound mung bean? মন প্রতি কত টাকা মূল্যে "মুগ ডাল" বিক্রি করেছিলেন?	1) ……Tk per Maund HYV টাকা (প্রতি মন উচ্চ ফলনশীল জাত) 2) ……Tk per Maund LV টাকা (প্রতি মন জাত)
B48	How much mung bean did your household consume during the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনার খানায় কত মন "মুগ ডাল" ভোগ করেছিলেন?	….. Maund
B49	Where did your household sell mung bean? "মুগ ডাল" কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B50	Did your household face any problems when selling mung bean? মুগ ডাল বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না

		7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না; 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না 12=no problems faced কোন সমস্যা নাই – Yes/No হ্যাঁ / না
B51	Did your household cultivate other pulses crops (other than mung bean) during the last Robi/Boro season? গত রবি/বোরো মৌসুমে আপনি কি অন্যান্য ডাল জাতীয় (মুগ ডাল ছাড়া) ফসলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B51 If No go to B52]	Y/N/Don't know
B51_1	How much money did your household receive from selling other pulses? গত রবি/বোরো মৌসুমে আপনি অন্যান্য ডাল জাতীয় (মুগ ডাল ছাড়া) ফসলের আবাদ থেকে কত টাকা আয় করেছিলেন?	…… Tk
FIELD CROPS: KHARIF 2 / AMAN SEASON		
B52	Did you cultivate paddy in the last Aman season? গত আমন মৌসুমে আপনি কি ধানের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B53 If No or Don't know, go to B66]	Y/N/Don't know
B53	How much land did your household cultivate for growing field crops during the last Aman season? গত আমন মৌসুমে আপনি কত শতক জমিতে ধান আবাদ করেছিলেন?	…. decimals
B54	How much own land did your household cultivate for growing field crops during the last Aman season? গত আমন মৌসুমে আপনি কত শতক নিজস্ব জমিতে ধান আবাদ করেছিলেন?	…. decimals

B55	How much land did you cultivate for LV T. aman during the last Aman season? গত আমন মৌসুমে আপনি কত শতক জমিতে দেশি রোপা আমনের আবাদ করেছিলেন?	…. decimals
B56	How much LVT Aman did you harvest during the last Aman season? গত আমন মৌসুমে আপনি কত মন দেশি আমন ধান উৎপাদন করেছিলেন?	…. maund
B57	How much land did you cultivate for HYV T. aman during the last aman season? গত আমন মৌসুমে আপনি কি পরিমান জমিতে উচ্চ ফলনশীল রোপা আমনের আবাদ করেছিলেন?	…. decimals
B58	How much HYV T.Aman did you harvest during the last Aman season? গত আমন মৌসুমে আপনি কত মন উচ্চ ফলনশীল রোপা আমন উৎপাদন করেছিলেন?	…. maund
B59	How much for your selves paddy did your household consume in the last Aman season? গত আমন মৌসুমে আপনি ভোগের জন্য কত মন আমন ধান ব্যবহার করেছিলেন?	... maund
B60	Did your household sell paddy in the last 12 months? গত আমন মৌসুমে আপনি কি কোনো ধান বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B61 If No or Don't know, go to B66]	Y/N/Don't know
B61	How much paddy did your household sell in the last Aman season? গত আমন মৌসুমে আপনি কত মন ধান বিক্রি করেছিলেন?	..... maund
B62	How much money did your household earn per maund of paddy in the last Aman season? গত আমন মৌসুমে বিক্রি করা মন প্রতি ধানের মূল্য?	…… Tk
B63	Where did your household sell the paddy? ধান কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না; Government purchase center সরকারি ক্রয় কেন্দ্র – Yes/No হ্যাঁ / না; Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না; Local miller স্থানীয় মিল মালিকের নিকট – Yes/No হ্যাঁ/না; Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার

		নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না; Other (specify) অন্যান্য (লিখুন)
B64	Did your household face any problems when selling paddy? ধান বিক্রি করার সময় আপনি কি কোনো সমস্যার সম্মুখীন হয়েছিলেন? **[Note for enumerator:** If Yes, go to B65 If No or Don't know, go to B66]	Y/N/Don't know
B65	Which of the following problems did your household face when selling paddy? ধান বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে? **NOTE FOR ENUMERATOR:** Ask each of the options as a Y/N question to the respondent তথ্য প্রদানকারীকে প্রতিটি বিকল্পের হ্যাঁ/না উত্তর জিজ্ঞাসা করুন	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
B66	Did your household cultivate vegetables as a commercial cash crop in the last Aman season? গত আমন মৌসুমে আপনি কি বাণিজ্যিক ভাবে শাকসবজি চাষ করেছিলেন? **[Note for enumerator:** If Yes, go to B67 If No or Don't know, go to B72]	Y/N/Don't know
B67	How many decimals did you use for cash crop vegetables in the last Aman season?	……. Decimals

	গত আমন মৌসুমে আপনি কত শতক জমিতে বাণিজ্যিক ভাবে শাকসবজি আবাদ করেছিলেন?	
B68	How much money did your household earn by selling vegetables in the last Aman season? গত আমন মৌসুমে আপনি মোট কত টাকার শাকসবজি বিক্রি করেছিলেন?	..... Tk
B69	How much vegetables did your household consume? গত আমন মৌসুমে মোট কত টাকার শাকসবজি নিজেরা ভোগ করেছিলেন?	..... Tk
B70	Where did your household sell vegetable cash crops? আপনি শাকসবজি কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ/না; Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না National market জাতীয় পর্যায়ের বাজারে – Yes/No হ্যাঁ/না Dadon (contractual) দাদন প্রধানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ/না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B71	Did your household face any problems when selling vegetables? শাকসবজি বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ/না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না

		11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
KHARIF 1 / AUS SEASON		
B72	Did your household cultivate crops in the last Aus season? গত আউস মৌসুমে আপনি কি কোনো ফসল আবাদ করেছিলেন? [If Yes, go to B72 If No or Don't know, go to B134]	Y/N/Don't know
B72_1	How much land did your household cultivate for growing field crops during the Aus season? গত আউস মৌসুমে আপনি কত শতক জমি আবাদ করেছিলেন?	…. decimals
B73	How much own land did your household cultivate for growing field crops during the Aus season? গত আউস মৌসুমে আপনি কত শতক নিজস্ব জমি আবাদ করেছিলেন?	…. Decimals
B74	Did your household cultivate paddy in the last Aus season? গত আউস মৌসুমে আপনি কি ধানের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B75 If No or Don't know, go to B86]	Y/N/Don't know
B75	How much land did you cultivate for LV T. aus in the last Aus season? গত আউস মৌসুমে আপনি কত শতক জমিতে দেশি রোপা আউস ধান আবাদ করেছিলেন?	…. decimals
B76	How much LV T.Aus did you harvest in the last Aus season? গত আউস মৌসুমে আপনি কত মন দেশি আউস ধানের উৎপাদন করেছিলেন?	…. maund
B77	How much land did you cultivate for HYV aus in the last Aus season? গত আউস মৌসুমে আপনি কি পরিমান জমিতে উচ্চ ফলনশীল আউস ধানের আবাদ করেছিলেন?	…. decimals
B78	What was the harvest of HYV aus in the last Aus? গত আউস মৌসুমে আপনি কত মন উচ্চ ফলনশীল আউস ধানের উৎপাদন করেছিলেন?	…. maund
B79	How much of your own paddy did your household consume in the last Aus season? গত আউস মৌসুমে আপনি কত মন আউস ধান ভোগ করেছিলেন?	..... maund

B80	Did your household sell paddy in the last Aus season? গত আউস মৌসুমে আপনি কি ধান বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B81 If No or Don't know, go to B86]	Y/N/Don't know
B81	How much paddy did your household sell in the last Aus season? গত আউস মৌসুমে আপনি কত মন ধান বিক্রি করেছিলেন?	..... maund
B82	How much money did your household earn per maund paddy in the last Aus season? গত আউস মৌসুমে বিক্রি করা মন প্রতি ধানের মূল্য?	…… Tk
B83	Where did your household sell the paddy? ধান কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না Government purchase center সরকারি ক্রয় কেন্দ্র – Yes/No হ্যাঁ / না Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local miller স্থানীয় মিল মালিকের নিকট – Yes/No হ্যাঁ/না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B84	Did your household face any problems when selling paddy? ধান বিক্রি করার সময় আপনার কি কোনো সমস্যা হয়েছিল? **[Note for enumerator:** If Yes, go to B85 If No or Don't know, go to B86]	Y/N/Don't know
B85	Which of the following problems did your household face when selling paddy? ধান বিক্রি করার সময় আপনি নিম্নের কোন কোন সমস্যার সম্মুখীন হয়েছিলেন? **NOTE FOR ENUMERATOR:** Multiple options possible Ask each of the options as a Y/N question to the respondent	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না

	তথ্য প্রদানকারীকে প্রতিটি বিকল্পের হ্যাঁ/না উত্তর জিজ্ঞাসা করুন	5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
B86	Other than paddy, did you grow any field crops during the Aus season? গত আউস মৌসুমে আপনি কি ধান ছাড়া অন্য কোনো ফসলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B87 If No or Don't know, go to B134]	Y/N/Don't know
B87	Did your household cultivate maize in the last Aus season? গত আউস মৌসুমে আপনি কি ভুট্টার আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B88 If No or Don't know, go to B91]	Y/N/Don't know
B88	How much area did you use for maize cultivation? আপনি কত শতক জমিতে ভুট্টার আবাদ করেছিলেন?	……decimals
B89	How much maize did you harvest? আপনি কত মন ভুট্টা উৎপাদন করেছিলেন?	…….maund
B90	How much money did your household earn per maund maize? মন প্রতি ভুট্টায় মূল্য কত?	…… Tk
B91	Did your household cultivate sesame in the last Aus season? গত আউস মৌসুমে আপনি কি তিলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B92	Y/N/Don't know

