



**Bangladesh Water Development Board (BWDB)**



**Kingdom of the Netherland**



**Department of Agricultural Extension (DAE)**



## **Half-Yearly Progress Report July to December 2019**



# Half Yearly Progress Report

July to December 2019

## The Blue Gold Program

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### Issue and Revision Record

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## 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 Proforma
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	Guidelines for 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	Upazilla 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

## Contents

<b>Executive summary</b> .....	<b>ES-1</b>
<b>1 Introduction</b> .....	<b>1</b>
<b>2 Major Blue Gold Trends &amp; Achievements</b> .....	<b>2</b>
2.1 Households Reached & Area Covered.....	2
2.2 Increased Production and Profitability.....	2
2.2.1 Improvement of cropping system.....	2
2.2.2 Trends among Farmer Field School (FFS) members .....	4
2.3 Building organizations and WMO capacity Building.....	8
2.3.1 Building Organizations .....	8
2.3.2 WMO Capacity Building .....	9
2.4 Improved Water Management.....	12
2.4.1 Water Resource Management Infrastructure .....	12
2.4.2 In Polder Water Management.....	14
2.4.3 Operation and Maintenance.....	21
2.4.4 Participatory Monitoring of Water Management.....	23
2.5 Value Chain Improvements .....	25
2.5.1 Collective Actions for Economic Development .....	28
2.6 Gender Equality & Women Empowerment.....	29
2.7 Horizontal Learning & Communications .....	32
<b>3 Polder Level Progress</b> .....	<b>34</b>
3.1 Progress of Water Management .....	34
3.2 Increased Production & Profitability .....	41
<b>4 Monitoring, Reflection &amp; Learning</b> .....	<b>53</b>
<b>5 Innovation Fund Progress</b> .....	<b>55</b>
<b>6 Financial Report</b> .....	<b>57</b>
<b>7 Project Management</b> .....	<b>58</b>
7.1 Focus activities for zonal and polder teams.....	58
7.2 Reduction & relocation of staff .....	59
7.3 DPP Revision subsequent situation .....	60
<b>Annex A: Project Outputs</b> .....	<b>A-1</b>
<b>Annex B: Achievements of BGP in water management and agriculture from July to December 2019 (Non-cumulative)</b> .....	<b>B-1</b>
<b>Annex C: Building Organisations</b> .....	<b>C-1</b>
<b>Annex D: Training</b> .....	<b>D-1</b>
<b>Annex E: Reports and videos</b> .....	<b>E-1</b>

## List of Tables

Table 1: Increase in cropping intensity compared to pre BGP .....	3
Table 2: Land use in the kharif-II season in the Khulna zone.....	4
Table 3: Comparison between benchmark and end line regarding improved poultry rearing practices .....	5
Table 4: Comparison between benchmark and end line regarding no of poultry and egg production.....	5
Table 5: Comparison between benchmark and end line of the sale and consumption of eggs and poultry.....	6
Table 6: Comparison of practices of different technologies between benchmark and end line ..	6
Table 7: Comparison between bench mark and end line regarding meat production .....	7
Table 8: Comparison of Fish production (Kg) per farmer between benchmark and end line .....	7
Table 9: Comparison of practices of different technologies between benchmark and end line ..	8
Table 10: FFS training for WMG people.....	12
Table 11: Status of Progress of Works.....	13
Table 12: Work plan for 2019-20 and status of estimate & tender.....	13
Table 13: Progress from July-December 2019 .....	15
Table 14: Zone wise coverage of CAWM and replicated area through HL.....	17
Table 15: Call for applications for small scale infrastructure .....	20
Table 16: Progress of O&M capacity building, catchment planning and O&M agreement signing (Jul-Dec 2019).....	21
Table 17: Participation of community people in collective actions for O&M (cumulative) .....	22
Table 18: Total contribution of WMG members and community people for O&M of Infrastructure .....	22
Table 19: Table: Information on Fish Collective Action .....	27
Table 20: Participation of WMG members in different collective actions for Economic Activities	29
Table 21: The summery of on-going BGIF projects.....	56
Table 22: Financial report of Blue Gold Program (July- December 2019) .....	57

## List of Figure

Figure 1: Upazila workshop in Satkhira .....	10
Figure 2: CAWM farmers cultivated mustard (before harvest of Aman) and chick Pea (after Aman harvest) in Polder 25, Khulna.....	17
Figure 3: Preparation for collective wholesale .....	19
Figure 4: WMA and O&M subcommittee members in Satkhira providing feedback on manual drafts. ....	23
Figure 5: Self assessed performance of the WMGs .....	24
Figure 6: WMG performance assessed by polder team.....	24
Figure 7: Self assessed performance of the WMAs .....	25
Figure 8: WMA performance assessed by polder team.....	25
Figure 9: Process of empowerment in Blue Gold Program.....	31
Figure 10: Md. Anwar Hossain's Duck firm .....	33



## Executive summary

The Blue Gold Program (BGP) aims to reduce poverty and stimulate economic development in 22 coastal polders in Bangladesh through improved water resource management and enhanced agricultural productivity and profitability. This report presents the progress of the BGP between July-December 2019. In this reporting period, BGP has continued to emphasize on strengthening WMOs, specially WMA formation, registration and their capacity building as WMA will take the leadership of polder level water management. Due to improved water management system, farmers of the BGP polders have been able to increase cropping intensity as well as adaptation of HYV of different crops in different seasons specially last aman season. This started with the introduction of short duration HYV T. Aman, followed by a chance crop (e.g. Mustard) and ending the yearly cropping cycle with a variety of different Rabi crops (e.g. Okra). The WMGs reported that a total of 25,520 WMG members (17% women involvement) in collective actions for O&M with an estimated value of BDT 7,183,646 through cash, kind and labour. This has been supported by many reported activities of WMOs related to cleaning water hyacinth and removing obstacles from canals, repairing infrastructure and excavating field drains and canals (please see 3.1).

An Impact study to see the impact of BGP interventions in BGP confirms that overall cropping intensity has increased by 41 percentage points, from 187% to 228%, with a larger increase in Satkhira of 76 percentage points - largely due to expansion of fish ghers in polder 2. Increases in cropping intensity was reported for almost all polders and for 80% of WMG. In kharif II season, almost all land was used for cultivation each of the three zones. For the Khulna zone, in the kharif 2 (late monsoon) season, over half the land was used to grow aman paddy. This has now fallen slightly, with a significant increase in area under fish. In Satkhira, in kharif-2, prior to BGP, one third of land was growing aman paddy, and just over one quarter used for fish ghers. The area under fish ghers has now doubled, with little change in aman paddy – and an overall increase in land utilisation. In Patuakhali, there is virtually no use of land for fish/shrimp ghers. In kharif-2 almost all land is (and was) used for aman paddy. Aman is grown in all three zone and there has been a trend towards HYV, although much local aman is still grown in Khulna and Patuakhali. In Satkhira most aman was HYV before the start of BGP.

Also, at homestead level more production has been generated, especially meet up the household level demand and benefitting the women (please see 3.2). Better linkages with market actors and private sector also resulted in more profitability from produce sold. The respective 511 WMGs are positive about their performance too: around 66% of WMGs believes that they have achieved more than 60% of BGP objectives, which is also confirmed by the polder team assessments. On the other hand, among the 35 WMAs 46% WMAs confirmed that they have able to meet 60% of their responsibilities and fulfil their objectives.

During this reporting period, the following activities of BGP contributed to this success:

- Rehabilitation works executed in 21 polders, with estimated completion of 52% for FY 2018-2019 (as of June 2019). The total cumulative program physical progress is tentatively estimated around 50%. Within the reporting period, due to unfavorable working conditions for physical works as *khals*/embankments are partly under water and paddy harvesting not completed. Only carried-over structural works and a very few on-going earthworks are

ongoing. However, TA Team is assisting BWDB in related works - design data collection, estimate submission, package preparation, timely work order issue etc.

- The introduction of the Sluice Catchment O&M planning and small-scale water management infrastructure approaches and the role out in all polders, and further efforts to make this approach more WMA-led and efficient. O&M committees and Catchment O&M sub-committees have been formed to take leadership through training. A total 190 catchment O & M plans has been completed. In addition, 80% of small scale water management infrastructure works that was planned for 2018-29 have been completed. Moreover, 142 WMGs have been contracted to implement the works value BDT 226 *lak* under small scale water management infrastructure during 2019-20, this includes, 75 pipe culverts, 8 gated box culverts and re-excavation of 114 km *khal*. All of them will impact on efficient IPWM and crop production.
- Field staff is nowadays directly responsible to train and facilitate WMOs, expecting to result in more functional WMAs and WMGs.
- The effective role out of FFS cycle no. 13 with 120 FFS on native poultry rearing, beef fattening and pond aquaculture with market orientation. After the training, the production and consumption of egg, meat and fish multiplied to 2-3 times, and commercial sale increased from an average ~20% to ~80%; also, sale of eggs, poultry and fish multiplied on average 3-4 times. Households are earning significantly through beef fattening activities. A total of 120 FFDs were organized where 15,745 visitors took part and learnt about TA FFS experience.
- Cropping Intensity Initiative (CII) was implemented in 13 WMGs. A total of 131 farmers were involved in CII that covered 47 acres of land. Total 25 (Patuakhli 13, Khulna 06 and Satkhira 02) CAWM schemes were initiated that includes area is 447 ha (21.29 ha/CAWM), 1697 farmers (average 68 farmers/CAWM).
- Activities on strengthening value chains and collective action for economic development have resulted in a tremendous increase in adoption. While on average only 2-3% of WMG members trained use to keep records, contact market actors, use ICT and do collective purchase & sale, now even on average 45% women have adopted these practices. Capacity building training and market visits among 118 resource farmers (RFs) help them organize profitable collective actions.
- A program-wide agro-extension approach has been developed and is being rolled out. As part of that training messages and good practices on water management, agriculture and collective action have been spread further by Horizontal learning activities and many success stories have reported. Also, community friendly posters, festoon, videos and drama shows have motivated residents of polders to form strong WMGs and a new experiential learning approach for field staff has resulted in better facilitation towards polder communities. Large audience coverage of Drama show regarding water management has very positive impact on coastal communities. Printing and distribution of Blue Gold *Barta* targeting WMOs towards sharing and replication of good practices, success, and innovation for confidence and capacity building of WMOs.

- Special training for women on income generating options and market linkage through Gender and Leadership Development training, gender court yard sessions and using gender flipchart for GLD has positively influence on increased women mobility and involvement of women in income generating activities. As a result, now women have better status within the HHs as well as more roles in intra household decision making.

Main remaining challenges and proposed mitigation strategies:

- The infrastructural progress needs to be further accelerated during 2019-20 to fulfil the target of completion of 72% WRM works. With the approval of the revised DPP, mobilisation of additional resources by BWDB will help to reach the targets for rehabilitation / construction works. In addition to these, IPWM initiatives were great help for communities. Specially, proper implementation of small-scale infrastructure hopefully brings more support for coastal communities
- The delayed registration of WMAs, handing over the water management responsibilities to WMA is a big challenge. BGP has given high emphasis to develop the capacity of the WMAs, BGP is working on the capacity building of WMA as well as in
- Weather was not so favourable throughout Aman season, especially cyclone bulbul causing obstacle in implementing relevant interventions as well as hamper the crop production significantly. BGP is working with farmer to recover their loss of during *aman* by having a successful *rabi* season.
- Unstable price for crucial products like rice can be considered a major challenge for BGP beneficiaries since core of SVC was to encourage increase in rice production, promote additional crop and subsequent income. Volatile market situation affects farmers decision making. Often farmers find themselves in a situation where input prices go up but selling price for rice goes down, making rice production not so profitable. BGP initiatives at educating farmers on -reducing production cost, adopting profitable crop or collective selling to attract higher price- considered often not enforceable.
- Collective action around water management and economic development can be further expanded and scaled out, especially paying more attention on local needs and community-based service providers like RF and FT. BGP aims to continue the activities under collective action further, increased the number of beneficiaries through the unbundled FFS module, more experiential training for WMOs, catchment level O & M planning, initiating small scale infrastructure development for IPWM, expanded implementation of horizontal learning on good practices, results those are already tested and found successful and effective.

## 1 Introduction

After the independence of Bangladesh, the Governments of Bangladesh and Netherlands have been working closely together in the coastal zone of Bangladesh to create a sustainable environment for a better livelihood of the coastal communities. The Blue Gold Program (BGP) is designed systematically on the experiences and the lessons learnt over the past ten years of the different coastal project like IPSWAM and considered new insights in how to deal with the challenges created in the environment. The BGP aims to reduce poverty and stimulate economic development through improved water resource management that ultimately supports to improve agricultural and economic development in the polders.

The BGP became operational in March 2013 and extends over a 8 year period, until December 2020. Its operations concentrate on 22 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 119,124 ha of selected coastal polders by creating a healthy living environment and a sustainable socio-economic development the Southwest Coastal Zone of Bangladesh.

BGP is being implemented by the Bangladesh Water Development Board (BWDB) in the lead, and the Department of Agricultural Extension (DAE) with separate DPP– in association with Department of Livestock Services (DLS) and Department of Fisheries (DoF) through MoU with support of the Technical Assistance Team jointly funded by the Governments of Bangladesh and the Netherlands. The BGP is also guided by different national policies of Bangladesh like the National Water Policy (NWPo, 1999), the Guidelines for Participatory Water Management (GPWM, 2000), the National Water Management Plan (NWMP, 2000) and the Participatory Water Management Rule (PWMR, 2014).

After the introductory chapter, the half-yearly progress report July-December 2019 presents a discussion and description on major trends and achievements within the Blue Gold Program (Chapter 2). The following chapter illustrates polder wise changes in term of agricultural productions and water management (Chapter 3). The next three chapters focus on the update on Monitoring, Reflection and Learning (Chapter 4), the progress of the Innovation Fund (Chapter 5) and Financial Report (Chapter 6). The last chapter (Chapter 7) of this report highlights on the Project Management.

## 2 Major Blue Gold Trends & Achievements

### 2.1 Households Reached & Area Covered

BGP is working with its full efforts in all the selected polders (22), covering an estimated 199,326 households and an estimated area of 119,124 ha.

The household coverage is around 19% higher than the initial beneficiary target as set out in the original Development Project Proformas (DPPs) with the Bangladesh Water Development Board (BWDB) and the Department of Agricultural Extension (DAE). In term of land coverage, Blue Gold working area is 26% smaller than originally envisioned in the DPP.

### 2.2 Increased Production and Profitability

#### 2.2.1 Improvement of cropping system

BGP water management works have improved drainage and increased the supply of water for irrigation. WMG have also contributed their own labour for routine maintenance and minor works, and have sometimes made contributions to the cost of BGP works. BGP is also supporting them to adopt improved crop management technologies and efficient marketing of their products. These interventions all together helped the coastal communities in 22 BGP polders in practicing an improved cropping system these is in turn ensuring increased production and profitability.

According to Technical Report 26 (TR-26), 2019, majority of the WMGs (86%) say that water management infrastructure has been improved that has reduced in water-related constraints to crop production. These primarily relate to water scarcity (for irrigation) and water logging – with salinity and flooding much less serious. Water scarcity is now slightly more frequently reported than waterlogging. Only 9% WMGs reported ‘bad’ or ‘very bad’ water management condition compared to 59% WMGs prior to BGP. Most of infrastructure works were undertaken by BWDB-BGP with WMG support, with WMG themselves mainly being responsible for *khal* cleaning and better sluice operation. Local government have had an important role in culvert improvement. Participants identified technologies which they had learned and adopted. For crops, new varieties and improved cultivation techniques have mostly been fairly widely – including by farmers who are not members of FFS. These interventions all together helped the coastal communities in 22 BGP polders to efficient use and increase cropping intensity of the land and this is one of the main agendas of the Blue Gold program.

TR -26 shows since the start of BGP there has been significant changes in land use and cropping. In Khulna the biggest change has been an increase in the area under fish *ghers*, but the area of paddy has also gone up with more *boro* being grown. In Satkhira there has been an even bigger increase in area of fish *ghers* (the area has doubled), and there has also been an increase in *boro* paddy. There are virtually no fish *ghers* in Patukhali and there has been little change in the area of paddy, but a significant increase in area of non-rice crops, primarily mung bean which has largely replaced *keshari* (grass pea). In all three zones there has been increases in the total area of both paddy and non-rice crops, but taking the three zones together the increase in area under fish *ghers* has been greater than the combined increase in paddy and non-rice crops. The reporting

period is related to kharif-II/Aman season, Aman is grown in all three zone and there has been a trend towards HYV, although much local *aman* is still grown in Khulna and Patuakhali. In Satkhira, most *aman* was HYV before the start of BGP.

Like earlier, the BGP has continued the technical assistance to farmers to increase their cropping intensity and yield. Following steps were continued:

- Assist implementation of DAE activities: Complement DAE activities by facilitating horizontal expansion of improved agronomic practices through WMGs and selection of FFS sites that have a year-round cropping potential;
- Assist implementation of CAWM: Complement CAWM by bringing in technical assistance on improved agronomic practices and through horizontal expansion of proven CAWM interventions;
- Implement demonstrations: Initiate demonstration plots (with inputs such as improved seeds and fertilisers) to show farmers the potential of cropping system improvements.

This reporting period covers Kharif-II/Aman season production of BGP polders. In this reporting period, one could see the successful harvesting of the HYV of Aman paddy and aquaculture followed by *boro* paddy or non- rice *rabi* crops in the Rabi season in the attempt to promote an alternative profitable annual cropping pattern. TR 26 also shows that overall cropping intensity has increased by 41 percentage points, from 187% to 228%, %, with a larger increase in Satkhira of 76 percentage points - largely due to expansion of fish *ghers* in polder 2. Increases in cropping intensity was reported for all polders apart from polder 28/2 (which recorded a fall of 34 percentage points, but which is being absorbed into the urban area of Khulna city) and for 80% of WMG. please see the table 1

**Table 1: Increase in cropping intensity compared to pre BGP**

Zone	Cropping intensity with <i>gher</i> *			Cropping intensity without <i>gher</i> **		
	Before BGP	Current situation	Change	Before BGP	Current situation	Change
Khulna	199	237	38	128	138	10
Satkhira	176	252	76	117	131	14
Patuakhali	173	205	33	173	205	33
Total	187	228	41	143	161	19

\*cropping intensity = (crops + *gher*) / (crops + *gher* + fallow); \*\* cropping intensity = (crops) / (crops + *gher* + fallow)

According to TR 26, use of cultivated land has been divided for each season into three categories: (i) paddy; (ii) other crops; and (iii) fish/shrimp *ghers*. Table 2 shows the kharif II season land use for each of the three zones. For the Khulna zone, in the kharif 2 (late monsoon) season, over half the land was used to grow *aman* paddy. This has now fallen slightly, with a significant increase in area under fish. In Satkhira, in kharif-2, prior to BGP, one third of land was growing *aman* paddy, and just over one quarter used for fish *ghers*. The area under fish *ghers* has now doubled, with little change in *aman* paddy – and an overall increase in land utilisation. In Patuakhali, there is

virtually no use of land for fish/shrimp *ghers*. In kharif-2 almost all land is (and was) used for *aman* paddy.

**Table 2: Land use in the kharif-II season in the Khulna zone**

Zone	Time	Paddy	Other crops	Fish	Total
Khulna	Before BGP	57	6.3	30	93
	Now	48	8.4	40	96
Satkhira	Before BGP	33	0	26	59
	Now	33	0.6	54	88
Patuakhali	Before BGP	95	0.1	0	95
	Now	99	0	0	99
Total	Before BGP	67	3.3	19	89
	Now	65	4.4	28	97

Percentage of cultivable land

## 2.2.2 Trends among Farmer Field School (FFS) members

### Trend among FFS members

A total of 120 Farmer Field Schools (FFSs) implemented in Khulna (Polders 25, 27/1, 27/2, 34-2 part) Satkhira (P-2) and Patuakhali (polders 43/2A, 43/2B, 55/2A). The implementation period of 13<sup>th</sup> cycle FFSs was from April 2019 to November 2019. FFSs ran with native poultry rearing, beef fattening and fish culture modules with market orientation. The main objectives of this programme are to increase knowledge and skill of poor farmer on native poultry rearing, beef fattening and fish culture and to generate additional income.

A total of 3000 WMG members were trained where 86% were women. It is noteworthy that significant percentages of women participated with generally male dominated beef fattening and fish modules.

It is important to note that inclusiveness of resource poor WMG member were 84%, 44% and 74% with poultry, beef fattening and fish module respectively. Consolidated data from benchmark and end line survey demonstrated that improved technologies adaptation had a good impact on poultry, beef fattening and fish production. FFSs participants are now considering homestead level small production as a business, thus trying to be surplus and participating in collective action (input purchase and product selling) for making profit.

Based on the data of this FFS, more detailed trends on native poultry rearing, beef fattening and fish production are given hereafter.

### Trends in poultry production

In the poultry module, the FFS farmers learn several improved poultry rearing practices, such as vaccination of the birds, the use of *hazals*, and candling of eggs. Many farmers at the end of the

FFS report that they have adopted these practices. By following FFS principle trial on housing, use *hazal* (earthen device) for broody hen management, candling, chick separation established with every FFS.

**Table 3: Comparison between benchmark and end line regarding improved poultry rearing practices**

Poultry rearing practices	Patuakhali, Khulna and Satkhira (% of farmer)	
	Benchmark (n=482)	End line (n=469)
Vaccinate always	.62	82
Vaccinate sometimes	5.82	18
Vaccinate never	94	0
Use <i>hazal</i>	4.77	98
Use candling	6.43	100
Separate chicks after 1 week	1.66	92
Separate chicks after 2 weeks	1.24	7.89
Separate chicks never	97	.43

Table 3 shows that at the end of FFS 98 % farmers started using *hazals*, and all farmers adopted the practicing of candling their eggs. Most farmers separate chicks from hen after one or two weeks, while this was not a common practice before the FFS. The regular vaccination percentage rose significantly (82%).

The following tables show the average number of birds per household and the egg production per year. The end-line survey shows big increases in the number of birds and egg production. These numbers are of course rough estimates and it seems that in the end survey the estimates were too high.

**Table 4: Comparison between benchmark and end line regarding no of poultry and egg production**

Particulars	Patuakhali, Khulna, Sathkira	
	Benchmark (n=482)	End line (n=469)
Average number of chicken /HH	3.24	9.50
Average number of chicks /HH	5.82	3.92
Average number of ducks /HH	3.09	5.46
Average number of duckling /HH	2.97	3.02
Number of Eggs per hen/per year	47	83
Number of Eggs per duck/per year	61	110



With the increase in birds and the increase in egg production we see that households are now consuming more of their produced eggs and birds. The following table also shows that selling eggs and poultry has increased among the FFS farmers and also the number of eggs sold per month has increased. Number of poultry selling per year also increased significantly.

**Table 5: Comparison between benchmark and end line of the sale and consumption of eggs and poultry**

Particulars	Patuakhali, Khulna, Sathkira (average per household)	
	Benchmark (n=482)	End line (n=469)
Consume eggs/week	3.92	7.43
Consume birds/monthly	.99	2.05
Selling eggs/month	6	19
Selling poultry /year	4.54	17.07

#### Trend in Beef fattening practices

To build a successful, sustainable cattle fattening business, a farmer requires sufficient knowledge on how to fatten cattle efficiently and those technologies are provided through FFS. Objective of beef fattening module is to increase the efficiency of beef fattening, which for many farmers is an income generating activity, especially in the period before the Eid festival. Technical topics in the module include cattle housing, feeding, preparation of Urea Molasses Straw (UMS), HYV fodder crops, de-worming and vaccination. The module also emphasizes linkages and networking with input providers, service providers (such as animal health worker), markets actors and staff of the department of livestock services (DLS).

Table 6 shows that cattle housing improved significantly. At the time of end line survey significant percentages of farmer reported that cattle shed cleaning, ventilation, gutter for drainage were in their practice and the percentages increased up to 99%. Farmers also reported significant increases of Urea Molasses Straw (UMS) preparation and feeding. Along with UMS farmers also feeding roughage, concentrate and straw for fattening their cattle. Farmer started regular de-worming of their fattening cattle. Farmers are taking services from animal health worker. Now all farmers know how to measure body weight of animal which helped to bargain with traders.

**Table 6: Comparison of practices of different technologies between benchmark and end line**

Particulars (% of participants)	Patuakhali, Sathkira and Khulna	
	Benchmark (n=366)	End line (n= 360)
<b>Cattle shed improvement</b>		
Cattle shed has ventilation	50.27	98.99
Cattle shed has gutter for drainage	25.14	99.44
Cattle shed is cleaned daily	52.46	97.22

Particulars (% of participants)	Patuakhali, Satkhira and Khulna	
	Benchmark (n=366)	End line (n= 360)
<b>Cattle feed</b>		
Know how to make UMS	1.37	100
Feed UMS to cattle	1.09	100
Roughage, concentrate and straw	20.77	38.06
<b>Services</b>		
De-worming cattle regularly	13.11	100
Receive animal health service	1.09	23.89
Have phone no of service provider	7.65	100
Know how to measure body weight	1.09	100

Table 7 shows the datasets of all farmer for beef fattening from three districts together. If we compare benchmark with end-line data, a total of 23925 kg meat production has been increased by the FFS members

**Table 7: Comparison between bench mark and end line regarding meat production**

Meat production in in Khulna, Patuakhali and Sathkira	Benchmark	End line	increase
Total meat production (kg)	38660	62585	23925
Meat production per farmer (kg)	125	174	48

### Trend in fish production

Objective of fish module is to improve the efficiency and productivity of household ponds. Technical topics in the module include pond preparation, selection of fingerlings, stocking ratio, stocking density, use of supplementary feed, fertilizing ponds for natural feed, different problems of fish culture, fish diseases, and harvesting. Linkages with input providers and with staff of the department of fisheries are strengthened. Farmers reported a considerable higher fish production after completion of the FFS fish module compared to prior to FFS training. Data shows that per decimal fish production increased from 1 kg to 7.53 kg.

**Table 8: Comparison of Fish production (Kg) per farmer between benchmark and end line**

All fish production	Khulna and Patuakhali	
	Benchmark (n=212)	End line (n=208)
Total fish produced (kg)	3062	23288
Fish production per farmer (kg)	12	88
Fish production per decimal (kg)	1	8

Table 8 shows that the fish module training brought clear knowledge on different modern technologies of fish production that are helping them to adopt these technologies both in Khulna and Patuakhali.

**Table 9: Comparison of practices of different technologies between benchmark and end line**

Use of different technologies	Khulna and Patuakhali (% of farmers)	
	Benchmark (n=212)	End line (n=208)
Fish pond preparation	0.94	100
Fingerling selection	2.83	100
Use of Supplementary feed	6.13	100
Knowledge on stocking density	0.47	100
Natural Feed testing	1.89	100
Knowledge on sampling	4.72	100

## 2.3 Building organizations and WMO capacity Building

### 2.3.1 Building Organizations

#### Introduction

BGP has geared up its efforts towards sustainable participatory water management (PWM) through the functional WMOs. The functional WMOs are able to ensure the proper operation and maintenance of water management infrastructures and build partnerships and networks that drive higher productivity and profitability from their livelihood options like agriculture, aquaculture, livestock and poultry. Below progresses have been achieved during the reporting period (July-December, 2019) to ensure functional WMOs

#### Formation and registration of WMOs

- 1 (one) WMG and 3 (three) WMAs have been formed and
- 5 (Five) WMGs and 8 (Eight) WMAs have been registered

#### O&M fund generation and utilization

- 233 WMGs have generated O&M fund amounting BDT 974,783/- which were collected from WMG members during their admission and also seasonal crops harvesting (Aman, Rabi/*Boro* season).
- 167 WMGs spent BDT 681,911/- for O&M purpose. Generally, they spent O&M fund for removing silt from *Khals*, construction of wooden box culvert, construction and removal of cross dam, cleaning water hyacinth, excavation of drainage channels, maintenance of embankment, temporary protection of river banks, sluice operation and maintenance, etc.

### Contribution of WMGs in SSWMI and CAWM

- 145 WMGs contributed BDT 46,54,763/- (30% of total cost) to execute SSWMI to remove drainage problem of their areas. On an average 25 (twenty-five) ha of land in each WMG has benefited from the initiatives.
- 24 WMGs contributed BDT 22,29,597/- (40% of total cost) to implement CAWM for improving drainage system.

### Initiatives for functional WMOs

- 84 Catchment O&M Sub-Committees were formed in 10 polders under 10 WMAs; 57 Catchment O&M Plans have been prepared
- 401 WMGs have prepared their Annual Action Plans (AWP) and are implementing accordingly
- 35 WMAs have prepared their AWP and taken initiatives to ensure success of the plans.
- TA team prepared a guideline for the capacity building of WMA and shared this with 35 WMAs.
- TA team is assisting WMAs to be more functional. So that WMAs would be able to take over their core tasks and responsibilities.

### Challenges

- Establish constructive relation and partnership among the WMOs and OCWM, O&M Divisions of BWDB and Operation and Maintenance (O&M) of water management infrastructures.
- Activation of catchment committees involving concerned actors, channelling required O&M fund from the concerned WMGs and implementation of catchment O&M plan by the catchment O&M sub-committees were challenging.
- Illegal occupying of water flow khal by the political leaders, muscle man and also lease out by the local administration is one of the barriers for proper water management;
- Follow up WMOs' activities by the Office of the Chief Water Management (OCWM).

### Lesson learned

- WMOs need support from LGI for implementation of WMO's Annual Work Plan (AWP)
- SSWMI/CAWM schemes will help to ensure proper water management which ultimately increase crop production and cropping intensity

#### 2.3.2 WMO Capacity Building

A functional WMO drives higher productivity and profitability in agriculture-based livelihood options like crop farming, aquaculture, livestock, and poultry through water resource management. BGP put significant efforts towards functional WMOs through the initiatives below:

1. Training
2. Farmer Field School (FFS)
3. Horizontal Learning and Communication

## Training

Blue Gold Program shifted its focus and giving more priority on the activation and capacity development WMAs rather than WMGs as WMAs have been formed almost in all polders and it has been envisioned that they will enter the central stage in polder-level water management. Within the reporting period, training program aimed to support on sustained WMA capacity using the principle of self-sustaining organizations and giving explicit attention to catchment water management plans. For the training detail of capacity building, please see annex D.

### Capacity building WMA

#### WMA capacity building in catchment WM plan and implementation:

WMA is responsible to prepare catchment water management plans involving water management groups (farmers) at the grass root level and implement by their own capacity. To develop this capacity of the WMA, BGP train/coach the WMA members and O&M sub-committee members to carry out the catchment water management planning process involving the farmers at the grass root level. The completion of catchment WM planning process took another steps where WMA shared this plan with respective Union Parishad and then finalized Catchment Water Management Action Plan through WMA Meeting.

#### O&M agreement signing in between BWDB & WMA:

O&M agreement signing in between WMA and BWDB is the formal handing over O&M responsibility to the WMAs. This agreement will give legislative authority to the WMA to carry out O&M responsibilities (routine), handle in-polder water management using their own resources and expertise as well as outside resources. This process will improve their confidence and ownership on the water management infrastructures. This is one step forward of successful phasing out of the program. During this period BGP extended support to WMAs for signing of agreement in 16 polders (10 polders in Patuakhali/Barguna, 5 polders in Khulna and 01 polders in Satkhira) which represented by 30 WMAs. Considering the roles and responsibilities of WMAs as described in the agreement. In consideration of the time frame and situation, it emphasized and initiated capacity building of WMAs engaging themselves in developing towards functional WMS.



Figure 1: Upazila workshop in Satkhira

### **Partnership development for obtaining support for in-polder water management**

The zonal teams are pursuing the WMOs to establish a practical cooperation with Union and Upazilla Parishads in order to get support in developing in-polder water management activities and increased service from the concerned line departments. BGP is now preparing WMOs to present the summary of their Polder level O&M plan and its activities at Upazilla Parishad in presence of the concerned authorities at Upazilla level with the objectives (i) to inform the situational updates on in-polder water management; (ii) to seek cooperation and support/contribution in implementing O&M plan and activities i.e. periodic/emergency maintenance and implementation of small infrastructures for in-polder water management for higher crop production; and (iii) to extent support for introduction of modern agriculture technologies and market facilities. In light of the above objectives BGP supported WMA to present the summary of the water management plans, challenges and seek support & opportunities to overcome the challenges in presence of District Upazilla level officials and LGI representatives.