	If No or Don't know, go to B97]	
B92	How much land did your household use to cultivate sesame? আপনি কত শতক জমিতে তিলের আবাদ করেছিলেন?	….. decimals
B93	How much sesame did your household harvest? আপনি কত মন তিল উৎপাদন করেছিলেন?	…... maund
B94	How much money did your household earn per maund sesame? মন প্রতি তিলের মূল্য কত?	…… Tk
B95	Where did your household sell its sesame? তিল কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local miller স্থানীয় মিল মালিকের নিকট – Yes/No হ্যাঁ/না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B96	Did you face any problems when selling sesame? তিল বিক্রি করার সময় আপনি নিম্নের কোন কোন সমস্যার সম্মুখীন হয়েছিলেন?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না; 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না; 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না; 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না; 12=no

		problems faced কোন সমস্যা নাই – Yes/No হ্যাঁ / না
B97	Did your household cultivate sunflower in the last Aus season? গত আউস মৌসুমে আপনি কি সূর্যমুখীর আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B98 If No or Don't know, go to B101]	Y/N/Don't know
B98	How much land did your household use to cultivate sunflower? আপনি কত শতক জমিতে সূর্যমুখীর আবাদ করেছিলেন?	….. decimals
B99	How much sunflower did your household harvest? আপনি কত মন সূর্যমুখীর উৎপাদন করেছিলেন?	…... maund
B100	How much money did your household earn per maund sunflower? মন প্রতি সূর্যমুখীর মূল্য কত?	…... Tk
B101	Did your household cultivate other oil seeds (other than sesame and sunflower) in the last Aus season? গত আউস মৌসুমে আপনি কি অন্য কোনো তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B102 If No or Don't know, go to B105]	Y/N/Don't know
B102	How much land did you use to cultivate other oil seeds (other than sesame and sunflower)? আপনি কত শতক জমিতে অন্য তৈলবীজের (তিল ও সূর্যমুখী ব্যতীত) আবাদ করেছিলেন?	….. decimals
B103	How much other oil seeds did you harvest? আপনি কত মন অন্য তৈলবীজের উৎপাদন করেছিলেন?	…... maund
B104	How much money did your household get for other oil seeds per mound? মন প্রতি তৈলবীজের মূল্য কত?	…... Tk per maund
B105	Did your household cultivate watermelon in the last Aus season?	Y/N/Don't know

	গত আউস মৌসুমে আপনি কি তরমুজ আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B106 If No or Don't know, go to B109]	
B106	How much land did you use to cultivate watermelon? আপনি কত শতক জমিতে তরমুজ আবাদ করেছিলেন?	….. decimals
B107	How much watermelon did you harvest? আপনি কত মন তরমুজ উৎপাদন করেছিলেন?	…... maund
B108	How much money did your household get for watermelon per mound? মন প্রতি তরমুজের মূল্য কত?	…... Tk
B109	Did your household cultivate vegetables as a cash crop/commercially in the last Aus season? গত আউস মৌসুমে আপনি কি বাণিজ্যিক ভাবে বিক্রির জন্য সবজির আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B110 If No or Don't know, go to B115]	Y/N/Don't know
B110	How many decimals did you use for cash crop vegetables in the last Aus season? গত আউস মৌসুমে আপনি কত শতক জমিতে বিক্রির জন্য সবজির আবাদ করেছিলেন?	…….. Decimals
B111	How much money earn did your household sell vegetables? সবজি বিক্রি করে মোট কত টাকা আয় করেছিলেন?	..... Tk
B112	How much vegetables did your household consume? (value) মোট কত টাকার সবজি ভোগ করেছিলেন?	..... Tk
B113	Where did your household sell vegetable? সবজি কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না National market জাতীয় পর্যায়ের বাজারে – Yes/No হ্যাঁ/না Dadon (contractual) দাদন প্রধানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না

		Local miller স্থানীয় মিল মালিকের নিকট – Yes/No হ্যাঁ/না Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B114	Did your household face any problems when selling vegetables? সবজি বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
B115	Did your household cultivate jute in the last Aus season? গত আউস মৌসুমে আপনি কি পাটের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B116 If No or Don't know, go to B121]	Y/N/Don't know
B116	How many decimals did you use for cultivating jute in the last Aus season? গত আউস মৌসুমে আপনি কত শতক জমিতে পাটের আবাদ করেছিলেন?	…….. Decimals
B117	How much jute did your household sell? আপনি মোট কত মন পাট বিক্রি করেছিলেন?	.....maund

B118	How much money did your household get for jute per maund? মন প্রতি পাটের মূল্য?	..... Tk
B119	Did your household face any problems when selling jute? পাট বিক্রি করার সময় আপনি নিম্নের কোন কোন সমস্যার সম্মুখীন হয়েছিলেন? **[Note for enumerator:** If Yes, go to B120 If No or Don't know, go to B121]	Y/N/Don't know
B120	What problems did your household face when selling jute? পাট বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery বিক্রির সময় সরবরাহ বেশি – Yes/No হ্যাঁ / না 6=low prices মূল্য কম – Yes/No হ্যাঁ / না 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ / না 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
B121	In the last Aus season, did your household cultivate pulses? গত আউস মৌসুমে আপনি কি ডালের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B122 If No or Don't know, go to B134]	Y/N/Don't know
B122	In the last Aus season, did your household cultivate mung bean? গত আউস মৌসুমে আপনি কি "মুগ ডালের" আবাদ করেছিলেন?	Y/N/Don't know

	[Note for enumerator: If Yes, go to B123 If No or Don't know, go to B130]	
B123	How much land did your household used during the last Aus season for mung bean cultivation? গত আউস মৌসুমে আপনি কত শতক জমিতে "মুগ ডালের" আবাদ করেছিলেন?	…. decimals
B124	Did your household sell mung bean in the last Aus season? গত আউস মৌসুমে আপনি কি "মুগ ডাল" বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B125 If No or Don't know, go to B130]	Y/N/Don't know
B125	How much mung bean did your household sell in the last Aus season? গত আউস মৌসুমে আপনি কত মন মুগ ডাল বিক্রি করেছিলেন?	….. Maund
B126	The price of mugh bean per mound? মন প্রতি "মুগ ডালের" মূল্য?	……Tk
B127	How much mung bean did your household consume during the last Aus season? গত আউস মৌসুমে আপনার খানায় মোট কত মন "মুগ ডাল" ভোগ করেছিলেন?	….. Maund
B128	Where does your household sell mung bean? "মুগ ডাল" কোথায় বিক্রি করেছিলেন?	Local market স্থানীয় বাজারে – Yes/No হ্যাঁ / না Regional market আঞ্চলিক বাজারে – Yes/No হ্যাঁ/না; Dadon (contractual) দাদন প্রদানকারী ব্যক্তির কাছে (চুক্তিভিত্তিক) – Yes/No হ্যাঁ / না Local miller স্থানীয় মিল মালিকের নিকট – Yes/No হ্যাঁ/না; Local buyer (Paiker/ farm gate) স্থানীয় ক্রেতার নিকট (পাইকার/ফড়িয়া) – Yes/No হ্যাঁ/না Other (specify) অন্যান্য (করে লিখুন)
B129	Did your household face any problems when selling mung bean? "মুগ ডাল" বিক্রি করার সময় আপনাকে কি কি সমস্যার সম্মুখীন হতে হয়েছে?	1=markets far বাজার দূরে – Yes/No হ্যাঁ / না 2=market inaccessible due to poor infrastructure দুর্বল অবকাঠামো কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না 3=market inaccessible due to lack of means for transportation পর্যাপ্ত পরিবহন সুবিধা না থাকার কারণে বাজারে যাওয়া যায় না – Yes/No হ্যাঁ / না

		4=limited numbers of buyers ক্রেতাদের সংখ্যা সীমিত হওয়ায় – Yes/No হ্যাঁ/না 5=oversupply at the time of delivery সরবরাহ বেশি – Yes/No হ্যাঁ / না; 6=low prices মূল্য কম – Yes/No হ্যাঁ / না; 7=not aware of current prices বর্তমান মূল্য সম্পর্কে সচেতন নয় – Yes/No হ্যাঁ / না 8=poor product quality পণ্যের নিম্ন মান – Yes/No হ্যাঁ/না; 9=price volatility (rapidly fluctuating prices) মূল্য অস্থিতিশীল (দ্রুত দাম উঠানামা) – Yes/No হ্যাঁ / না; 10=unavailability of storage facilities গুদামজাতকরণে সুবিধার অভাব – Yes/No হ্যাঁ / না; 11=other, specify অন্যান্য (নির্দিষ্ট করুন) – Yes/No হ্যাঁ / না
B130	Did your household cultivate other pulse crops (other than mung bean) during the last Aus season? গত আউস মৌসুমে আপনি কি "অন্য ডাল" (মুগ ডাল ছাড়া) আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B131 If No or Don't know, go to B134]	Y/N/Don't know
B131	How much land did your household use for the cultivation of other pulses? আপনি কত শতক জমিতে "অন্যান্য ডাল" আবাদ করেছিলেন?	….. decimals
B132	How much other pulses did your household harvest? আপনি কত মন "অন্যান্য ডাল" উৎপাদন করেছিলেন?	…… Maunds
B133	What was the price per maund of other pulses? মন প্রতি "অন্যান্য ডালের" মূল্য?	…… Tk
COMMERCIAL FRUIT CULTIVATION		
B134	Did your household commercially cultivate fruit in the last 12 months? গত ১২ মাসে আপনি কি বাণিজ্যিক ভাবে ফলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B135 If No or Don't know, go to B136]	Y/N/Don't know
B135	How much did your household earn from selling commercially cultivated fruits in the last 12 months?	…..Tk