### **Challenges, Mitigation Measures and Lessons Learned**

- Organizing workshop with UP and UZ Parishod

Usually the UZ level administration and GoB Line Departmental officials could not pay full time to the workshop. Most of them attend the workshop in late hour and wants live earlier (before concluding the workshop) as a result the process of the workshop seriously affect. In some cases, the political influence also disrupts the process of the workshop which create very challenging to accommodate and finding the optimum output from the workshop. From these experience BGP Capacity Building Team is changing the design and pattern of the workshop to get the optimum output from the workshop accommodating/overcoming all these challenges.

- Implementation of Polder Water Management

Some of the WMAs are in regular contact with LGIs and receiving positive responses in conflict resolutions on water management issues, direct/indirect contribution for O&M activities and service from the line department available under their jurisdictions. In addition, WMO members in some polders are gradually getting involved in mainstream activities of Union Parishad and especially at the relevant standing committees. These are very good sign of a functional WMOs. But many WMOs are not equally active and confident to improve the partnership relationships with LGIs and UZ line departments for obtaining support and opportunities.

Many of the WMOs are facing key challenges to implement the actions to stop illegal leasing of khals by the influential people, illegal use of sluice gates for illegally cultivating shrimp and rehabilitation of small-scale infrastructures due to lack of funds finding support from line departments. In these cases UZ administration line department involvement is highly important. BGP teams are supporting those WMOs for intensive communication & coordination with UZ administration/line departments for improvement of partnership relation.

- Implementation of O&M Agreement:

The agreement is signed with BWDB but some WMAs are still facing challenges to get the position of the sluice gates which are occupied by the political or influential people for their illegal use. BGP Polder teams now facilitating/guiding them to communicate with Union and UZ

administration for getting administration support. After the UZ level workshop the WMAs are getting support from the UP Chairman's and UNO instantly which the situation is now improving.

### Farmer Field School (FFS)

To improve the skill and knowledge of the members of WMOs in modern agriculture practices, BGP implements farmer field school (FFS) through DAE and Technical Assistance (TA) team. DAE FFSs are mainly for crop agriculture while TA FFSs focus on homebased production like homestead vegetable cultivation, poultry, beef fattening, pond aquaculture. Table 10 below show the detail of both FFSs during the reporting period.

**Table 10: FFS training for WMG people**

SL no.	Zone	Types of FFS	No. of FFS	Male	Female
1.	Khulna	TA FFS	61	114	1411
		DAE FFS	24	600	600
2.	Patuakhali	TA FFS	40	252	748
		DAE FFS	34	850	850
3.	Satkhira	TA FFS	19	48	427
		DAE FFS	11	275	275
<b>Total</b>			189	2139	4311

Section 2.2.2 and 2.5 represent the impact on production, consumption and technology adoption among the of TA FFS participant of cycle 13.

### Horizontal learning and communication

Through horizontal learning and communication, members of WMOs learn from successes elsewhere and then replicate the learning in their areas. Horizontal learning and communication tools are using to achieve scale with agricultural technology, water management, organizational strengthening, and capacity building of the WMOs. Within the reporting period, a number of WMGs organized their own experience-sharing visits to witness and then replicate good practices/ experiences (for details pls see the section 2.8).

## 2.4 Improved Water Management

### 2.4.1 Water Resource Management Infrastructure

#### Introduction

July-December period is mainly pre-construction period, which includes design data collection, design approval, estimation, estimate vetting, tendering etc. Most of the time during this period, working sites are not favorable for physical works as Khals/embankments are partly under water, paddy harvesting not completed. Only carried over structural work may be started with limited progress.

As such a very few works have been undertaken from July - Dec 2019, mostly carried-over structural works and a very few on-going earthworks. The remaining on-going works did not start yet. In some cases, time extension approval also causes for non-start of works. Table 11 below summarizes the progress of these on-going works (including carried over and new works) within this period. The cumulative progress has increased from 23% to 44% and the respective financial progress is around 9%.

**Table 11: Status of Progress of Works**

Work Items	Unit	Works under implementation	Progress (up to Jun 2019)	Progress (Jul – Dec 2019)	Financial payment
Embankment Re-Sectioning	km	5.290	25%	61%	4,978,360
Embankment Retirement	km	1.310	15%	16%	-
Canal Re-Excavation	km	20	55%	64%	1,502,489
Repair of Sluices	nos	12	17%	44%	2,558,495
Construction of Sluice	nos	14	22%	42%	36,899,513
Construction of Outlet	nos	12	16%	40%	7,603,231
Construction of Box Culvert	nos	1	0%	5%	-
Pump Shed Construction	nos	3	30%	65%	-
Low Cost Bank Protection Works	m	119	0%	94%	1,347,616
FDR/ Breach Closing	m	870	4%	58%	419,690

Total bill amount claimed for reimbursement in 2018-19 was 58.66 crore of which RPA was 44.58 crore; total amount recommended for reimbursement was 42.68 crore that included bills from 2018-19 and pending bills from 2017-18 & 2016-17. Total recommended reimbursement up to Dec 2019 is 119.00 crore.

**Table 12: Work plan for 2019-20 and status of estimate & tender**

Work Items	Unit	Plan for 2019-20 (new works)	Estimate Submitted	Estimate Vetted	NOA/ Work Order Issued
Embankment Re-Sectioning	km	54	54	54	8.65
Embankment Retirement	km	4.71	4.71	4.71	-
Canal Re-Excavation	km	79	79	79	12
Repair of Sluices	nos	26	26	26	10
Repair of Outlet	nos	02	02	02	-
Construction of Sluice	nos	04	04	04	04
Construction of Outlet	nos	05	05	05	03



Work Items	Unit	Plan for 2019-20 (new works)	Estimate Submitted	Estimate Vetted	NOA/ Work Order Issued
Construction of Inlet	nos	-	-	-	-
Construction of Box Culvert	nos	-	-	-	-
Pump Shed Construction	nos	01	01	01	01
Low Cost Bank Protection Works	km	0.29	0.29	0.29	-
FDR/ Breach Closing	Km	8.28	8.28	8.28	-
Interior Dyke	km	2.40	2.40	2.40	-
Drain Pipe	m	3983	3983	3983	3983

As mentioned earlier, only few structural works have been implemented during Jul – Dec, and mostly they are just a part of the continuous works. After the completion of the full structures, they will contribute to better drainage system, improving water logging problem, agricultural production and economic development

## Trends

WRM TA is continuously focusing on maintaining an uptrend for estimate vetting and physical progress of work. To follow up this up trend, TA Team is assisting BWDB in related works - design data collection, estimate submission, package preparation, timely work order issue etc. TA team is also continuing support to DP-III in providing all information, updates, calculations and responding to various queries.

## Challenges, Mitigation Measures and Lessons Learned

As already mentioned, for the timely completion of work it was necessary that all the work orders were issued by December, so that the works could be started timely from the beginning of January. But estimate vetting is still on-going and most of the works orders have not been issued. Also, the time extension for all the carried over works have not been approved. Due to this delay, the progress will become less than planned. To overcome this, all the pre-construction activities including awarding of contract for the works should be completed and execution of works started as early as possible.

A major Cyclone “Bulbul” hit the BGP polder area during Nov 2019 causing storm surge, heavy rains, and floods across the areas. There were no major damages to the structures (retired embankment, sluice etc.) but later due to water logging crops (mostly T-Aman) were damaged partly causing loss to the farmers.

### 2.4.2 In Polder Water Management

#### Introduction

The Blue Gold Program (BGP) aims to increase profits from agriculture and fisheries through enhanced In-Polder Water Management (IPWM). In-Polder Water Management is the planning, implementation, operation and maintenance of the water management infrastructure inside the

polders. As IPWM works on a variety of scales and is context-specific, we think a mix of approaches is appropriate. We implement:

1. Catchment O&M Planning (see 2.4.2.1)

By inter-WMG communication for proper operation of sluices for regulation of water levels of main khals in the catchment and good for all catchments.

2. Community-Led Agricultural Water Management (see 2.4.2.2)

The optimization of sub-catchments, a scale that allows for crop synchronization, collective action, intensive inputs and results that can be easily related to by other farmers. This can be used for horizontal learning, but also for further policy dialogue on In-Polder Water Management.

3. A fund for small scale water management infrastructure (see 2.4.2.3)

Improving water management infrastructure that does not fall under jurisdiction of the Bangladesh Water Development Board (e.g. secondary and tertiary khals) because it is too small, but is too big an investment for farmers to improve themselves. It follows a ‘hand-off’ approach, as the

### 2.4.2.1 Catchment O & M Planning

WMA is responsible to prepare Catchment Water Management Plans involving water management groups (farmers) at the grass root level and implement by their own capacity. To develop this capacity of the WMA, BGP train/coach the WMA members and O&M sub-committees members to carry out the catchment water management planning process involving farmers at the grass root level. This process is a highly bottom up approach where related farmers were involved in identifying & analysing the water management problems and formulate SMART plan for agricultural production. This plan is completed in 440 WMG level and all 190 catchments level under 22 polders in Satkhira, Khulna, Patuakhali and Barguna District in December 2019.

**Table 13: Progress from July-December 2019**

Zone	No. Catchment	Up to Dec'19 completed	Progress from Jul-Dec'19	Remarks
Patuakhali	101	101	25	
Khulna	77	77	28	
Satkhira	12	12	0	Completed before June 2019
Total	190	190	53	

### Bringing Change

In most cases the WMOs are implementing WM actions which are under their capacity such as removal of water hyacinth, siltation, cross dams, small repairing of pot holes on the embankments, fixing wooden gates, excavation field channels etc. including regular operation & maintenance of sluice gates etc. In many cases WMOs have developed partnership with the Union Parishad in

order to increase support service to improve in-polder water management such as conflict resolution, removal of illegal cross dam, fishing nets, financial support in excavating small khals, installation of pipe culverts etc.

### Trends

The impact of catchment water management planning for higher crop production is reflected in the Monitoring and Reflection reports where positive trend and impact are clearly observed. There is no separate impact assessment report for catchment water management planning. The positive changes are published in BGP Fact Sheets and Bulletins where a number of examples and success stories of WMO self-directed activities for improved water management are reflected. These activities are from the catchment WM plans prepared by WMA. WMOs are becoming highly conscious for higher agricultural production which is the result of effective water management.

### Challenges, Mitigation Measures and Lessons Learned

The process of catchment O&M planning for water management is carrying out by the WMA Catchment Committee (O&M Sub Committee) members involving WMG members, key farmers and UP members. In some cases WMOs could not overcome those challenges due to lack of confidence & coordination, lack of influence UP to involve in taking action and reluctant to generate funds for implementing some small scale infrastructures.

BGP polder teams are continuing follow up, facilitating and supporting WMOs to develop their confidence to coordinate and develop relationships with UP for more involvement in improvement in-polder water management.

#### 2.4.2.2 Community-led Agricultural Water Management (CAWM)

##### Introduction

CAWM can be measured as sustainable Internal Polder Water Management (IPWM) by catchment level water management planning, implementation, operation, maintenance by WMOs with support of relevant stakeholders, especially DAE and LGIs. This is result in a year-round approach to crop system management, in which the coastal belt will no longer be mostly single cropped, but provides opportunities for double and triple cropping combined with aquaculture. Year-round diverse crop system management approach is more effective, when WMO farmers cultivating in the same agricultural unit combine it with the stimulation of collective market action. It is an intensive approach in which field staff of DAE, BWDB and TA team have an active role (i) to strengthen the motivation and leadership of WMGs, (ii) to stimulate crop synchronisation and diversification, (iii) to build capacity in new agri-technologies, water management and marketing and (iv) improve community ownership over water management infrastructure. To create a sense of ownership the infrastructure is only co-funded by BGP and handed over to WMGs directly. WMGs develop an operation and maintenance plan which includes insurance of labour contribution and the creation of funds (cash/crops) by the community. Through the provision of technical support and horizontal learning between WMGs, the practices are executed and spread. The linkage with LGIs for conflict conciliation and the technical support from BWDB, DAE and other service providers is also a key factor for success. This with the ultimate aim to increase production and household income.

## Major Achievements

Total 25 (Patuakhali 13, Khulna 06 and Satkhira 02) CAWM includes area 447 ha (21.29 ha/CAWM), 1697 farmers (average 68 farmers/CAWM including female headed farmers are 162 and replicated area (through HL) 1305 ha (average 52 ha/CAWM) with total no. of farmers 2886 (average 115/CAWM). Please see Table 14. Out of these area/polders more area is also replicated through horizontal learning.

**Table 14: Zone wise coverage of CAWM and replicated area through HL**

No. of Polder	CAWM up-scaling (July-Dec 2018)					CAWM replicated area through HL	
	No. of WMG	No. of WMG members	No of farmers		Total land (ha)	No. of Farmers	Total Land (ha)
			M	F			
Satkhira	02	677	179	7	40	23	95
Khulna	06	2177	419	0	103	1087	878
Patuakhali	13	5135	660	47	304	4783	3455
Total	21	7989	1258	54	447	5095	4428

## Scaling up

CAWM is scaled up leading by community (WMOs) with the supported of DAE/BGP with cooperation/linkage LGIs and other service providers. CAWM activities plan is included in WMOs WAP like other regular integration activities in the plan. The activities are integrated with sluices catchment/sub catchment water management for crops water management in respect of increase production, income and improve cropping pattern. WMOs, DAE, BWDB and UPs are involved in the planning and implementation procedure of CAWM.

It is noted that BGP distributed seed 10 kg/acre perhaps, this is little bit more than one acre. Generally, the farmers used to transplant higher (4-5) no. of seedling in a bunch per hill, however, with the learning from CAWM FFS, they are now transplanting about 1-2 sapling in a hill. Under the CAWM, farmers are using this new approach, individual farmer is saving a good amount of seed/seedling which was sharing with the neighbour/extended farmers. A good number of farmers purchased BR 52 seed from BADC and other service providers.



**Figure 2: CAWM farmers cultivated mustard (before harvest of Aman) and chick Pea (after Aman harvest) in Polder 25, Khulna**

### Bringing Change

- CAWM is bringing in community water management within CAWM sub-catchment for changing cropping pattern, crop diversification and introducing high valued crops for early harvesting so that they can cultivate early rabi crops.
- CAWM provided technical knowledge (DAE-FFS and informal meeting by TA staff on modern varieties crop production and income.
- CAWM includes horizontal learning for best practice and its replication in the polders specially CAWM implementation procedure and benefits.

### Major Trends

In the BGP Polders area cropping pattern have changed through implementation of CAWM especially for sub-catchment level water management e.g. small scale infrastructures implementation. Many of these farmers have adapted this concept, they are initiating sub-catchment water management for increase production through adapting modern varieties and crop diversifications. In BGP polders area, we have observed (July to December 2018) modern varieties of aman crop has increased (related to last Aman season). Cultivation of short duration HYV aman allowed early drainage of water. Due to risk of other Rabi crops (except Boro) and availability for irrigation water by LLP, Boro rice has been increasing in Satkhira and Khulna ( in Polder 22, watermelon is increasing). In Patuakhali, due to increasing facilities of storage water in channels, Boro cultivation has increased in Polder 47/4. In Polder 43/2B and 43/1A most of the area is under watermelons crops. In this regard, women are involving in all types of farm activities for watermelon cultivation except marketing. BGP has organized women groups for capacity development training on marketing linkage for women at Polder 43/1A. Some women have started marketing watermelon in the local market. It is important to note that, women's husband and WMOs leaders have helped to create an environment for involvement of women in marketing.

### Success story – Hortakbaria WMG

Hortakbaria WMG is in polder 43/2A under Choto Bighai union of Patuakhali Sadar. Farmers of this area traditionally grow local varieties of T. Aman having low yield and longer life cycle. Through CAWM activities, they learned about cultivation of high yielding variety of rice and benefits, process of collective action and networking for collecting inputs, as they have seen direct benefit of cost reduction through collective action. During T-Aman season, Hortakbaria WMG was selected for CAWM-WMG representative and farmer are selecting BRRI dhan76 for CAWM field. BRRI dhan76 has been developed by genetically crossing with one local rice variety called Sada Motta, seedlings are very tall, plant height is tall as like as local varieties which is feasible to grow in low land, no lodging as stem is strong enough, production is almost double compared to local varieties. Sixty-two farmers cultivated BRRI dhan76 covering of 20 hectares of land through joint land plowing and preparation, purchase seeds, fertilizers, pesticides, sowing, planting and also jointly operating existing structures in the sub-catchment for on farm water management resulting, all farmers have build-up their confident level through the CAWM activities in Hortakbaria WMG members and nearby WMGs members through horizontals learning process. It is noted that the WMG organized 2 horizontals learning events for 60 members from different

WMGs/WMAs and different Polders. They also got many visitors from DAE, Ministry of Agriculture, BWDB, MoWR and BRRRI regarding successful production of BRRRI dhan 76.