	গত ১২ মাসে বাণিজ্যিকভাবে চাষ কৃত ফল বিক্রি থেকে কত টাকা আয় করেছিলেন? [Coconut; Lemon; Guava; Papaya; Banana; Mango/ Jack fruit; Tal/Date palm; Betel nut; Hog-plum; litchi; jujube; black berry; Other] [নারকেল; লেবু; পেয়ারা; পেঁপে; কলা; আম/কাঁঠাল; তাল/খেজুর; সুপারি; আমড়া; লিচু; কুল/বরুই; জাম; অন্যান্য;]	
HOMESTEAD CULTIVATION		
B136	Did your household cultivate homestead vegetables over the last 12 months? গত ১২ মাসে আপনি কি বসতভিটায় সবজির আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B137 If No or Don't know, go to B141]	Y/N/Don't know
B137	Which of the following vegetables did your household cultivate? বসতবাড়িতে নিম্নলিখিত কোন কোন শাকসবজি আবাদ করেছিলেন? **[Note for enumerator:** Ask each of the following options as a Y/N question] (প্রত্যেকটি সবজির নাম বলুন এবং "হ্যাঁ / না" জানুন)	1= pumpkin - Yes/No; মিষ্টি কুমড়া - হ্যাঁ / না; 2= beans - Yes/No; দেশি শিম - হ্যাঁ / না; 3= Cucumber - Yes/No; শসা - হ্যাঁ / না; 4= potato - Yes/No; আলু - হ্যাঁ / না; 5= tomato - Yes/No; টমেটো - হ্যাঁ / না; 6= chilli - Yes/No; মরিচ - হ্যাঁ / না; 7=Earm কচু - হ্যাঁ / না; 8= Data shak/ lalshak - Yes/No; পাতা জাতীয় শাকসবজি - হ্যাঁ / না; 9= brinjal - Yes/No; বেগুন - হ্যাঁ / না; 10= bottlegourd - Yes/No; লাউ - হ্যাঁ / না; 11= cauliflower - Yes/No; ফুলকপি - হ্যাঁ / না; 12= cabbage - Yes/No; বাঁধাকপি - হ্যাঁ / না; 13= carrot - Yes/No; গাজর - হ্যাঁ / না; 14= radish - Yes/No; মূলা - হ্যাঁ / না; 15= bitter gourd - Yes/No; করলা - হ্যাঁ / না; 16= ash gourd - Yes/No; চাল কুমড়া- হ্যাঁ / না; 17= yard long bean - Yes/No; বরবটি - হ্যাঁ / না; 18= snake gourd - Yes/No; চিচিঙ্গা - হ্যাঁ / না; 19= ridge gourd - Yes/No; ঝিঙ্গা- হ্যাঁ / না; 20= lady's finger - Yes/No; ঢেঁড়স - হ্যাঁ / না; 21= drum stick - Yes/No; সজিনা - হ্যাঁ / না; 22= Other অন্যান (উল্লেখ করুন)

B138	How much homestead vegetables did your household harvest in the last 12 months? (value) গত ১২ মাসে বসতবাড়িতে আপনি কত টাকার শাকসবজি উৎপাদন করেছিলেন?	..... Tk
B139	Did your household sell homestead vegetables? বসতবাড়িতে উৎপাদিত শাকসবজি কি বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B140 If No or Don't know, go to B141]	Y/N/Don't know
B140	How much homestead vegetables did your household sell? (value) কত টাকার শাকসবজি বিক্রি করেছিলেন?	..... Tk
B141	Did your household cultivate homestead fruit during the last 12 months? গত ১২ মাসে আপনি কি বসতবাড়িতে ফলের আবাদ করেছিলেন? **[Note for enumerator:** If Yes, go to B142 If No or Don't know, go to B147]	Y/N/Don't know
B142	Which of the following fruits did your household cultivate? বসতবাড়িতে নিম্নলিখিত কোন কোন ফলের আবাদ করেছিলেন? **[Note for enumerator:** Ask each of the following options as a Y/N question] প্রত্যেকটি ফলের নাম বলে প্রশ্ন করুন এবং "হ্যাঁ/না" উত্তর লিখুন	1=Coconut নারকেল - Yes/No হ্যাঁ/না; 2=Lemon লেবু - Yes/No হ্যাঁ/না; 3=Guava পেয়ারা - Yes/No হ্যাঁ/না; 4=Papaya পেঁপে - Yes/No হ্যাঁ/না; 5=Banana কলা - Yes/No হ্যাঁ/না; 6=Water melon/ melon তরমুজ/বাংগি - Yes/No হ্যাঁ/না; 7=Mango/Jack fruit আম/কাঁঠাল - Yes/No হ্যাঁ/না; 8=Tal or palm/date তাল/খেজুর - Yes/No হ্যাঁ/না; 9=Bettelnut সুপারি - Yes/No হ্যাঁ/না; 10=Amra আমড়া - Yes/No হ্যাঁ/না; 11=litchi লিচু - Yes/No হ্যাঁ/না; 12=jujube কুল/বরুই - Yes/No হ্যাঁ/না; 13=black berry জাম - Yes/No হ্যাঁ/না; 14=Chhephada ছফেদা - Yes/No হ্যাঁ/না; 15= Jamrul জামরুল- Yes/No হ্যাঁ/না; 16=Other অন্যান্য - Yes/No হ্যাঁ/না;
B143	How much homestead fruit (price) did your household harvest during the last 12 months	.... Tk

	গত ১২ মাসে আপনি বসতবাড়িতে কত টাকার ফল উৎপাদন করেছিলেন?	
B144	Did your household sell homestead fruit in the last 12 months? গত ১২ মাসে বসতবাড়িতে উৎপাদিত ফল কি আপনি বিক্রি করেছিলেন? **[Note for enumerator:** If Yes, go to B145 If No or Don't know, go to B146]	Y/N/Don't know
B145	How much homestead fruit did you sell in the last 12 months? গত ১২ মাসে বসতবাড়িতে উৎপাদিত কত টাকার ফল বিক্রি করেছিলেন?	..... Tk
B146	How much of the the homestead fruit did you consume in the last 12 months? গত ১২ মাসে বসতবাড়িতে উৎপাদিত কত টাকার ফল ভোগ করেছিলেন?	..... Tk consumed
POULTRY AND LIVESTOCK		
B147	Does your household rear poultry? আপনার খানা কি হাঁস-মুরগি পালন করে? **[Note for enumerator:** If Yes, go to B148 If No or Don't know, go to B155]	Y/N/Don't know
B148	How many adult chickens does your household own? খানায় মোট কতগুলি প্রাপ্ত বয়স্ক মুরগি আছে?	….. (number) সংখ্যা
B149	How many adult ducks does your household own? খানায় মোট কতগুলি প্রাপ্ত বয়স্ক হাঁস আছে?	….. (number) সংখ্যা
B150	How many adult geese does your household own? খানায় মোট কতগুলি প্রাপ্ত বয়স্ক রাজ হাঁস আছে?	….. (number) সংখ্যা
B151	Does your household use poultry meat for own consumption and/or does your household sell? (select one) খানার হাঁস-মুরগির ব্যবহার (যে কোনো একটি নির্বাচণ করুন)	1=only for own consumption শুধুমাত্র নিজস্ব ভোগের জন্য 2=own consumption, and sells less than half নিজস্ব ভোগ এবং 50% এর কম বিক্রি 3=own consumption, and sells more than half নিজস্ব ভোগ এবং ৫০% এর বেশি বিক্রি
B152	How much does your household earn per year by selling poultry? গত বছর হাঁস-মুরগি বিক্রি করে কত টাকা আয় করেছিলেন?	..... Tk

B152_1	How many eggs does your household get per month? আপনার হাঁসমুরগী থেকে প্রতি মাসে মোট কতটি ডিম পান?	… (number) সংখ্যা
B153	How many eggs does your household sell per month? প্রতি মাসে মোট কতটি ডিম বিক্রি করেন?	… (number) সংখ্যা
B154	How much does your household earn monthly by selling eggs? প্রতি মাসে মোট কত টাকার ডিম বিক্রি করেন?	..... Tk
B155	Does your household own sheeps or goats?আপনার কি নিজস্ব ভেড়া বা ছাগল আছে? **[Note for enumerator:** If Yes, go to B153 If No or Don't know, go to B158]	Y/N/Don't know
B156	How many sheeps and/or goats does your household own? আপনি মোট কতটি ভেড়া বা ছাগলের মালিক?	…(number) সংখ্যা
B157	How much does your household earn per year by selling sheep and/or goats? আপনার খানায় প্রতি বছর ভেড়া/ছাগল বিক্রি করে কত টাকা আয় করেন?	…. Tk
B158	Does your household own cows or buffalos? আপনার কি নিজস্ব গরু বা মহিষ আছে? **[Note for enumerator:** If Yes, go to B159 If No or Don't know, go to B166]	Y/N/Don't know
B159	How many cows does your household own? আপনি মোট কতটি গরুর মালিক?	…. (number) সংখ্যা
B160	How many buffalos does your household own? আপনি মোট কতটি মহিষের মালিক?	…. (number) সংখ্যা
B161	How much does your household earn per year by selling cows and / or buffalos? গরু বা মহিষ বিক্রি করে আপনি প্রতি বছর কত টাকা আয় করেন?	…. Tk
B162	Does your household own any milking cows? আপনার খানায় কি নিজস্ব দুধের গাভী আছে? **Note for enumerator:** If Yes, go to B163	Y/N/Don't know