Though, significant damage happened before harvest by Cyclone “Bulbul”, farmer got a good production. When farmers were taking rice to market for sale, all the hardship have gone from their expression of their face. In Hortakibaria CAWM area, all activities have accomplished under the leadership of WMG leaders. When the farmer’s found rice prices in local market is very low (Tk.500.00-550.00) then they tried to link-up outside market for lurching higher prices, the whole matter led by Hanif Shikder (WMG Leader) on the behalf of CAWM-WMG members. Md. Hanif Shikder contracted with Upazilla Food Officer for selling of rice. Eventually they succeeded, Upazilla Food Office has agreed to purchase rice from the CAWM farmers at the rate of Tk.1040.00/mound (according to GoB purchase rate). All procedures were assist by concerned CDFs in the Polder from 43/2A. In the first phase, they sold 5 ton of rice that was sold Tk.1040/mound. Later, the farmers of WMG sold all rice at almost double price compared to local market resulting, benefit to WMGs members Tk. 62,500.00 and established a good relation with Upazilla food department and enhancement interest among the WMGs members on collective action as well as improved in Polder water management.



**Figure 3: Preparation for collective wholesale**

### Challenges

- Climate changed risk e.g. early rain in Aman season, after plantation and before harvest Cyclone “Bulbul” damage T. Aman production.
- Pest attack after plantation (particularly in Khulna and Patuakhali)
- Water logging at Kalapara WMG/CAWM due to not complete the *Khal* re-excavation.

### Mitigation Measures

- Farmers rise Aman seeds bed, develop small dyke (*aile*) around the plots, excavated/re-excavated internal/branch drainage channels, Linkage internal channels in to main channels.
- Pest (*mazra*) attacked has been observed in early stage after plantation of seedling but crops have not damaged due to farmers/SAAOs taken joint effective initiatives with cooperation of CDFs/UAOs, DAE.
- After seed damage farmers managed seedling from other CAWM area
- CAWM tried to reduce water-logging problem by local initiative if not possible they partly low laying are planting lately local variety rice (most of the cases after damage of HYV seedling)

## Lessons Learnt

- ensure seed availability in the market, from BADC or other organization
- Seeds and drainage facilities should be available by June otherwise difficult to ensure crop synchronization and early high yield.
- Preparation for mitigation of emergency e.g. Cyclone, drought and pest attack
- Unified approach is essential for community involvement towards IPWM.
- If water level up to 'booting stage' rice plant is friendly to cut down for rat because in this stage rice plants are become soft therefore, rat can attack/damage rice plant by swimming (farmers source)

## Conflict noticed in CAWM area & mitigation

Kalapara CAWM in polder47/4 had a conflict resolved through discussion between WMGs and UP chairman. Some areas faced land problem for excavation of channels, WMGs/Farmers able to resolve this problem with help of local UP chairman and members, it may be mentioned that local UP chairman and member are very cooperative and they are taking part strong role in all BGP CAWM program.

### 2.4.2.3 Small Scale Water Management Infrastructure

A fund has been made available to use a “hands-off” approach, with a low-level of involvement by the BWDB/DAE/TA team, to implement small scale water management infrastructure (SSWMI). With the experience of the first call for infrastructure over 2018-2019, the second call for the 2019-2020 has been developed (Table 15) only for Khulna and Patuakhali (not for Satkhira, as the office closes December 2019).

**Table 15: Call for applications for small scale infrastructure**

Applications	2018-19	2019-20
Contracted WMGs	168	142
Total contracted value	200 lakh	226 lakh
Gated pipe culverts	91	75
Gated Box culverts	31	8
Khal (re-)excavations	110 (52 km)	124 (73 km)
Other (fallboards, drains etcetera)	14	1
Completion	80%	0%

Given the low involvement of TA and the high implementation rate, demand for these types of infrastructure seems large. In the previous report, we wrote on main challenges being balancing involvement of TA (we have now developed a construction sheet containing photographs with instructions in bangla for pipe and box culverts), construction safety (as part of the contract, we have added safety instructions), switching to HYV's (demonstration plots have been planted) and the use of excavators (due to the clear communication, this has not resurfaced). However,

challenges remain with respect to quality of the structures and limited knowledge of the beneficial or harmful effects of the structure.

### 2.4.3 Operation and Maintenance

#### Progress

We stimulate WMGs and WMAs to perform activities for Operations & Maintenance through Catchment O&M Planning and BWDB-WMA O&M agreements. They do this based on their cropping patterns. Firstly, members of the WMA-O&M subcommittee are trained to guide their O&M subcommittee and the WMGs to make Catchment Plans. These catchment plans are validated by the WMA Executive Committee. A major outcome of the activities is that WMG, WMA and the WMA - O&M subcommittees are focussing on and planning for Operations and Maintenance of their water infrastructure.

**Table 16: Progress of O&M capacity building, catchment planning and O&M agreement signing (Jul-Dec 2019).**

Polder phasing	1. Capacity Building		2. Catchment Planning		3. O&M Agreements		4. Upazilla level workshops	
	Completed	Total	Completed	Total	Completed	Total	Completed	Total
1	76 (0)	76	76(0)	76	17 (0)	17	1	8
2	51 (0)	51	51 (0)	51	11 (1)	12		
3	72 (72)	72	72 (72)	72	2 (2)	7		
Total	199 (72)	199	199 (72)	199	30 (3)	36		
Percentage	100%		100%		83%		13%	

In this process, Operations & Maintenance is actively planned by the communities during Catchment Planning. A major outcome of these activities is the linkage of WMGs not only with their WMA, but with Local Government Institutions and line agencies. A challenge with catchment planning is that that Local Government Institutions and other Government Line Agencies Challenges have to attend many planning workshops. In the coming months, they will be invited at an Upazilla level workshop, organized by multiple WMAs – which is more efficient. A challenge within the catchment is the distribution of costs (in kind or cash) of O&M between WMGs in a catchment. A method to do so is now developed and described in the water management manual (under development, see below).

Table 16 below shows the number of WMG members and community people who participated in collective actions for O&M activities of infrastructure and estimated value of works done. As shown in the following table, WMG members and community people are involved in collective actions for O&M of infrastructure. Up to June 2019, a total of 25,520 WMG members and community people were involved in collective O&M activities (with 17% female involvement). The value of work accomplished, which consists mainly of physical labour<sup>1</sup> and in-kind contribution by

<sup>1</sup> The value of labour was calculated by using daily wage rates of labourers, considering an 8 hours' workday



the community, is estimated at Tk 7,183,646. The trend of WMG members'/community people's participation in collective actions for O&M of infrastructure has been positively increasing in every quarter – it is because they understand how their participation in O&M of infrastructure pays off in return.

**Table 17: Participation of community people in collective actions for O&M (cumulative)**

Collective Activities	Results up to June 2019 (Source: WMG Tracker)		
	No. of Participants	% of Female	Estimated amount (BDT) for works done
Cleaning of <i>khals</i>	12,022	21	2,923,710
Excavation of field channel	3,942	18	1,502,968
Repair of embankment	5,100	17	1,306,620
Repair/maintenance of structures-Inlets	362	11	124,458
Repair/maintenance of structures-Outlet	749	5	227,250
Repair/maintenance of structures-Sluice	3,247	9	1,048,060
Others	98	2	50,580
<b>Total</b>	<b>25,520</b>	<b>17</b>	<b>7,183,646</b>

The WMG members and community people/farmers have also contributed for O&M activities of Infrastructure in cash and kind. The total contribution of WMG members and community people up to June 2019 amounts to Tk. 2,785,118. Besides, the WMGs also collect fund from their members for O&M purpose. As shown in the following table, the total contribution of WMG members and community people for O&M of infrastructure stands at Tk. 13,521,874.

**Table 18: Total contribution of WMG members and community people for O&M of Infrastructure**

Fund or Activities for O&M (Source: WMG Tracker)	Results up to June 2019	
	Amount (BDT)	% of Total amounts
<b>a) Present O&amp;M fund of WMG</b>		
O&M Fund (cash) available with WMGs	3,553,110	26%
<b>b) Total Payouts/Contributions made for O&amp;M of infrastructures</b>		
i) Cash expenditure for O&M activities (25% of O&M funds)	2,785,118	20%
ii) Contribution in kinds/labor (man-days converted in value) for O&M	7,183,646	53%
Total contribution for O & M in cash and kind/labour	9,968,764	73%
<b>Total (a+b)</b>	<b>13,521,874</b>	

## Water Management (O&M) Manual

A new water management (O&M) manual is being developed, aimed at O&M subcommittees and WMAs. This manual will inform through a visual approach – using photographs and artist impressions. In Participatory Water Management projects it has become common practice to develop a project manual on Operations & Maintenance. This manual is often technical and textual in nature. This makes it unattractive to read and use for beneficiaries.

In the past months, the manual’s key messages have been developed. We have received feedback on the manual’s initial messages from the of O&M subcommittees and WMAs. BWDB and DAE are to follow. Parallely, a more textual manual will also be compiled –aimed at government officials.



**Figure 4: WMA and O&M subcommittee members in Satkhira providing feedback on manual drafts.**

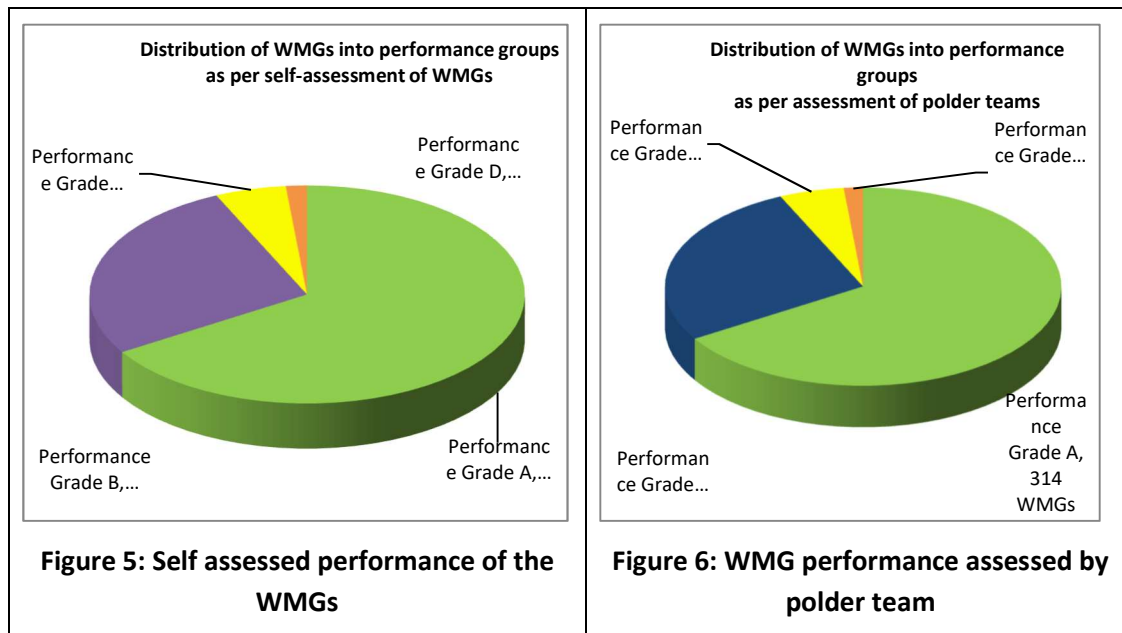
### 2.4.4 Participatory Monitoring of Water Management

#### ➤ Participatory Monitoring of Water Management Groups

Participatory Monitoring (PM) was conducted by Water Management Groups (WMGs) of all 22 Blue Gold polders in October 2019; a total of 511 WMGs participated in the PM exercise. The WMGs have made assessment of their own performance and progress against a number of potential targets for development; the indicators of functional WMGs as defined by Blue Gold Program (BGP) form the essence of the potential targets of WMGs. The progress or performance levels of WMGs have been determined by the progress markers (scores) the WMGs themselves have indicated against the potential targets. Based on the progress indicated by them, the WMGs have been ranked in 5 performance levels<sup>i</sup>: about 66% in grade A, 27% in grade B, 5% in grade C and 2% in grade D; no WMG has been ranked in grade E.

The polder teams agree with the results of self-assessment by the WMGs to a large extent. The polder teams observed that most WMGs have done well in their self-assessment; instances of over-rating or under-rating are very few. The results of WMGs’ self-assessment and polder teams’ assessment are shown in the following diagrams.

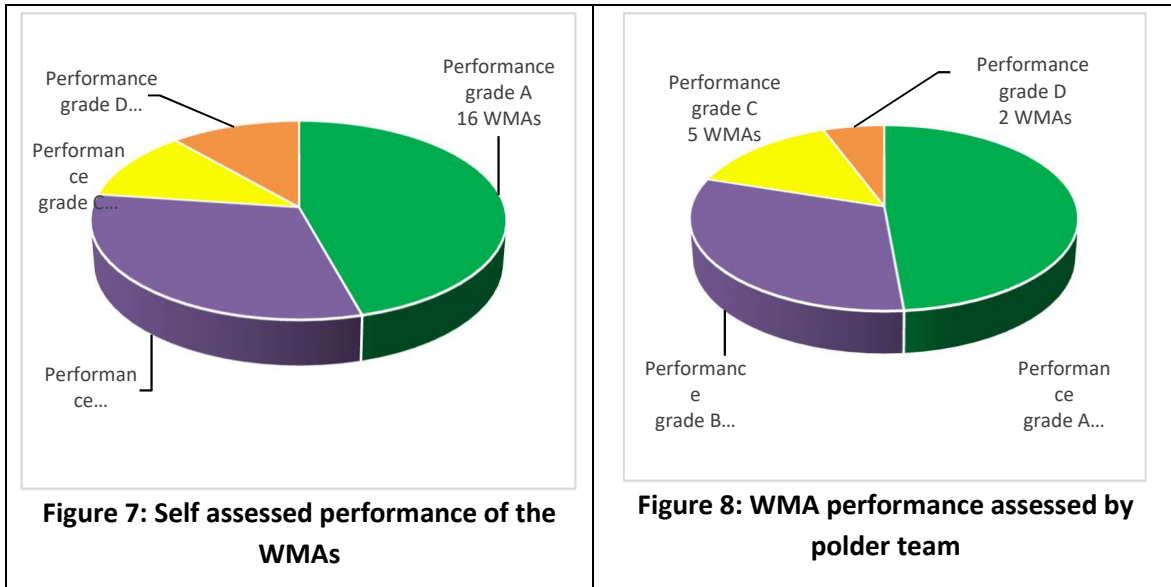
The charts below show the distribution of 511 WMGs into performance groups.



It is noteworthy that performance levels of about 93% of the total number of WMGs are of top 2 grades ('A' & 'B') as per WMGs’ self-assessment, and about 91% as per the assessment of polder teams; thus both the assessments indicate a progress in the performance of WMGs: in the previous round of PM 73% WMGs ranked in top 2 performance groups according to self-assessment of WMGs, while 74% WMGs were reported to belong to top 2 performance groups as per polder teams’ assessment.

➤ **Participatory Monitoring of Water Management Associations**

A total of 35 WMAs, out of 36 WMAs formed in 22 BGP polders, participated in the PM exercise. Based on the progress they reported, WMAs have been ranked in 5 performance grades (A – E). The results of PM show that performance grade of about 46% of the total number of WMAs is 'A', overall achievement being 80% or more. The polder teams agree with the self-assessments of WMAs to a large extent but they do have different views on performance of some WMAs. Distribution of WMAs into performance groups as per WMAs’ self-assessment and polder teams’ assessment is reflected in the following charts:



The second round of participatory monitoring was conducted by WMAs of Blue Gold polders in October 2019. The WMAs assessed their progress against 10 outcome challenges under 3 themes and indicated the progress they achieved vis-à-vis the outcome challenges by using scores. It may be noted that the outcome challenges taken into account in PM at WMA level underscore the functionality indicators identified by Blue Gold professionals.