	If No or Don't know, go to B166]	
B163	How much litter does your household product milk in the last year? গত বছর আপনি কি পরিমান দুধ উৎপাদন করেছিলেন?	..... litter
B164	How much does your household earn by selling milk per year? গত বছর আপনার খানা দুধ বিক্রি করে কত টাকা আয় করেছিলেন?	…. Tk
B165	How much of your own produced milk does your household consume per year? গত বছর আপনার খানা মোট কত টাকার উৎপাদিত দুধ ভোগ করেছিলেন?	…. Tk
FISHERIES		
B166	Does your household own ponds / ditches? আপনার খানার কি নিজস্ব পুকুর/ডোবা আছে? **[Note for enumerator:** If Yes, go to B167 If No or Don't know, go to B180]	Y/N/Don't know
B167	How much area of pond/ditches does your household own? আপনার নিজস্ব কত শতক পুকুর/ডোবা আছে?	… decimals শতক
B168	Does your household use ponds / ditches for aquaculture? আপনি কি পুকুর / ডোবায় মাছ চাষ করেন? **[Note for enumerator:** If Yes, go to B169 If No or Don't know, go to B180]	Y/N/Don't know
B169	How much area of your pond/ditches was used for aquaculture over the last 12 months? গত ১২ মাসে আপনি কত শতক পুকুর/ডোবায় "বর্ষজীবী" মাছ চাষ করেছিলেন?	… decimals শতক
B170	How much is the area of pond / ditches that your household had in use for seasonal aquaculture over the last 12 months? গত ১২ মাসে আপনি কত শতক পুকুর/ডোবায় "মৌসুম ভিত্তিক" মাছ চাষ করেছিলেন?	… decimals শতক
B171	How many decimals of ponds / ditches did you use for shrimp cultivation in the last 12 months? গত ১২ মাসে আপনি কত শতক পুকুর/ডোবায় বাগদা চিংড়ি চাষ করেছিলেন?	… decimals শতক

B172	How many Kg of shrimps did your household produce over the last 12 months from ponds / ditches? গত ১২ মাসে আপনি কত কেজি **"বাগদা চিংড়ি"** উৎপাদন করেছিলেন?	… Kg
B173	What was the market value of your shrimps per Kg? কেজি প্রতি **"বাগদা চিংড়ির"** মূল্য?	… Tk কেজি
B174	How many decimals of ponds / ditches did you use for prawn cultivation in the last 12 months? গত ১২ মাসে আপনি কত শতক পুকুর/ডোবায় **গলদা চিংড়ি** চাষ করেছিলেন?	… Decimals শতক
B175	How many Kg of prawns did your household produce over the last 12 months from ponds / ditches? গত ১২ মাসে আপনি পুকুর/ডোবায় কত কেজি **"গলদা চিংড়ি"** উৎপাদন করেছিলেন?	… Kg কেজি
B176	What was the market value of your prawns per kg? কেজি প্রতি **"গলদা চিংড়ির"** মূল্য?	… Tk
B177	How many decimals of ponds / ditches did you use for white fish cultivation in the last 12 months? গত ১২ মাসে আপনি কত শতক পুকুর/ডোবায় **"সাদা"** মাছ চাষ করেছিলেন?	… Decimals
B178	How many Kg of white fish did your household produce over the last 12 months from ponds / ditches? গত ১২ মাসে আপনার পুকুর/ডোবায় কত কেজি "সাদা" মাছ উৎপাদন করেছিলেন?	… Kg
B179	What was the market value of your white fish per kg? কেজি প্রতি **"সাদা"** মাছের মূল্য?	… Tk
B180	Does your household own, share or lease a Gher? খানার নিজস্ব মালিকানাধীন অথবা বর্গা বা ইজারা নেয়া ঘের আছে কি? **[Note for enumerator:** If Yes, go to B181 If No or Don't know, go to B198]	Y/N/Don't know
B181	How much gher area do you have under cultivation? আপনার কত শতক জমি ঘের চাষের আওতায় আছে?	….decimals
B182	What is the ownership model of the largest gher that you have access to? আপনার বৃহত্তম ঘেরটির মালিকানার ধরন কি? **[Note for enumerator:**	1=household owns a gher নিজস্ব মালিকাধীন ঘের; Yes/No হ্যাঁ/না;

	Read out each of the options to the respondent]	2=household shares gher with other households under multi ownership যৌথ মালিকানায় ঘের; Yes/No হ্যাঁ/না; 3=household leasesin gher ইজারা/লিজ নেয়া; Yes/No হ্যাঁ/না; 4=household private mortgages in gher ব্যক্তিগত ভাবে বন্ধক নেয়া; Yes/No হ্যাঁ/না; 5=institutional leased in প্রতিষ্ঠান থেকে লীজ নেয়া; Yes/No হ্যাঁ/না; 6=khas leased in খাস জমি লীজ নেয়া; Yes/No হ্যাঁ/না; 7=institutional/khas freehold প্রাতিষ্ঠানিক/খাস জমি দখল করে; Yes/No হ্যাঁ/না;
B183	What crops other than rice do you cultivate in the ghers? আপনি ঘেরে কি ধরণের মাছ/ফসলের (ধান ছাড়া) আবাদ করেছিলেন? **[Note for enumerator:** Read out each of the options to the respondent]	1=freshwater prawn cultivation মিঠা পানির চিংড়ি চাষ (গলদা) 2=saltwater shrimp cultivation লোনা পানির চিংড়ি চাষ (বাগদা) 3=Prawn and Shrimp together গলদা & বাগদা চিংড়ির মিশ্র চাষ 4= Polyculture মিশ্র মাছ চাষ 5= fruits and vegetable cultivation on the banks ঘেরের পারে ফল এবং সবজি চাষ 6= crabs কাঁকড়া চাষ 7= other অন্যান্য (নির্দিষ্ট করুন)
B184	How many Kg of shrimps did your household produce over the last 12 months from ghers? গত ১২ মাসে আপনি ঘের থেকে কত কেজি "বাগদা চিংড়ি" উৎপাদন করেছিলেন?	… Kg
B185	What was the market value of your shrimps per kg? কেজি প্রতি "বাগদা চিংড়ির" বাজার মূল্য?	… Tk
B186	How many Kg of prawns did your household produce over the last 12 months from ghers? গত ১২ মাসে আপনি ঘের থেকে কত কেজি "গলদা চিংড়ি" উৎপাদন করেছিলেন?	… Kg
B187	What was the market value of your prawns per kg? কেজি প্রতি "গলদা চিংড়ির" বাজার মূল্য?	… Tk
B188	How many Kg of white fish did your household produce over the last 12 months from ghers? গত ১২ মাসে আপনি ঘের থেকে কত কেজি সাদা মাছ উৎপাদন করেছিলেন?	… Kg

B189	What was the market value of your white fish per kg? কেজি প্রতি সাদা মাছের বাজার মূল্য?	… Tk
B190	Did you encounter any problems in relation to the gher in the last 12 months? গত ১২ মাসে আপনি কি ঘের সম্পর্কিত কোনো সমস্যার সম্মুখীন হয়েছিলেন? **[Note for enumerator:** If Yes, go to B191 If No or Don't know, go to B192]	Y/N/Don't know
B191	Which problems has your household encountered over the last year in relation to your Gher? গত বছর আপনি ঘের সম্পর্কিত কোন কোন ধরণের সমস্যার সম্মুখীন হয়েছিলেন?	1=Water pollution পানি দূষণ; 2=too Saline পানি খুব লবণাক্ত; 3=lack of water প্রয়োজনীয় পানির অভাব; 4=Viral diseases ভাইরাস জনিত রোগ; 5= Other অন্যান্য (নির্দিষ্ট করে লিখুন)
B192	Did your household sell any fish (including shrimps and prawns) in the last 12 months? আপনি গত ১২ মাসে কি কোনো মাছ (বাগদা, গলদা চিংড়ি এবং sada mach সহ) বিক্রি করেছেন? **[Note for enumerator:** If Yes, go to B193 If No or Don't know, go to B198]	Y/N/Don't know
B193	How many Kg of fish (including shrimps and prawns) did your household sell in the last 12 months? আপনি গত ১২ মাসে কত কেজি মাছ (বাগদা, গলদা চিংড়ি এবং sada mach সহ) বিক্রি করেছেন?	… Kg sold
B194	How many Kg of fish (including shrimps, prawns and white fish) did your household consume in the last 12 months? আপনি গত ১২ মাসে কত কেজি মাছ (বাগদা, গলদা চিংড়ি এবং সাদা মাছ সহ) ভোগ করেছেন?	… Kg consumed
B195	How much money did your household earn in the last 12 months by selling fish (including shrimps and prawns)? আপনি গত ১২ মাসে মাছ (বাগদা এবং গলদা চিংড়ি সহ) বিক্রি করে কত টাকা আয় করেছেন?	…. Tk
B196	Where do you sell your fish prawns and/or shrimps? আপনি কোথায় মাছ বিক্রি করেন (বাগদা এবং গলদা চিংড়ি সহ)? (একাধিক উত্তর আসতে পারে) [**Note for enumerator:**	1=Mohajon মহাজন; 2=Local market স্থানীয় বাজারে; 3=Distant market দূরের বাজার; 4=Other অন্যান্য (নির্দিষ্ট করে লিখুন); 5=doesn't sell fish/prawns/shrimps মাছ/বাগদা/গলদা চিংড়ি বিক্রি করি না

	Please mention all options to the respondent]	
B197	Which of the following challenges did your household face regarding fish culture in the last year? গত বছর মাছ চাষে আপনার খানা নিম্নলিখিত কোন কোন চ্যালেঞ্জের সম্মুখীন হয়েছিলেন? [Note for enumerator: Ask each of the options as Y / N questions]	1=the flooding of ponds/ditches during high tide; ভরা জোয়ারের সময় পুকুর/গর্তে বন্যা; Yes/No হ্যাঁ/না; 2=insufficient availability of fingerling or other input; মাছের পোনা অথবা অন্যান্য উপকরণের অপর্যাপ্ত প্রাপ্যতা; Yes/No হ্যাঁ/না; 3=Quality of fingerlings পোনার গুণগতমান; Yes/No হ্যাঁ/না; 4=marketing/ pricing of fish produce was very competitive উৎপাদিত মাছের বাজার মূল্য খুব প্রতিযোগিতামূলক ছিল; Yes/No হ্যাঁ/না; 5=fingerling or other input was too expensive; পোনা বা অন্যান্য উপকরণ অত্যন্ত ব্যয়বহুল ছিল; Yes/No হ্যাঁ/না; 6=insufficient availability of fish feed মাছের খাবারের প্রাপ্যতা অপর্যাপ্ত; Yes/No হ্যাঁ/না; 7=fish feed was too expensive মাছের খাবার অত্যন্ত ব্যয়বহুল ছিল; Yes/No হ্যাঁ/না; 8=pond dried up পুকুর শুকিয়ে গিয়েছিল; Yes/No হ্যাঁ/না; 9=theft of fish মাছ চুরি; Yes/No হ্যাঁ/না; 10=low prices মাছের মূল্য কম; Yes/No হ্যাঁ/না; 11=water was too saline পানি খুব লবণাক্ত ছিল; Yes/No হ্যাঁ/না; 12= water pollution due to weeds and water hyacinth কচুরিপানার কারণে পানি দূষণ; Yes/No হ্যাঁ/না; 13=water pollution, the water looks green or grey-green পানি দূষণ, পানি সবুজ বা ধূসর-সবুজ; Yes/No হ্যাঁ/না; 14=water pollution due to poisoning বিষক্রিয়ার কারণে পানি দূষণ; Yes/No হ্যাঁ/না; 15=other (specify) অন্যান্য (নির্দিষ্ট করুন); Yes/No হ্যাঁ/না;
B197_16	How much does your household earn per year by selling fruit/vegetable from gher গত বছর আপনি ঘেরের পারে উৎপাদিত ফল/সবজি হতে কত টাকা আয় করেছিলেন?	..... Tk
Indicator B_2: Crop losses (tons / ha) পরিমাপক **B_2:** শস্য ক্ষতির পরিমাণ (টন / হেক্টর)		

B198	Did you suffer from crop losses in the last 12 months? গত ১২ মাসে কি আপনার কোনো শস্যহানী হয়েছিল? **[Note for enumerator:** If Yes, go to B199 If No or Don't know, go to B201]	Y/N/Don't know
B199	What was your estimated crop loss during the last 12 months? গত ১২ মাসে আপনার কি পরিমান শস্যহানী হয়েছিল?	.....Tk rice টাকার ধান ….Tk cash crop vegetables টাকার অর্থকরী ফসল (সবজি) ….Tk watermelon টাকার তরমুজ …. Tk fruits (excl. watermelon) টাকার ফল (তরমুজ বাদে) ….Tk sesame টাকার তিল ….Tk sun flower টাকার সূর্যমুখী ….Tk other oil seeds টাকার অন্যান্য তৈল বীজ ….Tk mung bean টাকার মুগ ডাল ….Tk other pulses টাকার অন্যান্য ডাল ….Tk cereals টাকার দানাদার শস্য (গম, ভুট্টা, ইত্যাদি) ….Tk other crops টাকার অন্যান্য ফসল (নির্দিষ্ট করুন)
B200	What were the reasons for these crop losses? শস্যহানীর কি কি কারণ ছিল?	1=flooding due to storm surge in monsoon বর্ষা মৌসুমে জলোচ্ছ্বাসের কারণে বন্যা 2=cyclone/tornado সাইক্লোন-ঘূর্ণিঝড়/টর্নেডো 3=waterlogging জলাবদ্ধতা 4=salinization of land জমির লবণাক্ততা 5=drought resulted in lack of water, which resulted in loss of agricultural produce খরার কারণে: পানির অভাবে কৃষি উৎপাদনে ব্যাপক ক্ষতির সম্মুখীন হতে হয়েছে 6= other অন্যান্য (নির্দিষ্ট করুন)
Indicator B_3: Food items consumed **পরিমাপক B_3: দৈনন্দিন ভোগ্য পণ্য**		
B201	How many days over the last month did your household eat fish? গত মাসে আপনার খানায় কত দিন মাছ খেয়েছেন?	…. (days) দিন
B201_1	How many days over the last month did your household eat meat? গত মাসে আপনার খানায় কত দিন মাংস খেয়েছেন?	…. (days) দিন

B201_2	How many days over the last month did your household eat egges? গত মাসে আপনার খানায় কত দিন ডিম খেয়েছেন?	…. (days) দিন
B202	In the past four weeks, how often did you worry that your household would not have enough food? গত মাসে আপনি কত বার অনুভব করেছিলেন যে, আপনার খানায় যথেষ্ট খাবার নেই? **[Note for enumerator:** Please discuss the options one-by-one with the respondent]	1=Rarely (once or twice); খুব অল্প সময়েই (একবার অথবা দুবার); 2=Sometimes (3 to 5 times); মাঝে মাঝে (৩ থেকে ৫ বার); 3=often (more than 5 times); প্রায়ই (৫ বারের চেয়েও বেশী); 4=never / it did not happen); কখনই না;
B203	In the last year, did your household eat insufficient food at any time? গত বছর, আপনার খানায় কোনো সময়ে কি অপর্যাপ্ত খাবার (দুই বেলার কম) খেয়েছেন? **[NOTE FOR ENUMERATOR:** 'insufficient food' is defined as 'had less than two meals a day' If Yes, go to B204 If No or Don't know, go to B207]	Y/N/Don't know
B204	During which of the last year your household did not have enough food? (select multiple) গত বছরের কোন কোন মাসে আপনার পরিবারে অপর্যাপ্ত খাবার খেয়েছে? **NOTE FOR ENUMERATOR:** 'not enough food' is defined as 'had less than two meals a day'	1=Boishakh বৈশাখ (এপ্রিল-মে) 2=Joshto জ্যৈষ্ঠ (মে-জুন) 3=Ashar আষাঢ় (জুন-জুলাই) 4=Srabon শ্রাবণ (জুলাই-আগস্ট) 5=Bhadro ভাদ্র (আগস্ট-সেপ্টেম্বর) 6=Ashin আশিন (সেপ্টেম্বর-অক্টোবর) 7=Kartik কার্তিক (অক্টোবর-নভেম্বর) 8=Ograhoyon অগ্রহায়ণ (নভেম্বর-ডিসেম্বর) 9=Poush পৌষ (ডিসেম্বর-জানুয়ারিতে) 10=Magh মাঘ (জানুয়ারিতে-ফেব্রুয়ারি) 11=Falgun ফাল্গুন (ফেব্রুয়ারি-মার্চ) 12=Choitro চৈত্র (মার্চ-এপ্রিল)
B205	In the last 12 months, how often did you or any household member have to eat a limited variety of foods due to a lack of resources? গত ১২ মাসে, আর্থিক দুর্বলতার কারণে আপনার খানায় কত বার খাদ্য বৈচিত্রের অভাব ছিল? **[Note for enumerator:** Please discuss the options one-by-one with the respondent]	1=Rarely (once or twice in the past 12 months); খুব অল্প সময়েই (গত ১২ মাসে, একবার অথবা দুবার); 2=Sometimes (3 to 10 times in the past 12 months); মাঝে মাঝে (গত ১২ মাসে, ৩ থেকে ১০ বার); 3=often (more than 10 times in the past 12 months); প্রায়ই (গত ১২ মাসে, ১০ বারের চেয়েও বেশী; 4=never / it did not happen; কখনই না;

B206	What is your household's coping strategy when you don't have enough food and / or financial resources to feed yourself? যখন আপনার খানায় যথেষ্ট খাবার না থাকে এবং/অথবা আর্থিক সামর্থ না থাকে তখন আপনি কিভাবে এই চাহিদা পূরণ করেন?	1=our household never faces this problem; আমাদের খানা কখনো এই সমস্যার মুখোমুখি হয়নি; 2=eats seeds; বীজ খেয়ে 3=eats fruits and vegetables that are unripe; অপরিপক্ক ফল ও সবজি খেয়ে; 4=sells land to be able to buy food; জমি বিক্রি করে খাদ্য ক্রয়; 5=sells livestock to be able to buy food; প্রাণিসম্পদ বিক্রি করে খাদ্য ক্রয়; 6=buys food from finances that were meant for other expenditure (i.e. school fees); আর্থিক অন্যান্য ব্যয়ের জন্য রাখা (যেমন- স্কুল ফি) অর্থ দিয়ে খাদ্য ক্রয় 7=gets support from an NGO or religious organization এনজিও বা ধর্মীয় সংগঠন থেকে সহযোগিতা পেয়ে 8=applies for a loan; প্রয়োজন মতো ঋণ নিয়ে 9=mortgage or leases out of land to get money; জমি বন্ধক বা লিজ দিয়ে প্রাপ্ত টাকা থেকে 10=borrows money from neighbours or relatives to buy food; প্রতিবেশী বা আত্মীয়দের কাছ থেকে টাকা ধার করে 11=temporarily migrates out of area to work elsewhere; সাময়িকভাবে এলাকার বাইরে গিয়ে কাজ করে 12=eats one meal less a day; দৈনিক এক বেলা কম খেয়ে 13=sells assets or jewelry; সম্পদ অথবা গয়না বিক্রি করে 14=begs for food or money; খাবার অথবা টাকার জন্য ভিক্ষা করে; 15=other, specify অন্যান্য (নির্দিষ্ট করুন)
Indicator B_4: Progress out of Poverty Index পরিমাপক B_4: দারিদ্র্য নিরসনের অগ্রগতির সূচক		
B207	In the past year, did any household member ever do work for which he/she was paid on a daily basis? গত বছর আপনার খানার কোনো সদস্য কি দৈনিক মজুরি ভিত্তিতে কাজ করেছিল?	A. Yes (0 point) হ্যাঁ (0 পয়েন্ট) B. No (8 point) না (8 পয়েন্ট)
B208	How many rooms does your household occupy (excluding rooms used for business)? আপনার পরিবারের কয়টি থাকার ঘর আছে?	A. One (0 point) একটি (0 পয়েন্ট) B. Two (3 point) দুইটি (3 পয়েন্ট)