It is noteworthy that performance levels of about 77% of the total number of WMAs are of 2 top grades ('A' & 'B') as per WMAs' self-assessment, and about 80%, as per the assessment of polder teams. On the other hand, there is no WMA that ranks itself in the lowest grade ('E'), nor do the polder teams.

## 2.5 Value Chain Improvements

### Introduction

Strengthened Value Chains (SVC) workgroup activities were mostly focused on improving forward market linkages for target beneficiaries. In Patuakhali zone, three linkage building and information sharing workshops were organized for newly formed WMAs and private sector actors. A total of 124 participants took part at those events. Capacity building training were organized for 117 resource farmers (RFs) who lead participants of cycle 13 TA FFS. This training will help them organize profitable collective actions and motivate them to develop as micro or small enterprises. Market visits were also organized for 118 RFs to give them opportunity to meet different market actors face to face and learn about the trade. A total of 120 FFDs were organized where 15,745 visitors took part and learnt about TA FFS experience. As part of demonstration to show economic potential from adopting relatively short duration HYV rice, additional crop and market linkages in suitable locations, by collective effort in water resource management, Cropping Intensity Initiative (CII) was implemented in 13 WMGs. A total of 131 farmers were involved in CII that covered 47 acres of land. SVC is working hard to create sustainable relationship among private companies and producers. Different companies have set 17 demonstrations with 9 WMGs and related lead farmers of BGP to promote their products and share improved technologies during this period. As part of sharing SVC work group implementation results with concerned extension stakeholders,

sharing events were organized on fisheries interventions of BGP and their economic outcome. Two such events were organized with 135 participants at Khulna and Patuakhali, where DoF high officials, WMA along with other value chain actors took part. In pursuit of developing capacity in forward linkage for vegetable growing RFs, as well as to show ways of additional income generation, two events with 74 RFs were organized at zonal level. Different value chain actors took part at the events where different methods in cleaning, grading, shorting and packaging of vegetables were demonstrated. It was hoped that such initiative will help participants to market good quality product with premium price.

### Bringing Change

Capacity building training of RFs, who are mostly female, and organizing subsequent market visit for them have created tremendous enthusiasm. For many, this was the very first opportunity to meet, learn and observe different backward and forward market actors in real location. These practical initiatives have resulted many RFs to develop as micro or small entrepreneurs. Female farmers could engage in procuring inputs, producing vegetables, eggs and birds using homestead space, initiating collective actions and earning additional income. As a result, both house hold level income for FFS participants and local input businesses increased. Farmers are more eager to organize collective actions at the time of rice or water melon seed purchase and are showing interest in collective selling rather than individual selling. The acceptance of the idea, 'agriculture is a business', has encouraged farmers to invest in production process as well as for improving water resource management with the hope of getting relatively high return. This effect is evident in more than expected expansion of water melon and mung cultivation in BGP areas.

### Trends

BGP beneficiaries are now more profit oriented, looking constantly for growing more profit-making crops. There are positive signs of additional Kharif I crop in Patuakhali, Mung growing area is expanding. Not only that vegetable cultivation area is also increasing. Farmers are searching for more profitable crops, more inquisitive in adopting HYV crops, even selecting rice and other varieties considering productivity and earning opportunities. Thus, information sourcing is increasing. Many farmers are using online and offline information services and communicating more with extension service providers. Different private companies are engaging qualified extension service providers to promote HYV and hybrid seeds. Unfortunately, price fluctuation of rice and other commodity during harvest season is nullifying a lot of SVC interventions.

### Challenges, Mitigation Measures and Lessons Learned

Unstable price for crucial products like rice can be considered a major challenge for BGP beneficiaries since core of SVC was to encourage increase in rice production, promote additional crop and subsequent income. Volatile market situation affects farmers decision making. Often farmers find themselves in a situation where input prices go up but selling price for rice goes down, making rice production not so profitable. Moreover, it is not easy to find avenue where WMA and private sector will find win-win situation. Private sector is profit motivated where WMAs are often guided by altruism. Thus, achieving right balance in collaboration among these parties is challenging. Not only that, WMOs are heterogenous organization with members of different motives and contradictory livelihood strategies. Thus, success of collective actions in any particular value chain can suffer from lack of participation from majority of members. Moreover,

weather was not so favorable throughout Aman season, causing obstacle in implementing relevant interventions. As a result, SVC initiatives often aimed at educating farmers on -reducing production cost, adopting profitable crop or collective selling to attract higher price- considered often not enforceable. However, there will be more effort to strengthen linkages with private sector and WMAs to leave a process behind for the benefit of farmers. SVC will utilize local resources e.g. farmer trainers (FTs) in its effort to transfer improved production technologies and market linkages, not only to improve farmer capacity but also to make the process sustainable.

Consolidation of different interventions is very crucial. SVC had already organized and has planned to organize more sharing events with different extension agencies about implemented interventions with a view that the success will not deplete in time but these can be incorporated in other similar development initiatives.

### Strengthened supply chain by developing an actor: A success tory

Dakhin Purbo Badura WMG is in polder 43/2B. Blue Gold organized a Farmers Field School (FFS) in that area. Halim Hawlader is a Resource Farmer (RF) as well as a member of that WMG. Blue Gold SVC team organized different capacity building initiatives for the RFs. As a part of capacity building, SVC team organized a market visit for RFs to make them understand how markets function and to help establish initial business linkage for future collaboration. Halim was a very enthusiastic participant of that visit. During the visit, participants could meet and discuss with different input and output market actors. They could learn about their day to day activities and tried to find ways for future business collaboration. Halim collected mobile numbers and addresses of each output market actors and started communicating with them for necessary information. In this way he could develop linkage with Md. Mamun, one of the fish *arotdar cum paiker* at Amkhola bazar. Halim organized WMG members for collectively selling fish from farm gate instead of Amkhola bazar. When WMG members agreed to engage in collective selling, he communicated with Mamun and fixed prices for different species of fish. He shared price information with WMG members to ensure transparency and to avoid any confusion among participants of collective selling. As a result, 15 members of the group jointly sold 440 kg fish valued at Tk.77,200.00 (Table 16).

**Table 19: Table: Information on Fish Collective Action**

SL	Name of fish	Amount (Kg)	Price/kg (TK)	Total price (Tk)
1	Ruhi	80	200	16000
2	Katol	40	240	9600
3	Mrigal	40	170	6800
4	Minarcarp	40	220	8800
5	silvercarp	120	140	16800
6	Talapia	40	120	4800
7	Rajputi	80	180	14400
	Total	440		77200

The members explained the benefit of collective selling of fish. They claimed to have saved money in harvesting cost, transportation cost, labor cost, market toll and *arot* commission. Moreover, each farmer believed to have saved minimum time of half a day for this task. Farmers were also happy about the price they got from *arotder*. All members of collective selling group were thankful to Halim for taking such initiative and for his sincere assistance. It enabled participants to save a lot of effort as they could deliver their fish at farm gate and receive payment in the same place later that day. At the same time, Halim received Tk. 03 commission per kg of fish from the *arotder*. It encouraged him to search for more such options of additional income, collective actions in input procurement and output delivery for groups of farmers, not only in fish but also in vegetable, poultry bird, egg, rice and other agricultural commodities. Farmers who participated at the collective actions shared all relevant expenses and were generous enough to compensate his effort and time. This success, motivated Halim, a RF trained by BGP, to transform from just a good farmer to a supply chain actor, evolve as a microenterprise.

The buyer, Mamun was also very happy, expressed his deep satisfaction as he could purchase 440 kg of fish from a single source. He was happy with the quality of fish and it could save a lot of his effort. He was more than eager to extend support to Halim as a supply chain actor in fish and other commodities.

### 2.5.1 Collective Actions for Economic Development

Blue Gold Program (BGP) is continuously facilitating to improve collective action (CA) coordination approach among polder dwellers. From the beginning of MFS program, BGP tried to encourage CA, often in the form of new business ideas, so that both buyers & sellers can enjoy economic benefit and there is a win-win situation among all concerned. To achieve collective activities within WMGs, BGP facilitated workshops to promote collective activities and business planning involving concerned public –private entities. Involvement of private companies and input-output market actors were particularly helpful for WMG members as it could strengthen linkages and networking ability. By taking part at CAs, farmers benefit both economically and technically.

BGP has been linking Resource Farmers (RFs), WMG leaders with private seed companies and input retailers. So that WMG members can play a role to purchase quality seed from reliable sources within a reasonable price. BGP is also facilitating linkages among WMGs and different private sector value chain actors. In the meanwhile, WMG members can take decisions and participate in CA for input purchase and for output selling independently.

WMG members are engaged in different types of collective actions for economic development. The benefits they see in collective actions include reduced transaction costs and the opportunity of exercising bargaining power. As shown in the table 19, a cumulative total of 87,824 WMG members (64% of the total membership, but some double-counting between different years may have occurred) were involved in economic collective actions by June 2019. The involvement of WMG members in collective action has substantially increased since BGP started promoting and monitoring this in 2016/2017.

Table 20: Participation of WMG members in different collective actions for Economic Activities

Economic Activities	Results up to June 2019 (Source: WMG Tracker)		
	No. of Participants	% of Female	Investment (BDT)
Selling products	7,975	26	29,315,359
Tillage land for crops	7,470	12	13,642,230
Purchase of seeds	17,302	21	11,504,729
Purchase of pesticide	13,084	16	7,388,630
Purchase of fertilizer	9,083	58	6,796,835
Community-led fish culture	1,881	33	5,305,340
Purchase of fingerling	2,570	23	2,448,365
Purchase of fish Feed	3,152	22	2,158,740
Irrigation of Ag. Land	1,662	13	1,310,460
Vaccination of poultry & livestock	19,666	59	713,898
Purchase of lime	3,060	36	563,545
Bulking	465	63	457,950
Collection & sale of milk at chilling cent.	48	31	11,250
Others	406	77	413,300
Total	87,824	37	82,030,631

## 2.6 Gender Equality & Women Empowerment

### Introduction

The Blue Gold Program aimed to ensure reducing gender inequalities and enhancing women's empowerment by integrating attention to gender into its interventions and by implementing selected gender specific activities. Attention to gender also aims to contribute to better achieving BGP's overall objectives.

### Major Achievements

- In the new polders the Gender and Leadership Development training with a new approach (5 informal sessions per group) continued successfully. In the reporting period, 5214 women were trained and 2799 men.
- Gender court yard sessions, which are one-off gender awareness session, also continued, both in old and new polders, reaching 1928 men and 3685 women in the reporting period.
- The gender flip charts continued to be used in FFS sessions (in 101 sessions with 2159 women and 366 men) integrating gender messages in the FFS curriculum.



- In the reporting period 4 trainings on market linkages and women's empowerment were held, 2 joint workshops on women's empowerment with Union Parishads, and 3 Horizontal Learning events with a special focus on women's empowerment. Total participants 304, among them 253 women.
- By the above training women have become more aware, which often formed a trigger for them to engage in productive work and in participatory water management. Women also started to motivate their husbands to take up a share of domestic work. Male participants became more aware of the workload of women and their contributions to income. There is now more joint decision-making.

**Success story:** Beauty Begum in polder 47/3 said that attending a gender court yard session and gender and leadership development training had raised her interest to engage in productive work and to become WMG member; later she even was elected as vice-president.

- Interviews with Blue Gold staff at central, zonal and polder level were held in July to gauge their experiences on how BGP contributed to women's empowerment. In the context of documenting lessons learnt, the core messages on women's empowerment were prepared, as well as an overview of gender disaggregated monitoring data from various BGP sources.
- Based on the above, first versions of communication materials were developed with Big Blue, such as the women's empowerment slide deck and several case study handouts.
- In November 2019 an adjusted version of this slide deck was used for a learning event within Mott Macdonald on women's economic empowerment.

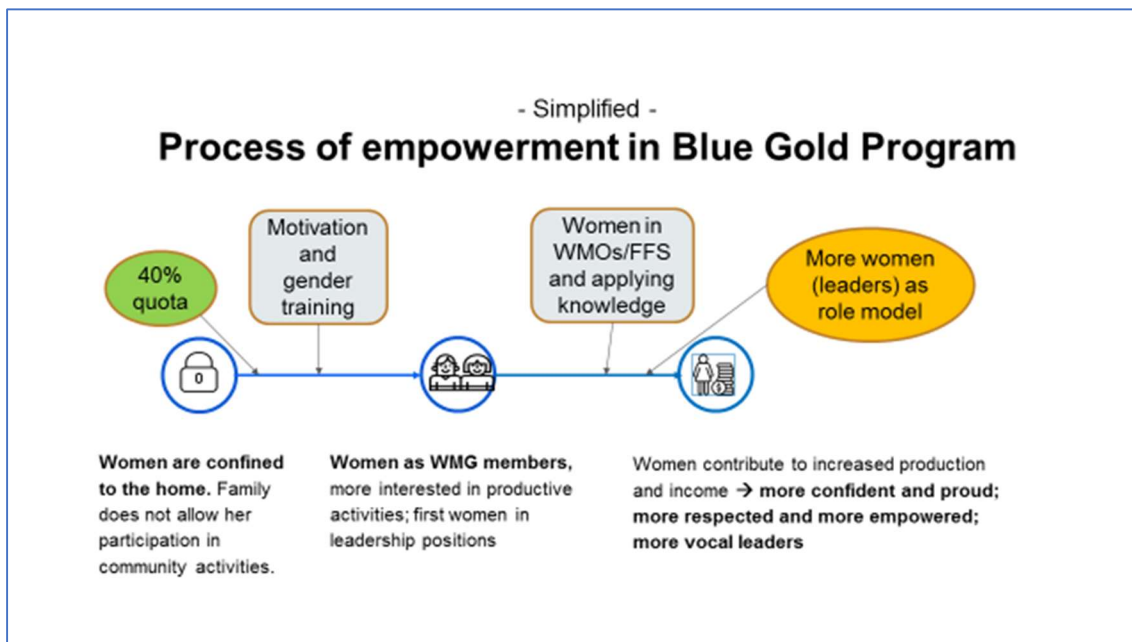
### Bringing Change

- The information collected through the interviews and other data collection, including women's stories, gave a consistent view of the change brought during Blue Gold. Quite surprisingly, several interviewees, especially polder staff, mentioned the 40% quota for women as WMG members as an important incentive for them to motivate also women to join WMGs. Once WMG member, women took opportunities to participate in training, including FFS, which subsequently led to more empowerment, see the below schedule.
- The interviews with BGP staff confirmed that women's empowerment also contributed to better achieving the overall objectives of Blue Gold. As one female CDF even said: *"If BGP would not have paid attention to women, it would not have achieved its objectives"*.
- Women's leadership in BGP polders is increasingly recognised. An example is Parveen, who became a leader as WMG joint secretary, and is now invited by educational institutions as a special guest for inspirational speeches.

### Trends

- Almost all women who participated in specific gender activities react very enthusiastically, the new insights serving as eye-opener to them and motivating them to take new steps. Though their workload often increases, they value and apply newly gained knowledge and are proud of their contribution to household production and/or income. Also for men the participation in gender training can be an eye-opener, eg recognizing women's work load.

- Though the proportion of women leaders in WMOs remains considerably less than that of male leaders, the quality of women leaders has definitely increased during the Blue Gold Program. This is also confirmed by the fact that in committees without a women’s quota, such as the O&M subcommittees, also women are elected, only based on their qualities.
- The analysed data confirmed the view that paying attention to gender issues is a positive factor in achieving Blue Gold’s overall objectives, such as economic development, livelihoods improvements and poverty reduction.



**Figure 9: Process of empowerment in Blue Gold Program**

## Challenges, Mitigation Measures and Lessons Learned

- A main challenge remains the limited amount of quantitative data related to actual women’s empowerment. There is ample evidence that BGP contributed to women’s empowerment, but there is less insight in the scale that this occurs. This may be mitigated by including relevant questions in the endline survey.
- The low and even decreasing proportion of female staff in the BGP team remains a challenge, as well as the need to continue addressing issues related to a women friendly working environment.
- Much energy was put into developing a short project on Feminization of Agriculture with ActionAid Bangladesh as implementing partner. Unfortunately, AAB withdraw during the inception period for various reasons, such as suitable in-house staff being unavailable. The option to have a study done by GWA will be investigated.
- An important lesson learnt is that gender mainstreaming, including the use of quota, really can work, but given that it is combined with selected specific gender activities.

### 2.7 Horizontal Learning & Communications

According to BGP principles, WMOs are the driving force for change. Blue Gold's Horizontal Learning (HL) program is led by WMGs and supported by the implementing agencies (BWDB and DAE) and LGIs. HL and partnerships are contributing to agricultural and economic development, environmental sustainability and finally to livelihood improvement.

#### Major achievements in regard to horizontal learning and communication:

Accelerating capacity building of WMOs which is facilitated by BGP communication team and through horizontal learning those activities are spreading among the polder dwellers. During this period, Communication and horizontal learning team organized variety of activities especially for the capacity building of WMA. Horizontal learning is become a platform for WMOs by using this platform they are sharing good practices, learning new things, getting opportunity to introduce with new technologies.

During this reporting period total number of horizontal learning events was 18 ( in Patuakhali 6 events with 177 male and 33 female participants; in Khulna 9 events with 210 male and 57 female participants; in Satkhira 3 events with 72 male and 48 female participants)

Barta and Trend watcher is our regular publication covering recent event, success stories and project updates. During this reporting period, we have published 16<sup>th</sup> issue of BARTA and 5<sup>th</sup> & 6<sup>th</sup> issue of Trend Watcher. The visual documentation is one of the important activities of communications team. We are developing event wise videos for the community and using these videos to inspire them through video screening. In addition, our process documentary is a live evidence of BGP interventions.

We are regularly updating BGP Facebook page and Website. Through this media, we are reaching to a vast audience. Mela & festivals are the exceptional opportunities for big gatherings, through these events BGP is disseminating new technologies, technic and information. Different festoons on different topics have been developed and are using during workshop, training, seminar and conference. Horizontal learning is building partnerships and contributing to scaling up good practices related to improving the productivity and profitability of agriculture especially in CAWM, CII and poultry rearing.

#### Bringing change

The horizontal learning program is working as an extension agent. Good practises, success stories, initiatives of WMOs are spreading quickly through this program. Our festoons containing O&M related pictures and massages are very inspiring for WMGs in O&M activities. Through our video screening, community people have introduced and aware about new technology and information. Now days, the agricultural labour is difficult to find and the agricultural machineries are taking place of them. Our Mela and festivals is place where farmers have the opportunities to introduce with these technologies and adopt them.

## Challenges, Mitigation Measures and Lessons Learned

Collecting information for BARTA, factsheets, success stories from polders is a challenge. The proper use of BARTA and Factsheets by CDFs is another challenge. CDFs are doing monthly meeting in a regular basis but they are not very much interested to motivate WMG to use the publications. Organising events like horizontal learning, video screening is also a challenge for communications. Now, the communication specialist of BGP is attending the monthly zonal coordination meetings, requesting the community people in person and keeping regular communication with them over phone. He is also motivating CDFs, so, now they are taking some initiatives. At the same time, CDFs are helping to implement all communications related activities.

### Case study

Md. Anwar Hossain is the president of Amtoli khal, WMG polder 47/4. He is a businessman; he lost his everything after a great loss in his business. He became indebted. Later he sold 15 decimals of his land. To overcome this situation, his elder daughter started work at garment and his wife started swing. His wife also a member of FFS school from there she learns the new technologies of poultry rearing.

In the same polder, another farmer named Md. Firoz Mattobber who is already an established poultry farmer (rearing duck) and earning a good amount of money. A horizontal learning event was organized by Shanirvor Khal WMG at the house of Feroz Mattubber, where Anwar joined as participants. After attending the event Anwar felt guilty because after having all the facilities why he was not starting duck business. After the event, immediately he prepared a plan to start duck rearing business. As per the plan he, purchased 200 duckling by 6600 taka. After 2 months and 15 days he got 31,150 taka by selling his first batch. After all expenditures, his net profit was 13000 taka. At present he has 1025 ducks and 30 chicken. Now a days he is earning 10000 taka per month. He is very grateful to Shanirvor Khal WMG and BGP for organizing such an event.



**Figure 10: Md. Anwar Hossain's Duck firm**

### 3 Polder Level Progress

#### 3.1 Progress of Water Management

Polder	Polder wise trends of water resource management
22	<ul style="list-style-type: none"> <li>• 2 WMGs have collected 8,800/- as O&amp;M fund.</li> <li>• 7 WMGs have removed cross-dam engaging 75 self-contributory labors</li> <li>• Jointly with UP and with the help of WMA, Kalinagar WMG has established temporarily embankment at river erosion point Kalinagar</li> <li>• Re-sectioning of Embankment was done 0.11 Km</li> <li>• Retired Embankment was constructed 0.5 Km</li> <li>• Low Cost Bank Protection Work was completed upto 0.085 Km</li> <li>• Flood damage repair/Breach closing was done 0.17km</li> <li>• Significant river erosion at Kalinagar, Durgapur and Telekhali (Challenges)</li> </ul>
25	<ul style="list-style-type: none"> <li>• Hari-Badra WMA and respective 3 Union Parishads and Upazila Parishad have jointly moved silt from both sides of Keoratola Sluice by the contribution of Tk. 47,000/- from related 11 WMGs, UP &amp; UPz contributed Tk. 12,000/- and Tk. 60,000/- respectively. WMGs also engaged in 180 self-contributory labour for the purpose.</li> <li>• 43 WMGs have collected savings amounting to TK. 106,915/- and miscellaneous fee Tk. 332,524</li> <li>• WMA/Catchment Committee and Union Parishad jointly removed silt from out fall of Chohera Sluice/Regulator. Kharnia Union Parishad donated Tk. 15,000/- and WMGs engaged 196 self-contributory labour;</li> <li>• 5 WMGs have repaired embankment engaging 108 self-contributory labor;</li> <li>• Beel Dakatia WMA assisted Sholua Catchment O&amp;M Committee to make wooden gates for Sholua Sluice/Regulator;</li> <li>• 14 WMGs spent Tk. 49,550/- for maintenance of Sluice/Regulators, removal of water hyacinth, establishing/removal X dam etc.</li> <li>• 3 CAWM have successfully conducted by Department of Agriculture Extension (DAE) where 253 farmers were involved covering 45.26 ha of land;</li> <li>• Re-sectioning of Embankment- 3.6 km;</li> <li>• Re-excavation of Khals- 1.00 km.</li> <li>• Repair of Sluices- 4 nos.</li> <li>• Significant siltation of outfall khal of Keoratola and Chohera Sluice/Regulator (Challenges)</li> </ul>
27/1	<ul style="list-style-type: none"> <li>• 06 WMGs have collected savings amounting to TK. 4,930/- and miscellaneous fee Tk. 61,000/- (including CLF);</li> <li>• 4 WMGs have generated Tk. 8,000/- as O&amp;M fund and one WMG has utilised Tk. 600/- for embankment maintenance;</li> <li>• 4 WMGs have engaged 107 self-contributory labour for maintenance embankment, 3 WMGs have engaged 81 self-contributory labour for cleaning water hyacinth and 2 WMGs have engaged 20 self-contributory labour for silt removal. Union Parishad also participated in maintaining embankment;</li> <li>• Re-sectioning of Embankment 3.5 Km;</li> <li>• Repair Sluices with gates 4 nos.</li> <li>• The Polder is very close to Upazila that's why it is very difficult to involve WMG member in different collective activities for water management and economic development (Challenges)</li> </ul>

Polder	Polder wise trends of water resource management
<b>27/2</b>	<ul style="list-style-type: none"> <li>● 2 (two) WMGs have collected savings amounting to TK. 24,000/- and miscellaneous fee Tk. 9,100/-;</li> <li>● 2 (two) WMGs have generated Tk. 11,000/- as O&amp;M fund and one WMG has utilised Tk. 600 for embankment maintenance;</li> <li>● 3 WMGs have engaged 112 self-contributory labour for excavating field channel, one WMG has engaged 42 self-contributory labour for cleaning water hyacinth and one WMG has engaged 6 self-contributory labour for making wooden gate for Sluice.</li> <li>● The Polder is very close to Upazila that's why it is very difficult to involve WMG member in different collective activities for water management and economic development (Challenges)</li> </ul>
<b>28/1</b>	<ul style="list-style-type: none"> <li>● 06 WMGs have collected savings amounting to TK. 47,80/- and miscellaneous fee Tk. 28,041/-;</li> <li>● 2 WMGs have generated Tk. 6,140/- as O&amp;M fund and one WMG has utilised Tk. 6000/- for making wooden gate of Panchu Sluice;</li> <li>● 4 WMGs have engaged 380 self-contributory labour for cleaning water hyacinth from khals;</li> <li>● Re-sectioning of Embankment 3.6 Km;</li> <li>● Repair of Sluices 5 nos.;</li> <li>● Water logging due to inactive Sluices and silted khal (Challenges)</li> </ul>
<b>28/2</b>	<ul style="list-style-type: none"> <li>● 10 WMGs have collected savings amounting to TK. 60,060/- and miscellaneous fee Tk. 22,616/-</li> <li>● 3 WMGs have generated Tk. 9,520/- as O&amp;M fund and 2 WMGs have utilised Tk. 4,700/- for sluice and embankment maintenance;</li> <li>● Construction of box culvert under SSWMI by sharing Tk.58,456.41/- from own contribution.</li> <li>● Re-sectioning of Embankment 1.43 Km;</li> <li>● Repair of Sluices 4 nos.;</li> <li>● Construction of Drainage Sluice 1 no.;</li> <li>● The polder is very close to Khulna City that's why it is very difficult to involve WMG members in different collective activities for water management and economic development (Challenges)</li> </ul>
<b>29</b>	<ul style="list-style-type: none"> <li>● 41 WMGs have collected savings amounting to TK. 504,200/- and miscellaneous fee Tk. 32,50,957/- (including Service charge of loan);</li> <li>● 15 WMGs have generated Tk. 41,425/- as O&amp;M fund and 16 WMGs have utilised Tk. 51,600/- for embankment repairing, establishing X dams, cleaning of water hyacinths, etc.;</li> <li>● 5 WMGs have engaged 400 self-contributory labour to protect river bank erosion at Baro-Aria where Union Parishad donated Tk. 7,000/- and Upazila Parishad donated Tk. 600,000/- in Cash</li> <li>● 3 WMGs engaged 285 self-contributory labour for repairing ghoghs and rain cut of embankment</li> <li>● 30 WMGs engaged 825 self-contributory labour for cleaning water hyacinths and removal net-patta from khals;</li> <li>● The Telekhali WMG eliminated illegal occupation from the canal and sluice by resolving the sluice-centered conflicts led by them last October 2019.</li> <li>● 7 WMGs have engaged 155 self-contributory labour for establishing cross dam to protect saline water as well as reserve sweet water for cultivating rabi crops.</li> <li>● Re-sectioning of Embankment 2.72 Km;</li> <li>● Construction of Drainage Sluice 1 no.;</li> <li>● Low Cost Protection Work 0.085 Km</li> </ul>

Polder	Polder wise trends of water resource management
<b>30</b>	<ul style="list-style-type: none"> <li>● Low Cost Protection Work 0.085 Km</li> <li>● 8 WMGs have collected 41,425/- and 11 WMGs have utilised Tk. 18,330/- WMGs for establishing/removing X dam, cleaning water hyacinth, maintenance of Sluice gates, etc.;</li> <li>● 24 WMGs have engaged 658 self-contributory labour for cross dam establishment/removal, cleaning water hyacinth, removal net patta, excavation of field channels, etc</li> <li>● 9 WMGs have removed cross dam before T. Aman season and 1 WMG has established cross dam for cultivating rabi crop</li> <li>● By the request of WMA, Upazila Nirbahi Officer (UNO) has conducted Mobile Court to remove net patta from khals;</li> <li>● Stop Leasing out khals by local Administration (Challenge)</li> <li>● Completion of Khejurtola Sluice/Regulator in due time (Challenge)</li> </ul>
<b>31-Part</b>	<ul style="list-style-type: none"> <li>● 8 Water Management Groups (WMGs) have collected savings amounting to TK. 20,640/- and miscellaneous fee Tk. 33,630/-;</li> <li>● One WMG has repaired gates of one Sluice;</li> <li>● Retired Embankment 0.76 Km;</li> <li>● Repair Sluice with gates 4 nos.;</li> <li>● Construction of drainage sluice 2 nos.;</li> <li>● By the assistance of Union Parishad, 30 members and non-members of one WMG has involved in maintenance of embankment;</li> <li>● Intervention of UP Chairman in WMA's activities. (Challenges)</li> </ul>
<b>26</b>	<ul style="list-style-type: none"> <li>● 5 (five) WMGs have collected savings amounting to TK. 25,245/- and miscellaneous fee Tk. 8,730/- (4% of LCS Service Charge);</li> <li>● 9 WMGs have removed silt from outfall of 9 Sluices, 10 WMGs have cleaned water hyacinth from khals by engaging self-contributory labour and 6 WMGs (involving Union Parishad) have repaired embankment;</li> <li>● Significant siltation in the outfall of Sluices/Regulators; (Challenges)</li> <li>● Conflict between Chairman of WMA and Union Parishad. (Challenges)</li> </ul>
<b>34/2</b>	<ul style="list-style-type: none"> <li>● 12 (twelve) WMGs had collected savings amounting to TK. 9,840/- and miscellaneous fee Tk. 91,862/- (including 4% of LCS Service Charge);</li> <li>● According to the joint meeting decision of Bhandercote UP and respective WMA/WMG, Purba Halia and Paschim Halia WMG have collected Tk. 184,000/- from 184 HH and established 2 (two) wooden box culvert over cross dam made for construction of Purba Halia Sluice/Regulator by utilizing the same amount.</li> <li>● 2 WMGs and Bhandercote UP jointly repaired cross dam made for construction of Purba Halia Sluice engaging 105 members and non-members;</li> <li>● 4 WMGs have collected Tk. 21,940/- as O&amp;M fees;</li> <li>● 6 (six) excavated/repaired field channel by involving self-contribution labor;</li> <li>● 3 (three) CAWM had successfully conducted by Department of Agriculture (DAE) where 256 nos. of farmers were involved covering 56.68 ha of land;</li> <li>● Re-sectioning of Embankment 4.12 Km;</li> <li>● Retired Embankment 0.875 Km;</li> <li>● Construction of Drainage Sluice 2 nos.</li> <li>● Flood damage repair/Breach closing 1.39 Km</li> <li>● Significant river erosion Bujbunia, Kariavita, Shiyalidanga and West Halia (Challenges)</li> </ul>