	(ব্যবসার জন্য ব্যবহৃত ঘর বাদে)	C. Three or more (5 point) তিনটি বা তার বেশি (5 পয়েন্ট)
B209	What is the main construction material of the walls of the main room? প্রধান ঘরের দেয়ালের ধরণ?	A. Hemp/Hay/Bamboo or other (0 point) ছন/খড়/বাঁশ বা অন্যান্য (0 পয়েন্ট) B. Mud brick, or C.I. sheet/wood (2 point) মাটি অথবা টিন/কাঠ (2 পয়েন্ট) C. Brick/cement (9 point) ইট/সিমেন্ট (9 পয়েন্ট)
B210	How many fans does the household own? খানায় কয়টি বৈদ্যুতিক পাখা আছে?	A. None (0 point) নাই (0 পয়েন্ট) B. One (4 point) একটি (4 পয়েন্ট) C. Two or more (7 point) দুইটি বা তার বেশি (7 পয়েন্ট)
B211	How many mobile phones does the household own? খানায় কয়টি মোবাইল ফোন আছে?	A. None (0 point) নাই (0 পয়েন্ট) B. One (8 point) একটি (8 পয়েন্ট) C. Two or more (15 point) দুইটি বা তার বেশি (15 পয়েন্ট)
B212	Does the household own any bicycles, rickshaws, vans, motorcycle/scooters, or motor cars etc? খানায় কি নিজস্ব বাই-সাইকেল, রিক্সা, ভ্যান, মোটরসাইকেল/স্কুটার অথবা মোটর গাড়ি আছে?	A. No (0 point) B. Yes (4 point)
B113	Does the householduse use or have access to (or rent/sharecrop/mortgage in or out) 51 or more decimals of cultivable agricultural land (excluding uncultivable land and dwelling-house/homestead land)? খানার কি ভাড়া/বর্গা/বন্ধক নেওয়া বা দেওয়ার মাধ্যমে ৫১ শতক বা তার বেশি কৃষি (বসতবাড়ি/গৃহাঙ্গন/চাষযোগ্য নয় এমন জমি ব্যতীত) জমি চাষাবাদ করেন?	A. No (0 point) নাই (0 পয়েন্ট) B. Yes (7 point) আছে (7 পয়েন্ট)
Indicator B_5: Household Asset ইনডিকেটর B_5: গৃহস্থালী সম্পত্তি **[Note for enumerator:** Value of assets will be calculated based on their present status/condition] [সম্পদের বর্তমান অবস্থার উপর ভিত্তি করে সম্পদের মূল্য হিসাব করতে হবে]		
B214	What is the current value of your cultivable land, including ghers? আপনার খানার আবাদি জমি/ঘেরসহ বর্তমান মূল্য কত টাকা?	……Taka
B215	What is the current value of your homestead, including orchards, ponds and ditches?	……Taka

	আপনার খানার বসতভিটা, বাগান, পুকুর ও ডোবার বর্তমান মূল্য কত টাকা?	
B216	What materials is the roof of your house made of? আপনার প্রধান ঘরের ছাদ কি উপকরণ দিয়ে তৈরি?	1=Concrete; কংক্রিট; 2=Tin; টিন; 3=Tiles; টাইলস; 4= Hemp/Hay/Bamboo ছন/খড়/বাঁশ 5=Others; অন্যান্য (নির্দিষ্ট করুন);
B217	What is the current value of your house? আপনার প্রধান ঘরের বর্তমান মূল্য কত টাকা?	……Taka
B218	What is the current value of your livestock and poultry birds? আপনার খানার গৃহপালিত পশু-পাখির (প্রাণী সম্পদ এবং হাঁস, মুরগি ইত্যাদি) বর্তমান মূল্য কত?	……Taka
B219	What is the current value of your agricultural machineries (LLP, Power tiller, Power thresher, Spray machine, etc)? আপনার খানার কৃষি যন্ত্রপাতির বর্তমান মূল্য কত টাকা? (যেমন- এলএলপি, পাওয়ারটিলার, শক্তিচালিত মাড়াই যন্ত্র, স্প্রে মেশিন, ইত্যাদি)	……Taka
B220	What is the current value of your husking/crasher machine? আপনার খানার ধান/গম ভাঙার মেশিনের বর্তমান মূল্য কত টাকা?	……Taka
B221	What is the current value of your rickshaw/van/nosimon/boat? আপনার খানার রিকশা/ভ্যান/নসিমন/নৌকার বর্তমান মূল্য কত টাকা?	……Taka
B222	What is the current value of your motor-cycle/bicycle? আপনার খানার মোটরসাইকেল/ বাইসাইকেলের বর্তমান মূল্য কত টাকা?	……Taka
B223	What is the current value of your motorized mini van/truck/bus? আপনার খানার শক্তিচালিত মিনি ভ্যান/ট্রাক/বাসের বর্তমান মূল্য কত টাকা?	……Taka
B224	What is the current value of your radio/T.V./Mobile Phone? আপনার খানার রেডিও/টিভি/মোবাইল ফোন বর্তমান মূল্য কত টাকা?	……Taka
Indicator B_5: Household Income		

পরিমাপক B_5: খানার আয়		
B225	How much money did your household earn in 2016 from agricultural income sources? কৃষিখাত থেকে, ২০১৬ সালে আপনার খানা কত টাকা আয় করেছিল? **NOTE FOR ENUMERATOR:** please discuss in detail with the respondent what the source of income was তথ্য সংগ্রকারীর জন্য নোট: উত্তরদাতার সাথে আয়ের উৎস সমূহ বিস্তারিতভাবে আলোচনা করুন	…. Taka agricultural labour; টাকা কৃষি শ্রমিক; …. Taka providing services as Resource Farmer; টাকা আদর্শ কৃষক হিসেবে সেবা প্রদান …. Taka providing services as Vaxin; টাকা প্রাণী সম্পদের টিকা প্রদান করে …. Taka from renting out agricultural Machineries; টাকা কৃষি যন্ত্রপাতি ভাড়া দিয়ে; …. Taka rice husking; টাকা ধান/গম ভাঙ্গানো মেশিন থেকে; …. Taka providing veterinary services; টাকা পশুচিকিৎসা প্রদান করে; …. Taka catching fish in khals&beels (open water); টাকা খাল/বিল (খোলা পানি) থেকে মাছ ধরে …. Taka selling fire wood/fuel/straw; টাকা কাঠ/জ্বালানী/খড় বিক্রি; ..... Taka Lease/ Mortgage/Share out; টাকা লীজ/বন্ধক/বর্গা দেয়া থেকে আয় ..... Taka others (specify) টাকা, অন্যান্য (নির্দিষ্ট করুন)
B226	How much money did your household earn in 2016 from non-agricultural income sources? অ-কৃষিখাত থেকে, ২০১৬ সালে আপনার খানা কত টাকা আয় করেছিল? **NOTE FOR ENUMERATOR:** please discuss in detail with the respondent what the source of income was তথ্য সংগ্রকারীর জন্য নোট: উত্তরদাতার সাথে আয়ের উৎস সমূহ বিস্তারিতভাবে আলোচনা করুন	.....Taka from services (salaried jobs); টাকা, চাকরি (বেতনভোগী কাজ); .....Taka from remittance; টাকা, খানার বাইরে থেকে প্রাপ্ত; .....Taka from business (small & big); টাকা, ব্যবসা থেকে (ছোট ও বড়); .....Taka from transport operation/renting; টাকা, পরিবহন চালনা/ভাড়া থেকে; .....Taka from non-agriculture labour (construction, transport labouring, etc); টাকা, অকৃষি শ্রমিক থেকে (নির্মাণ, পরিবহন শ্রমিক, ইত্যাদি); .....Taka from self-employment (e.g. barber, ameen, village doctor, gold smith, iron smith, potter, boatmen, etc); টাকা, আত্মকর্মসংস্থান থেকে (যেমন- নাপিত, আমীন, গ্রামের ডাক্তার, স্বর্ণকার, কামার, কুমার, মাঝি, ইত্যাদি); ..... Taka others (specify) টাকা, অন্যান্য (নির্দিষ্ট করুন)
B227	Does your household run a business?	Y/N/Don't know

	বর্তমানে কি আপনার খানার কোনো ব্যবসা আছে? **[Note for enumerator:** If Yes, go to B228 If No or Don't know, go to C1]	
B228	How many people are employed in your household business(es) আপনার ব্যবসায় মোট কত জন কাজ করে? **[Note for enumerator:** If the household runs more than one business, please give the sum of the employees of all those businesses] যদি খানার একাধিক ব্যবসা থাকে তাহলে, ঐ সমস্ত ব্যবসার কর্মচারীদের সংখ্যা আনতে হবে	1=family labour……(number); পরিবারের শ্রমিক ..... (সংখ্যা); 2=external labour….(number); বহিরাগত শ্রমিক ..... (সংখ্যা);
Indicator C_1: Area (ha) and people (#) benefitting from proper water management and protected against floods **পরিমাপক C_1: সঠিক পানি ব্যবস্থাপনা এবং বন্যা থেকে রক্ষা পাওয়া মোট জমির আয়তন (হেক্টর) এবং লোকসংখ্যা**		
C1	Do you irrigate your land during the dry season? শুকনো মৌসুমে আপনি কি জমিতে সেচ দেন? **[Note for enumerator:** If Yes, go to C2 If No or Don't know, go to C5]	Y/N/Don't know
C2	How much land do you irrigate in the dry season? শুকনো মৌসুমে আপনি কত পরিমান জমিতে সেচ দেন?	……decimals
C3	What is the source of water for field crop irrigation for your household? (select multiple) শস্য চাষে সেচের জন্য পানির উৎস? (একাধিক উত্তর আসতে পারে)	1=Canal খাল; 2=Beel বিল; 3=Pond পুকুর; 4=Groundwater (tubewells) ভূগর্ভস্থ পানি (নলকূপ); 5=other অন্যান্য (নির্দিষ্ট করুন);
C4	Did you experience any of the following problems over the last year? আপনি কি গত বছরে নিম্নলিখিত কোন সমস্যার সম্মুখীন হয়েছিলেন? (1) flooding due to storm surge/tidal flooding in monsoon বর্ষা মৌসুমে ঝড়ের তান্ডব/জোয়ারের কারণে বন্যা; (2) cyclone/tornado ঘূর্ণিঝড় / টর্নেডো; (3) short-duration waterlogging (max 3 weeks) স্বল্প সময়ের জন্য জলাবদ্ধতা (সর্বোচ্চ ৩ সপ্তাহ);	Y/N Y/N

	(4) long-duration waterlogging (seasonal/above 3 weeks) দীর্ঘ সময়ের জন্য জলাবদ্ধতা (মৌসুম ভিত্তিক / ৩ সপ্তাহ উপরে); (5) salinization of land জমির লবণাক্ততা; (6) Crop losses due to drought / lack of fresh water খরা/পানির অভাবে ফসলের ক্ষতি;	Y/N Y/N Y/N Y/N Y/N
Indicator C_2: Area (ha) affected by poor drainage / waterlogging **পরিমাপক C_2:** দুর্বল নিষ্কাশন/জলাবদ্ধতার কারণে ক্ষতিগ্রস্থ জমির পরিমাণ (হেক্টর)		
C5	Did any of your land suffer from poor drainage / waterlogging in the last 12 months? গত ১২ মাসে, দুর্বল নিষ্কাশন ব্যবস্থা/ জলাবদ্ধতার কারণে আপনার কোনো জমি ক্ষতিগ্রস্থ হয়েছে? **[Note for enumerator:** If Yes, go to C6 If No or Don't know, go to C9]	Y/N/Don't know
C6	How much cultivable land could not be cultivated due to waterlogging / poor drainage in the Rabi / Boro season? গত রবি/বোরো মৌসুমে, দুর্বল নিষ্কাশন/ জলাবদ্ধতার কারণে আপনি কত শতক জমি আবাদ করতে পারেননি?	..... decimals
C7	How much cultivable land could not be cultivated due to waterlogging / poor drainage in the Kharif 1 / Aus season? গত খরিফ-১/আউস মৌসুমে, দুর্বল নিষ্কাশন/ জলাবদ্ধতার কারণে আপনি কত শতক জমি আবাদ করতে পারেননি?	..... decimals
C8	How much cultivable land could not be cultivated due to waterlogging / poor drainage in the Kharif 2 / Aman season season? গত খরিফ-২/আমন মৌসুমে, দুর্বল নিষ্কাশন/ জলাবদ্ধতার কারণে আপনি কত শতক জমি আবাদ করতে পারেননি?	..... decimals

Indicator C_3: Area (ha) effected by salinity **পরিমাপক C_3:** লবণাক্ততার কারণে ক্ষতিগ্রস্থ জমির আয়তন (হেক্টর)		
C9	Did any of your crop-land suffer from salinity in the last 12 months? গত ১২ মাসে, লবণাক্ততার কারণে আপনার কোনো জমি ক্ষতিগ্রস্থ হয়েছে? **[Note for enumerator:** If Yes, go to C10 If No or Don't know, go to C11]	Y/N/Don't know
C10	In the last 12 months, how much of your crop-land could not be cultivated due to salinity? গত ১২ মাসে, লবণাক্ততার কারণে আপনি কত শতক জমি আবাদ করতে পারেননি?	…..decimals

Indicator C_4: Participation in Water Management & Collective Actions **পরিমাপক C_4:** পানি ব্যবস্থাপনায় অংশগ্রহণ & যৌথ কার্যক্রম		
C11	Do any of your household members participate in a WMG? আপনার খানার কোন সদস্য কি পানি ব্যবস্থাপনা দলে (WMG) অংশগ্রন করেছে? **[Note for enumerator:** If Yes, go to C12 If No or Don't know, go to C14]	Y/N/Don't know
C12	How many of your household members are member of the water management group? আপনার খানার মোট কত জন সদস্য পানি ব্যবস্থাপনা দলের (WMG) সদস্য?	…. (number)
C13	How many female household members are member of the water management আপনার খানার মোট কত জন নারী সদস্য পানি ব্যবস্থাপনা দলের (WMG) সদস্য?	…. (number)
C14	Did your household contribute to operation and maintenance (O & M) activities through the WMG? আপনার খানার কোন সদস্য কি WMG গ্রুপ দ্বারা সমষ্টিগত পরিচালন ও রক্ষণাবেক্ষণ (O&M) কাজে অংশগ্রহণ করেছে? [Note for enumerator: If Yes, go to C15 If No or Don't know, go to C19]	Y/N/Don't know
C15	To which of the following O & M activities did your household contribute? নিম্নলিখিত পরিচালন ও রক্ষণাবেক্ষণ কোন কাজে আপনি অংশগ্রহণ করেছিলেন? **[Note for enumerator:** Please ask all options separately as Y/N questions to the respondent]	1=hyacinth cleaning-Yes/No কচুরিপানা পরিষ্কার - হ্যাঁ/না; 2=khal excavation-Yes/No খাল পুনঃ খনন - হ্যাঁ/না; 3=sluice operation- Yes/No স্লুইস গেইট পরিচালনা - হ্যাঁ/না; 4=small maintenance of sluices- Yes/No স্লুইস গেইটের এর ছোট-খাটো রক্ষণাবেক্ষণ - হ্যাঁ/না; 5=small maintenance of embankments- Yes/No বাঁধ এর ছোট-খাটো রক্ষণাবেক্ষণ - হ্যাঁ/না; 6=emergency repairs of embankments- Yes/No জরুরি বাঁধ মেরামত - হ্যাঁ/না; 7=other, specify- Yes/No অন্যান্য (উল্লেখ করুন) - হ্যাঁ/না;

C16	How much did your household financially (in cash) contribute to O & M activities through the WMG in the last year? গত বছর আপনি পানি ব্যবস্থাপনা দলের মাধ্যমে পরিচালন ও রক্ষনাবেক্ষন কাজে কত টাকা (নগদ) দিয়েছিলেন?	…. Tk
C17	How much did your household contribute in kind (materials/Labours) to O & M activities through the WMG in the last year? গত বছর আপনি পানি ব্যবস্থাপনা দলের মাধ্যমে পরিচালন ও রক্ষনাবেক্ষন কাজে কত টাকা (উপকরণ/ভাড়া করা শ্রমিক) দিয়েছিলেন?	…. Value in Tk
C18	How much time did your household in total (all HH members) contribute to O & M activities through the WMG in the last year? [Calculate at the rate of 400 Tk per day] গত বছর পানি ব্যবস্থাপনা দলের মাধ্যমে আপনার পরিবার (পরিবারের সকল সদস্য) কি পরিমান সময় পরিচালন ও রক্ষনাবেক্ষন কাজে ব্যায় করেছিলেন? [দৈনিক ৪০০ টাকা হারে হিসাব করুন]	……Value in Tk
C19	In what type of collective action did your household participate? যৌথ কার্যক্রমে আপনার খানা কোন ধরণের কাজে অংশগ্রহণ করেছিলেন? **[Note for enumerator:** Please ask each of the options as a Y/N question to the respondent] তথ্য প্রদানকারীকে প্রতিটি বিকল্পের হ্যাঁ/না উত্তর জিজ্ঞাসা করুন [If Yes, go to C20 If No or Don't know, go to D1]	1= Joint procurement of Inputs- Yes/No যৌথভাবে উপকরণ সংগ্রহ - হ্যাঁ/না; 2= Joint land preparation / tillage- Yes/No যৌথভাবে জমি প্রস্তুত/চাষ - হ্যাঁ/না; 3= Joint purchase / renting of agricultural machineries- Yes/No যৌথভাবে কৃষি যন্ত্রপাতি ক্রয়/ভাড়া - হ্যাঁ/না 4= Organizing Transportation together - Yes/No যৌথভাবে পরিবহনের ব্যবস্থা করা - হ্যাঁ/না 5= Jointly Selling- Yes/No যৌথভাবে বিক্রি - হ্যাঁ/না 6= Organizing / constructing a sales center- Yes/No যৌথভাবে বিক্রয় কেন্দ্রর ব্যবস্থা/নির্মাণ করা - হ্যাঁ/না 7= Joint Access to Finance - Yes/No যৌথভাবে অর্থায়নের ব্যবস্থা করা - হ্যাঁ/না; 8= Lobbing together for something - Yes/No কিছু পাওয়ার জন্য যৌথভাবে তদবির করা - হ্যাঁ/না; 9= Aquaculture - Yes/No মাছ চাষ - হ্যাঁ/না; 10= Other, specify- Yes/No অন্যান্য (উল্লেখ করুন) - হ্যাঁ/না
C20	How much did you invest in collective action? আপনি যৌথ কার্যক্রমে কত টাকা বিনিয়োগ করেছিলেন?	…… Taka