Polder	Polder wise trends of water resource management
43/2B	<ul style="list-style-type: none"> <li>● Middle Amkhola and Ramdhola water management groups have removed water hyacinth from 2 Khals which length is 650m</li> <li>● Algi Chalitabunia WMG has constructed 70 m dyke along the Khal which helped water management of 47 acres of land and they made an internal channel of 70 m which enabled 20 acres of land to be under rabi crop cultivation.</li> <li>● 9 WMGs removed illegal nets and obstacle from the Khals with the help of WMA</li> <li>● BWDB provided a chain- coppa for Masuakhali sluice which help to operate the sluice easily</li> <li>● After cyclone Bulbul, the Ramdula water management group made internal channel to remove water from the field which saved 50 acres of land from water logging.</li> <li>● With the help of LGED, Masurikhati WMG made a culvert at the end part of masurikati canal.</li> <li>● Construction work of three vent Bauria and Masurikati sluice is going on. About 90% and 65% activity has already been completed.</li> <li>● Outlet construction in Nurakhali and Machuakhali is completed 75% and 92%.</li> </ul>
43/2D	<ul style="list-style-type: none"> <li>● Cleaning/removal of silt from the base of 14 inlets and 1 outlet for smooth functioning of the structures</li> <li>● 5 WMGs have repaired 45 m (9 Ghogs) long embankment</li> <li>● Removal of water hyacinth from 11 Khals (total 9.7 Km long) by 12 WMGs of the Polder.</li> <li>● Patukhali WMG has repaired gate, hook and nuts of Jhapua sluice.</li> <li>● Removed huge “Kata” &amp; Nets (22 no.) from 8 Khals by 5 WMGs by getting assistance from WMA, UP and Upazila Parishad for creating smooth water flow in the Polder areas.</li> </ul>
43/2E	<ul style="list-style-type: none"> <li>● Cleaning/removal of silt from the base of 8 inlets and 1 outlet by 5 WMGs for smooth functioning of the structures.</li> <li>● 2 WMGs have repaired 80 ft. (4 Ghogs) long embankment.</li> <li>● Removal of water hyacinth from 4 Khals (total 2.8 Km long) by 4 WMGs to increase smooth water flow in the Polder areas</li> <li>● As part of sluice maintenance work, 3 WMGs have repaired wheel of Katakhal &amp; Suddurbaria sluices</li> <li>● Removed huge “Kata” &amp; Nets (27 no.) from 4 Khals by 6 WMGs by getting assistance from WMA, UP and Upazila Parishad for creating smooth water flow in the Polder areas.</li> </ul>
43/2F	<ul style="list-style-type: none"> <li>● Uttarkhakuani WMG installed 03 drainage pipe each 18 ft length which benefitted to remove water logging of 150 acre of land.</li> <li>● Three gated pipes are almost 90% completed at pubogulisakhali WMG.</li> <li>● Construction of Khakuani two vent and Moradhona one vent sluice has been completed almost 80%. CC block casting is going on Khakuani sluice. Progress of Moradhona sluice is about 60%.</li> <li>● Outlet construction in North Kalagachia is 60%, Pasrchim Kolagachia is 25% and Ghoser khal is 10%</li> <li>● Tk.56,980 has been collected as operation and maintenance fund</li> <li>● For smooth flow of water, Bazarkhali water management group removed water hyacinth from canal through which 200 acres of land safe from water lodging</li> <li>● 9 WMG removed illegal nets and obstacle from the canal with the help of WMA and Union parishad chairman</li> <li>● Uttargozkhali and Dakhin haridrbaria Water Management Group repaired two rain-cut which were damaged during the rainy season</li> </ul>



Polder	Polder wise trends of water resource management
<b>55/2C</b>	<ul style="list-style-type: none"> <li>● 2 out of 7 sluices are repaired</li> <li>● 6 WMGs have repaired 50 m long embankment by removing ghogs</li> <li>● Removal of water hyacinth from five <i>Khals</i> (total 3 Km long) by 5 WMGs to increase smooth water flow</li> <li>● Evacuation of cross-bandh from 4 <i>Khals</i> by 4 WMGs by the help of WMA, UP and representatives from Local MP</li> <li>● Removed huge “Kata” &amp; Nets from 5 <i>Khals</i> by 7 WMGs</li> <li>● Ulashir Khal WMG has prepared a wooden fall-board for an existing box-culvert</li> <li>● During the reporting period, total Tk.65,900.00 has been collected by 16 WMGs as O&amp;M fund and this period savings collection by them was total Tk.1,15,300.00</li> </ul>
<b>43/1A</b>	<ul style="list-style-type: none"> <li>● Paschim Sonakhali WMG and Amtola-Chawla WMA jointly have cleaned water hyacinth from Amtola branch khal-1km</li> <li>● 5 WMGs and 2 WMAs jointly removed fishing net, other Kata and illegal obstacles from 5 different khals</li> <li>● 3 WMGs and WMA jointly repaired hole of Embankment</li> <li>● BADC has re-excavated 5km. khal and installed 82 no. of RCC pipe which are benefiting crops of 650ha land</li> </ul>
<b>43/2A</b>	<ul style="list-style-type: none"> <li>● Embankment protection works done 20 m at Chalitabunia and Nandipara area</li> <li>● Khatashia Sluice (3 Vent) and 2 Outlets (Bashtala Khal &amp; Ponditer Khal Outlet) construction work is going-on</li> <li>● 6 WMGs, Union Parishad and WMA jointly have cleaned water hyacinth, remove fishing net and other illegal obstacles from Kalir Khal-2km, Panditer Khal-0.5km, Farider Khal-0.5km, Chakor Barrier Khal-0.7km and Ghater Khal-0.8km</li> <li>● 2 WMGs and Union Parishad jointly have constructed 3 gated Pipe Culvert</li> <li>● 2 WMGs made 3 wooden gates for pipe culvert, that total cost tk. 10,000</li> <li>● 3 WMGs have excavated 250m field channel</li> <li>● Khatashia-Titkata Sluice WMA has been removed cross dam from Titkata main</li> <li>● Paschim Matibanga WMGs and SWIFT Project through co-funding have excavated 350m field channel</li> <li>● WMGs has raised Tk. 9,000 as O&amp;M fund</li> </ul>
<b>47/3</b>	<ul style="list-style-type: none"> <li>● 3 WMGs have excavated 250m field channel</li> <li>● BWDB has installed Flap Gate and Vertical Gate of 7 sluices</li> <li>● Block placement has been completed at 3 sluices</li> <li>● Before installation of gates at sluices by BWDB, 2 WMGs 3 wooden gates to manage water in the WMG areas, which reduced water logging of 650 acres of lands</li> <li>● 2 WMGs have made cross-bandh at 2 branch-Khal to store sweet-water for irrigation to Rabi crops of 150 acres</li> <li>● WMGs has raised Tk. 18,500 as O&amp;M fund</li> <li>● During hand-over of repaired sluices, wheel (Handle) of Golbunia sluice was not given to concern WMG for some political pressure. (Challenges)</li> </ul>
<b>47/4</b>	<ul style="list-style-type: none"> <li>● Hetalbunia WMG constructed a wooden box culvert to drain out excess water (waterlogging) from Modiar Beel (around 50 acre)</li> <li>● Amtoli, Ayum para and Dhulasar Khal WMG removed water hyacinth from 450 m canal.</li> <li>● 3 WMGs – Boltoli-Tarikata-Noyakata, Pakshiapara, Khekar Khal WMG constructed three cross dams for preserving sweet water to irrigate rabi crops in the coming season around 1500 acre of land.</li> </ul>

Polder	Polder wise trends of water resource management
	<ul style="list-style-type: none"> <li>• 2 WMGs removed illegal fishing net from two khal with the administrative assistance from Balitoli UP and Upazila Nribahi Officer (UNO), Kalapara</li> <li>• During last 6 months, 9 WMGs have collected Tk. 47720 as O&amp;M funds.</li> <li>• The construction work of 17 sluices out of 26 have started.</li> <li>• As most of the sluices of this polder damaged (gate of the sluice), Farmers could not drain out the excess water from the field timely. As a result, most of the farmers could not transplanting Aman rice in right time. (Challenges)</li> <li>• 2 WMGs could not take over the full control on sluice management due to political influences. (Challenges)</li> <li>• Motivation of Farmers to construct cross dam for preserving sweet water in dry season.</li> <li>• Removal of cross dam and illegal fishing net from canal due to political influences. (Challenges)</li> </ul>
55/2A	<ul style="list-style-type: none"> <li>• Char Baloikati Outlet construction work is going-on, progress- 80%;</li> <li>• WMGs, WMA and BWDB have jointly removed fishing net, Kata and illegal obstacles from 9 different khal resulting improved water flow and natural fish have increased;</li> <li>• 3 WMGs and Union Parishad jointly constructed 3 Box Culvert for drainage water which are benefiting crops of 150 ha land;</li> <li>• 5 WMGs and SWIFT Project through co-funding have constructed 18 RCC Culvert which are benefiting crops of 364ha land;</li> <li>• Hazirhat Sluice WMG removed slush mud from naptanir khal about 1km which improved drainage system of 109 ha land;</li> <li>• 4 WMGs and WMA jointly have removed water hyacinths and cleaned water hyacinth, removed fishing net and other illegal obstacles from Hazirhat Khal-1.5km, Thakurhat Khal-1km, Gazigastola Khal-0.5m</li> <li>• Akhaibaria-Bahemous WMG and Kamalapur Union Parishad jointly have repaired embankment which are damaged by cyclone BULBUL, that total cost is tk. 12,000;</li> <li>• WMGs have raised Tk. 61,500 as O&amp;M fund</li> <li>• Due to the cyclone BULBUL, local varieties of rice were partial damaged and the Change crop could not be cultivated (Challenges)</li> <li>• Dharandi Sluice Construction work has stopped due court Case by local political people (Challenges)</li> </ul>
2	<ul style="list-style-type: none"> <li>• Resectioning embankment completed- 0.454 km</li> <li>• Re-excavation of Khal- completed-2.060 km</li> <li>• Construction of 2 new sluices are running (progress is approximately 90%).</li> <li>• Repair of 4 sluices are running (progress is approximately 65%)</li> <li>• 3 low cost temporary bank protective works with a length is 0.532 km are running (progress is approximately 90%).</li> <li>• Construction of 3 pump sheds are running (progress is approximately 95%).</li> <li>• Small Scale Water Management Infrastructure (SSWMI), out of 39 projects 28 projects have been completed and 2 are running with around 60% progress</li> <li>• Small scale infrastructure works at CAWM areas 6 completed out of 10 projects</li> <li>• O&amp;M fund generated Tk. 1, 970 by 4 WMGs</li> <li>• 13 WMGs implemented collective actions for operation and maintenance of infrastructures voluntarily which value in kinds is estimated Tk. 257,720</li> <li>• From 17 August to 26 August, lowest 15 labors and highest 155 labors, were worked voluntarily daily to remove congested slushy earth from the river side of Amodkhali sluice</li> </ul>

Polder	Polder wise trends of water resource management
	<ul style="list-style-type: none"><li>• The Moheswarkati Sluice WMA have established one cross dam at the point of Kolatola culvert</li><li>• Due to heavy rainfall before transplantation and cyclone Bulbul before harvesting aman rice, water logging condition was severe. To reduce the loss the WMAs in particular the SSM Sluice WMA and Amodkhali Sluice WMA jointly moved with Dhulihor, Fingri, Brahmarajpur and Labsa UP.</li></ul>

### 3.2 Increased Production & Profitability

Polder	Polder wise trends in agricultural Production and Profitability																		
22	<b>Progress of crop cultivation during Kharif-2/Aman season:</b>																		
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	<b>Land Area under different crops</b>	<b>Last year</b>	<b>This year</b>	
	Aman (local variety)	24%	22%	
	Aman HYV	76%	78%	
	<ul style="list-style-type: none"> <li>212 farmers have collectively purchased T. Aman seeds (BRRI dhan 49);</li> <li>One WMG has invested Tk. 35,000/- as IGA to 8 members for crop production;</li> </ul>			
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	<b>Land area under different crops</b>	<b>% of FFS farmer</b>	<b>% of non- FFS farmer</b>	<b>On an average income (TK) per month/year</b>
	Homestead gardening and Poultry	75%	67%	Tk. 2050/- per month
	Livestock	42%	40%	Tk. 1500/- per month
	Pond fisheries	80%	71%	Tk. 950/- per month
	<ul style="list-style-type: none"> <li>159 famers of 5 WMGs have collectively purchased Vaccination for Poultry;</li> <li>129 farmers of 5 WMGs have collectively sold eggs;</li> </ul>			
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	<b>Land Area under different crops</b>	<b>Last year</b>	<b>This year</b>	
	Aman (local variety)	5%	4%	
	Aman HYV	70%	71%	
	Others (vegetables & fish in ghar)	24%	24%	
	Fellow land	1%	1%	
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	Homestead gardening	79%	40%	Tk. 1950/- per month
	Livestock	22%	20%	Tk. 1800/- per month
	Pond fisheries	61%	20%	Tk. 1050/- per month



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43/2F	<b>Progress of crop cultivation during Kharif-2/Aman season:</b>		
	<b>Land Area under different crops</b>	<b>Last year</b>	<b>This year</b>
	Aman (local variety)	45	35
	Aman HYV	55	65
	<ul style="list-style-type: none"> <li>Tk.7,73,069.00 has been collected as savings fund by the 08 WMGs and 01 WMG (Dakhin Purbo Kalibari) invested Tk.1,82,778.00 as IGA</li> </ul>		
	<b>Using of learned technologies from Homebased FFS:</b>		
	<b>Land area under different crops</b>	<b>% of FFS farmer</b>	<b>% of non- FFS farmer</b>
	Homestead gardening and Poultry	77	25
	Livestock	40	5
	Pond fisheries	60	22
	CLF		Used only for self-consumption
	<ul style="list-style-type: none"> <li>Two group under Uttar Angulkata WMG did fish farming at Khal which areas is about 1.5 km where they invested Tk.67000.00 and they are expecting for good profit margin.</li> </ul>		
55/2C	<b>Progress of crop cultivation during Kharif-2/Aman season:</b>		
	<b>Land Area under different crops</b>	<b>Last year</b>	<b>This year</b>
	Aman (local variety)	53%	38%
	Aman HYV	45	58
	Others	2.0	3.87 (Betel leaf, vegetable, Gher, Grass & fruit orchard )
	<ul style="list-style-type: none"> <li>450 farmers have collected 2500 kg of rice seeds. 253 farmers have purchased 1.0 ton of chemical fertilizer in the Aman season. 210 farmers bought 450 pack of pesticide (Virtako) for rice fields</li> <li>Executed 4 demo (4 acre lands) at IPWM areas and 3 CAWM (83 ha) for crop synchronization and improve agriculture production through In-Polder water management.</li> </ul>		
	<b>Using of learned technologies from Homebased FFS:</b>		
	<b>Land area under different crops</b>	<b>% of FFS farmer</b>	<b>% of non- FFS farmer</b>
	Homestead gardening and Poultry	94	29
	Livestock	90	16
	Pond fisheries	85	28
	CLF		2600 - 3000 per beneficiary
	<ul style="list-style-type: none"> <li>50 fish farmers purchased 500 kg of fish feeds. Organized 35 poultry vaccination camp where 3200 chicks, 3000 baby chicks and 2700 ducks were vaccinated.</li> </ul>		

43/1A	<b>Progress of crop cultivation during Kharif-2/Aman season:</b>																						
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Fish	30	30																																	
Fellow land	15	28																																	
Land area under different crops	% of FFS farmer	% of non- FFS farmer	On an average income (TK) per month/year																																
Homestead gardening & Poultry	100	63	12000																																
Livestock	100	45	20000																																
Pond fisheries	100	38	10000																																

## 4 Monitoring, Reflection & Learning

### Major Achievements

- Collection, quality control and analysis of WMG Tracker data: Output data of WMGs of 22 polders for the quarter ending on 30 June 2019 were collected through WMG tracker during this reporting period. Data were checked by members of MRL Team on sample basis to ensure data quality. Based on these data, a report has been prepared and issued during this period as Working Paper 9H “WMG Tracker Final Report to June 2019”. Being the final report on WMG Tracker data, the (cumulative) achievements of WMGs to June 2019 have been compared with the (cumulative) achievements obtained at financial year endings since June 2014. A summary of output data of WMGs to June 2019, is given at Annex-A.
- Participatory Monitoring (PM) at WMG level: The seventh round of PM was conducted by WMGs in October 2019, in which a total of 511 WMGs of 22 BGP polders participated. Based on the monitoring results, a report has been prepared as Working Paper 8G. A summary of the PM at WMG level conducted in October 2019 is given in Section 2.3.4.
- Participatory Monitoring at WMA level: The second round of PM was conducted by WMAs in October 2019; a total of 35 WMAs of 22 BGP polders participated in the PM exercise. Based on the monitoring results, a report has been prepared as Working Paper 10B. A summary of the PM at WMA level conducted in October 2019 is given in Section 2.3.4.
- Impact study conducted in BGP polders: In response to the recommendation the Annual Review Mission 2017 to document ‘economic changes and income increases’, an impact study was conducted in 2018 in phase 1 and 2 polders (total 14 polders) to see the outcomes of BGP interventions. In continuation of the impact study of 2018, another round of survey was conducted during this reporting period, which covers all WMG areas of 22 polders of Blue Gold Program. In addition, the study includes a survey on the outcomes of CAWM interventions of BGP. Based on the findings of the study, a report has been prepared as “Technical Report 26 : Improving the Productivity of Land in Coastal Bangladesh: Outcomes of Blue Gold Interventions”.
- Trends Watcher: The 6<sup>th</sup> issue of Trends Watcher, the Blue Gold seasonal bulletin, has been published during the reporting period.
- Development of MIS Dashboard: The system of development of MIS Dashboard has been completed by the assigned consultant, mPower. A project database has thus been created in Blue Gold server. The server (a) stores data, collected through various surveys and monitoring activities; (b) is accessible and operationalized by multiple users, specifically BWDB and DAE; and (c) provides reports in standard formats.
- Polder dashboard: The aim of polder dashboard is to provide an overview of the progress of individual polders towards the goals of BGP so as to facilitate evidence-based decision-making by the management team. The polder dashboard, showing the status of polder-wise achievements against key targets of Blue Gold, was updated in October 2019, showing progress to end-September 2019.