	[Note for enumerator: This includes investments in cash, man hours and in kind]	
C21	How much money did you earn from collective action? গত বছর আপনি যৌথ কার্যক্রম থেকে কত টাকা আয় করেছিলেন? [examples for enumerator- Farming, Fish cultivation, Purchasing inputs for agriculture, Selling products, Vaccination poultry, Tillage land for crops, etc] [তথ্য সংগ্রকারীর জন্য উদাহরণ: কৃষিকাজ, মাছ চাষ, কৃষিকাজের জন্য উপকরণ ক্রয়, পণ্য বিক্রয়, মুরগির টিকা দেয়া, জমিতে ফসল আবাদ, ইত্যাদি]	…… Taka
Indicator D: WASH		
D1	Do you use tube well (arsenic-free) water for domestic uses (e.g. drinking, cooking, etc.) all year round? আপনি গৃহস্থালির কাজে সারা বছরই কি আর্সেনিক মুক্ত টিউব-ওয়েলের পানি ব্যবহার করেন? (খাবার পানি, রান্না-বান্নার কাজসহ)	Y/N/Not applicable
D2	Do your children wash their hands with soap before taking meals? আপনার সন্তানরা কি খাবার গ্রহণের আগে সাবান দিয়ে হাত ধৌত করে?	Y/N
D3	Do you use a proper (at least ring slab) latrine? আপনি কি স্বাস্থ্য সম্মত পায়খানা ব্যবহার করছেন? (অন্তত রিং স্লাব)	Y/N
Indicator E: Women in development/empowerment **পরিমাপক E:** নারীর উন্নয়ন/ক্ষমতায়ন **[Note for enumerator: Please. ask these questions to female household members only]** [তথ্য সংগ্রকারীর জন্য নোট: দয়া করে শুধুমাত্র খানার মহিলা সদস্যদের এই প্রশ্ন জিজ্ঞাসা করুন]		
E1	Is the meat, fish and/or eggs consumed equally by male and female householdmembers and children? খানায় সদস্যদের (পুরুষ, মহিলা এবং শিশু সকলের) মাংস, মাছ এবং ডিম ভোগের ধরণ:	1=only male members (including boy child) consume meat, fish or eggs শুধুমাত্র পুরুষ সদস্য (ছেলে শিশু সহ) মাছ, মাংস, ডিম খায়; 2=both, but male members more than female members উভয় সদস্য কিন্তু মহিলা সদস্য থেকে পুরুষ সদস্য বেশী মাছ, মাংস, ডিম খায়;

		3=male and female members (including boy and girl children) equally consume meat, fish and eggs. উভয় সদস্য (মহিলা, পুরুষ এবং শিশু সদস্য সমান ভাগে মাছ, মাংস, ডিম খায়;
E1_1	In which of the following activities did female household members participate over the last 12 months? গত ১২ মাসে, নিম্নলিখিত কোন কোন কার্যক্রমে খানার মহিলা সদস্যদের অংশ গ্রহণ ছিল? **[Note for enumerator:** Please discuss each of the options as Y/N questions with the respondents] [If Code 10, go to E4]	1=homestead cultivation বসতবাড়িতে চাষাবাদ; 2=field-crop farming (both food and cash crops), জমিতে ফসল আবাদ (খাদ্য জাতীয় এবং অর্থকরী উভয়ই) 3=post harvest agricultural activities ফসল কাটার পরবর্তী কৃষি কার্যক্রম; 4=poultry and duck rearing হাঁস-মুরগি পালন; 5=livestock rearing গবাদি পশু পালন; 6=aquaculture মৎস চাষ; 7=non-farm economic activities (e.g. running a small shop, business, etc) আয়মূলক অ-কৃষি কাজ (যেমন-ছোট দোকান, ব্যবসা, ইত্যাদি); 8=wage (day-labor, earthwork, etc) মজুরি (দিন মজুর, মাটি কাটা, ইত্যাদি); 9=salaried employment চাকরি; 10=no economic activities কোন অর্থনৈতিক কার্যক্রমে জড়িত নয়
E2	Who decides about spending of money earned by female members? খানার মহিলা সদস্যদের দ্বারা অর্জিত টাকা খরচে কে সিদ্ধান্ত নেয়? **[Note for enumerator:** Please discuss each of the options as Y/N questions with the respondents] [If Code 5, go to E4]	2=only the male hh members শুধুমাত্র খানার পুরুষ সদস্যরা; 3=male members, but women control only the income they themselves generated নারীরা শুধুমাত্র তারা যা উপার্জন করে তা নিয়ন্ত্রণ করে; 4=husband and wife jointly decide about the spending of all household income স্বামী এবং স্ত্রী যৌথভাবে পরিবারের সব আয়ের খরচ সম্পর্কে সিদ্ধান্ত নেন; 5=only the female hh members শুধুমাত্র খানার মহিলা সদস্যরা;
E3	If the female household members are free to decide on spending the money they earn, for what purposes do they usually spend? যদি নারী সদস্যদের তাদের উপার্জিত অর্থ খরচের সিদ্ধান্ত নেয়ার স্বাধীনতা থাকে তাহলে সাধারণত কোন কোন খাতে তারা খরচ করে?	1=personal items (clothes, ornaments, cell phone, etc) ব্যক্তিগত জিনিসপত্র (কাপড়-চোপড়, অলঙ্কার, মোবাইল, ইত্যাদি); 2=children's education ছেলে-মেয়ের শিক্ষা; 3=improving toilets & drinking water facilities টয়লেটের উন্নয়ন & খাবার পানির সুবিধা; 4=treatment চিকিত্সা; 5=improvement of housing ঘরের উন্নয়ন;

		6=visits (relatives' house, religious places/events, cinema, mela, etc); ভ্রমণ (আত্মীয় বাড়িতে, ধর্মীয় স্থান/অনুষ্ঠান, সিনেমা, মেলা, ইত্যাদি); 7=special food items বিশেষ খাদ্য সামগ্রী; 8=gift উপহার; 9=Others (specify) অন্যান্য (নির্দিষ্ট করুন)
E4	Who decides about purchasing and selling of assets (including leasing / mortgaging) such as land, ponds, animals, equipment, mobile phones, etc.? সম্পদ ক্রয় এবং বিক্রয় (লিজ/বন্ধক দেয়া/নেয়া সহ) করার ব্যাপারে কে সিদ্ধান্ত নেয়? (যেমন- ভূমি, পুকুর, প্রাণী, সরঞ্জাম, মোবাইল ফোন, ইত্যাদি)	1=only male hh members decide on all assets পরিবারের শুধুমাত্র পুরুষ সদস্যরাই সকল সম্পদ সম্পর্কে সিদ্ধান্ত নেন; 2=male hh members decide on major assets with some input of female hh members পরিবারের পুরুষ সদস্যরা প্রধান সম্পদের ক্ষেত্রে সিদ্ধান্ত নেন তবে মহিলা সদস্যদের কিছুটা ক্ষমতা থাকে; 3=female household members decide on those assets related to their own production (e.g. poultry/vegetable cultivation) মহিলা সদস্যরা তাদের নিজস্ব উত্পাদন (যেমন- হাঁস-মুরগি, শাকসবজি, ইত্যাদি) সম্পর্কিত সম্পদে সিদ্ধান্ত নেয়; 4=joint decision making about all assets যৌথ ভাবে সকল সম্পদ সম্পর্কে সিদ্ধান্ত নেয়; 5=only female household members decide about all assets শুধুমাত্র মহিলা সদস্যরা সকল সম্পদ সম্পর্কে সিদ্ধান্ত নেন;
E5	Who in your household has taken any loans or credit (e.g. from NGO microfinance institutions, loans from banks)? আপনার খানার প্রাতিষ্ঠানিক ঋণ কার নামে নেয়া হয়? (যেমন- এনজিও অথবা ক্ষুদ্র ঋণ প্রদানকারী প্রতিষ্ঠান)	1=wife স্ত্রী; 2=husband স্বামী; 3=jointly যৌথভাবে; 4=other male HH members খানার অন্য কোনো পুরুষ সদস্য; 5=other female HH members খানার অন্য কোনো মহিলা সদস্য; 6=other male and female household members jointly took loans খানার অন্য পুরুষ এবং মহিলা সদস্য যৌথ ভাবে ঋণ নেয়; 99=non-applicable প্রযোজ্য নয়;
E6	Who in your household has taken any informal credits (e.g. loans from relatives and friends)? আপনার খানার কার নামে অ-প্রাতিষ্ঠানিক ঋণ নেয়া হয়? (যেমন- আত্মীয়-স্বজন, বন্ধু-বান্ধব থেকে কর্জ)	1=wife স্ত্রী; 2=husband স্বামী; 3=jointly যৌথভাবে; 4=other male HH members খানার অন্য কোনো পুরুষ সদস্য; 5=other female HH members খানার অন্য কোনো মহিলা সদস্য; 6=other male and female household members jointly took loans খানার অন্য পুরুষ এবং মহিলা সদস্য যৌথ ভাবে ঋণ নেয়; 99=non-applicable প্রযোজ্য নয়;
E7	Which of the following places do female household members visit on their own? নিম্নোক্ত স্থানগুলির মধ্যে কোনটিতে খানার মহিলা সদস্যরা তাদের ইচ্ছেমতো যাতায়াত করেন? ***[Note for enumerator:*** multiple answers possible]	1= local market/ hat স্থানীয় বাজার/হাট; 2= health center/clinic স্বাস্থ্যকেন্দ্র/ক্লিনিক; 3= hospital হাসপাতাল; 4= NGO office/ CBO office এনজিও অফিস/সিবিও কার্যালয়; 5= national festive জাতীয় উৎসব; 6= Union Parishad ইউনিয়ন পরিষদ;

		7= Upazila Livestock/ Agriculture/ Fishery/ উপজেলা প্রাণী সম্পদ/কৃষি/মত্স; 8= Upazila social welfare office উপজেলা সমাজ সেবা কার্যালয়; 9= district level offices জেলা পর্যায়ের অফিস; 10= schools স্কুল; 11= other অন্যান্য(নির্দিষ্ট করুন); 12= female household members do not visit any of these places on their own মহিলা এই সকল স্থানের কোনটিতেই তাদের ইচ্ছামত যান না;
E8	Do female household members cast votes in local and national elections? খানার মহিলা সদস্যরা কি স্থানীয় এবং জাতীয় নির্বাচনে ভোট দেন? **[Note for enumerator:** Please discuss each of the options as Y/N questions]	1= local elections স্থানীয় নির্বাচন; 2= national elections জাতীয় নির্বাচন;
E9	How do female household members decide whom to vote for? খানার মহিলা সদস্যের কিভাবে কাকে ভোট দেবে এই ব্যাপারে কে সিদ্ধান্ত নেন?	1=female household members decide on their own খানার মহিলা সদস্য নিজেরাই সিদ্ধান্ত নেন; 2=male and female household members decide jointly পুরুষ এবং মহিলা সদস্যদের যৌথভাবে সিদ্ধান্ত; 3=male household members decide খানার পুরুষ সদস্য সিদ্ধান্ত নেন;