### Reflection and Learning

- Database has been created in BGP server, where information on various elements of the project -with achievements and failures therein- has been stored, and the database is accessible to all concerned. Thus, it helps the project team in making evidence-based decision.
- The MRL Team shared the output results of WMG Tracker with polder teams. The progress and achievements of WMG activities were discussed and reflected upon together with the polder teams. Thus, the polder teams were made aware of the strengths and weaknesses of WMGs.
- The MRL Team shared the outcome results of participatory monitoring at WMG and WMA levels with the polder teams. The results were reflected upon together with the polder teams –progresses of WMGs and WMAs vis-à-vis their potential targets for development were reviewed, strengths and weaknesses of WMGs and WMAs were assessed and learning issues were identified– so that the polder teams can help WMOs plan for improvement of their performance. The polder teams were urged to encourage the WMOs to discuss and reflect on the participatory monitoring results in their meetings and to take appropriate action plans for improvement.
- Based on the result of TR -26 the development of communication materials is ongoing, these materials will be used to show the impact of BGP to the wider audiences including respective ministries, public departments and development partners.

### Challenges, Mitigation Measures and Lessons Learned

- The number of BGP field staff, including Community Development Facilitators (CDFs), has reduced remarkably in different polders. With the workload they have in connection with regular activities, CDFs cannot give sufficient time in collecting monitoring data. It has impact on the quality of data. This gap is, however, replenished by WMOs, who are assuming greater responsibility in collecting monitoring data.
- MRL Team needs to continue sharing of monitoring results with the polder teams and facilitate reflection and learning; and the polder teams need to share the issues and lessons learnt with WMGs.

## 5 Innovation Fund Progress

### Introduction

The BGIF provides support to different projects designed to address polder level constraints that have the potential to contribute in economic development of polder dwellers, including WMGs. Usually these constraints are not covered by core BGP activities but BGIF projects can offer ways to address those constraints. Implementation works of seven projects funded by BGIF are going on successfully. Within this period, two projects (MetaMeta – Horizontal Learning and mPower – breed identification) have successfully been closed and achieved their objectives. Five others ongoing BGIF project will be completed by June 2020.

### Success stories

**1. mPower, Breed Identification and Digital Registry of Cattle** – Strong demand has been observed for tele-veterinary and breed identification services among farmers, local service providers as well as the community leaders. These digital services increased confidence and competency of service providers in delivering livestock treatment and advisory services to farmers. Service providers like AI technicians, find it easy to motivate farmers take right type of semen for their cattle. Farmers developed strong awareness on negative and long-term consequences of wrong type of semen use for AI. However, sometimes AI technicians were not successful to recommend proper type of semen for the appropriate AI. Although willingness to join Shurokha tele-veterinary service among community service providers is quite strong, soliciting service with payment is limited to only complicated cases.

**2. Khulna University, Development of value- added products from water hyacinth to support alternative livelihoods and ecological resilience** –The WMG members successfully produced handmade papers of different qualities using the locally fabricated machineries. Meanwhile, compost produced with water hyacinth supplemented with cow dung appeared to be best in terms of various physicochemical parameters of the compost. WMG leaders and members are confident that it will be a good income generation activity and the water hyacinth problem can be addressed in their locality.

### Challenges, lessons learnt and mitigation measures

One of the main challenges has been dealing with the underperformance of the Women Business Centres project of United Purpose, where multiple field visits and constructive yet critical feedback with the project implementers result in little improvement in performance. Under these circumstances, we have decided to let UP finish the project as best they can and not to press anymore, considering only a few more months are left in the project duration. We hope that our feedback will help, the larger project that UP implements in the Chittagong Hill Tracts for the EU, involving 140 WBCs.

For Khulna University, we were sceptical about the likelihood that the craft papers could be easily sold, as domestic consumers may not be aware of the product and international buyers already have established supply chains with other craft paper producers. KU made a feasibility study which investigated the market potential and identified actors in existing and potential value chains. This gives KU a better understanding of market conditions and improves the chance of the project not only producing a high quality product but also being able to sell this.

**Table 21: The summary of on-going BGIF projects**

Sl. No	Name of the Project	Implementing Organization	Partner organizations	Update
01.	Breed Identification and Digital Registry of Cattle	mPower	DoF, DLS	Ended in September 2019, See section success stories, above.
02.	Accelerating HL in Bangladesh Polders: ICT as Force Multiplier	MetaMeta	DAE, DoF, DLS & WMOs	Ended in December 2019, Farmers have made and watched agricultural best-practice videos. Farmers have been trained in making, editing and sharing videos. Also, Union Digital Centre members in the HL project area have received training and were enthusiastic developing new skills. The project was concluded by a lessons learnt workshop at IRRI which was well attended by DAE, BWDB as well as several NGOs and some funder representatives (FAO).
03.	Leveraging decision making science to sustain climate- and market-smart mung bean advisories in Patuakhali	CIMMYT	DAE & WMOs	CIMMYT will provide metrological information to mung bean farmers form the beginning of the season through Interactive Voice Record system. They will also provide market information to mung bean farmers. In the coming mung bean season of Feb 2020 the systems and apps developed by CIMMYT will be tested full scale.
04.	Sustaining sack farming practices through Agro-met services in coastal areas of BD	Practical Action, Bangladesh	DAE & WMOs	The project has an ambitious plan of work and is still exceeding expectations. Trained farmers successfully produced summer vegetable and now are producing winter vegetable. Farmers received metrological information along with market updates and intercultural technical information and very about this.
05.	Development of value- added products from water hyacinth	Khulna University	DAE & WMOs	See section success stories, above.
06.	Women’s Business Centre in Waterlogging Areas of Southwest Bangladesh	United Purpose	LGIs & WMOs	Women entrepreneurs participate in meeting for monthly cost profit analysis. They visited Khulna market to generate idea about the market potential of egg and cloths. Participation in match making workshops also encouraging them to explore business opportunities through sharing experiences with other WBC members as well as public and private sectors.
07.	Sustainable Water Management through Indigenous Finance and Technology	United Purpose	BWDB DAE, DoF, DLS & WMOs	Ended in December 2019, implementing activities includes formal and informal meeting, training, sensitisation works, resource mobilisation initiatives, possible on-farm trails and SSWMI. These have contributed to enhance capacity of WMGs and promoted their mind set to initiate SSWMI works through mobilising resource from the community, LGIS and others .

## 6 Financial Report

**Table 22: Financial report of Blue Gold Program (July- December 2019)**

Budget Line	Original Budget converted to new budget set-up	Revised Budget 4th contract amendment converted to new budget set-up	Revised Budget Jan18 (new budget set-up)	Revised Budget Jan19	Total claimed 30/06/19*	Claimed Q3 2019	Claimed Q4 2019	Total cumulative	% Spent	Balance Remaining
<b>TA contract</b>										
TA team	14,808,453	17,286,204	17,301,465	17,638,451	15,107,288	529,910	669,697	16,306,895	94%	1,331,556
Durable goods (D)	1,169,053	997,713	996,176	836,176	797,278	3,258	(54,558)	745,978	75%	90,198
Training (T)	2,456,500	1,892,890	1,892,890	1,892,890	1,457,321	33,382	45,765	1,536,468	81%	356,422
Operational cost (O)	1,272,600	2,864,929	3,467,607	3,627,607	2,965,549	129,861	92,027	3,187,437	92%	440,170
Contracted Services	7,542,000	6,826,845	6,225,704	5,905,703	3,487,745	299,697	99,724	3,887,166	62%	2,018,537
Water management innovation fund	2,400,000	1,400,000	1,400,000	1,400,000	1,149,050	73,745	70,443	1,293,238	92%	106,762
Productive sectors innovation fund	1,900,000	1,050,000	1,050,000	1,050,000	727,941	84,373	47,416	859,730	82%	190,270
Annex B	0	877,058	861,796	844,810	844,133	-	-	844,133	98%	677
<b>SUBTOTAL TA contract</b>	<b>31,548,606</b>	<b>33,195,639</b>	<b>33,195,639</b>	<b>33,195,637</b>	<b>26,536,304</b>	<b>1,154,226</b>	<b>970,514</b>	<b>28,661,044</b>	<b>86%</b>	<b>4,534,593</b>
GoN contribution to BWDB	15,750,000	27,320,000	27,320,000	27,320,000	16,567,950			16,567,950	61%	10,752,050
GoN contribution to DAE	995,000	1,495,000	1,495,000	1,495,000	1,479,755			1,479,755	99%	15,245
<b>Total GoN contribution</b>	<b>48,293,606</b>	<b>62,010,639</b>	<b>62,010,639</b>	<b>62,010,637</b>	<b>44,584,009</b>	<b>1,154,226</b>	<b>970,514</b>	<b>46,708,749</b>	<b>75%</b>	<b>15,301,888</b>
<b>* In Q3 &amp; Q4 BWDB and DAE have not received any fund.</b>										

## 7 Project Management

### 7.1 Focus activities for zonal and polder teams

BGP TA team is engaged with extended responsibilities following its reframed ToR under the unified approach since the team is reorganized at central and zonal level. The streamlined ToR also helped the BGP Team to provide services and implement program activities with an emphasis on scaling up the successful initiatives through horizontal learning involving the partner agencies of Blue Gold program in the field. During the period of last six months, following the phase out plan zonal team experts were especially active in developing the In-polder water management and O&M plan engaging the WMOs at catchment level. Up to mid-December 2019, 202 nos. of catchments has been delineated for 22 polders and based on these catchments 190 nos. of O&M sub-committees are formed with representation of WMGs/WMAs. During this same period 190 nos. of O&M plan at catchment level has also been developed in all 22 polders.

During the same reporting period BGP extended its support to the WMAs for signing of O&M agreement (*following the WMR 2014*) between the concerned BWDB Field Divisions and representatives of WMAs. By mid-December 2019 such O&M agreement has been signed for 16 polders (10 polders in Patuakhali /Barguna, 5 polders in Khulna and 1 Polder in Satkhira) represented by 30 WMAs and the remaining O&M agreements for 6 polders in Khulna with 5 WMAs will be ready for signing by early January 2019. Annex C shows the phasing out plan/schedule and present status of WMAs in 22 polders under BGP. Considering the roles and responsibilities of WMAs as described in the agreement, capacity development of WMAs is necessary in effectuating the O&M agreement. In consideration of the time frame and situation of BGP, it emphasized and initiated capacity development of WMAs engaging themselves in developing towards functional WMAs.

The Zonal teams are presently pursuing the WMOs to establish a practical cooperation with Union and Upazila Parishads in order to get support in developing in-polder water management activities and increased services from the concerned line departments. In a number of cases WMAs are in regular contact with above mentioned LGIs and receiving positive responses in conflict resolution on water management issues, direct/indirect contribution for O&M activities and the services from the line agencies available under their jurisdictions. In addition, WMO members in some polders are gradually getting involved in mainstream activities of Union Parishad and especially at the relevant standing committees.

BGP is now preparing the WMOs to present the summary of their Polder level O&M plan and its activities at Upazila Parishad in presences of the concerned authorities at UZ level with the objectives (i) to inform the situational updates on in-polder water management (ii) to seek cooperation and support/ contribution in implementing O&M plan and activities i.e., periodic/emergency maintenance and implementation of small infrastructures for in-polder water management for higher crop production (iii) to extend support for introduction of modern agricultural technologies and market facilities. By end of December 2019 such presentation was made in presence of District and Upazila level officials in Satkhira for polder 2.

The Zonal teams are also engaged in exploring the possibilities of WMOs to get involved at Upazila and District level water management committees while the polder teams are exploring the possibilities at Union Parishad (UP) level following provisions indicated in *the Bangladesh Water*

*Rules –August 2018 and Integrated Water Resource Management Guide lines - January 2019 for District, Upazila and Union Parishad . It appears from the field information that the Bangladesh Water Rules – August 2018 is not very conducive with the WMOs registered under BWDB while it looks much more suitable for the WMOs registered under the Department of Co-operatives. The Zonal and Polder teams continued their efforts to develop linkages and networking with public and private sectors in the polders with the support from senior technical experts at central level. Linkages and partnerships related with agriculture and market development activities were established in between public-private sector agencies (BADDC, BIRRI, BARI and a number of seed producing /marketing companies) and WMOs in different BGP polders.*

BGP initiated 'Polder Health Check' using a simple checklist with some support from experts from central TA team in 2018. Up to now 26 nos. of such health check was initiated in 17 polders of which 10 nos. of health check was carried out at 9 polders during the last reporting period. This exercise appeared as a useful tool for better management of field level activities; it is supportive in readjusting the field activities through assessing the concentration of activities and its effectiveness of TA FFSs, initiation of collective actions, horizontal learning, capacity development of WMAs and relocation of CDFs. This effort of Health Check will continue in all polders during the remaining period of BGP.

## 7.2 Reduction & relocation of staff

During the last reporting period, a number of experts have left and a number of national consultants at central and zonal level have adjusted with reduced inputs following the field level activities under Phase out situation for the extended period. In addition, a number of CDFs were also discontinued in the phasing out process, a few CDFs were relocated in 1st and 2nd phase polders to support WMAs for their capacity development and consolidate the currently ongoing refocused activities in enabling them for O&M activities. The CDFs in new polders supported the WMOs in the process of horizontal learning of BGP activities. In addition, they are also engaged to address the refocused BGP activities and developing catchment O&M plan and activities.

During the last part 2019 a total of 76 CDFs were active in all BGP polders, based on the availability of resources for January to June 2020, a total of 13 CDFs were identified (through an assessment in October 2019) to discontinue from January 2020 and a total of 63 CDFs will continue up to June 2020 to address the extended focus on in-polder water management for higher production/income from agriculture, guide the WMAs (orientating them) towards becoming functional WMAs and enabling them for O&M activities with a special focus to the new polders.

However, low progress in implementation of physical infrastructure under BWDB has affected the Phasing Out schedule. Taking into consideration to the ARM recommendations and the status of physical works, request was made for additional resources under Technical Assistance during extend time as indicated in RDPP.

### Challenges

Challenges are still there for BGP to complete the project during the extended period by June 2020 maintaining the sequence of phase-out schedule; (i) low progress in implementation of physical infrastructures under BWDB while some items of works will remain incomplete or not be implemented (iii) low capacity and lack of human resources of the OCWM to make the WMAs

functional (iii) low integration in adaptation of new technologies of agricultural production and market facilities, etc.

Delayed approval of RDPP has already affected the phasing out schedule especially for the 1st and 2nd phase polders. The maturity of WMOs in new polders will also remain as a question. Low progress of physical works/ incomplete works in the polders affected the in-polder water management and limited the O&M trials/exercises by the Catchment O&M sub-committees. Considering the situation, the proposed phasing out plan/schedule demands extended time and resources.

Challenges are also there in maintaining the regular staffing in BGP during the last one year. They are: (a) a number of senior/mid-level experts already left the project and an extended number are also trying/leaving for new jobs with longer contract of employment as their allocated man-months are reduced towards the project end, (b) a number of trained technical staff in the field are also trying to join in the project for planning in construction of Railway lines connecting Payra Port and other projects with higher salaries/longer employment. The staffing situation is deteriorating and further reduction of CDF will effectuate from 1st January 2020. Such environment of staff reduction is not always conducive in keeping up the motivation of field staff for regular activities.

### 7.3 DPP Revision subsequent situation

Revision process of DPP was started in May 2016, ECNEC approved the RDPP in June 2018 with a meeting minute in July 2018. This long delay of RDPP, reduced the period of work execution - from 3 working season to 2 seasons; low progress in implementation of physical infrastructure, delayed the O&M agreement and affected seriously in phasing out plan/schedule of BGP polders.

Joint Annual Review Mission (ARM) was engaged in November 2018 for final review of BGP activities and its progress. They appreciated the results of integrated approach of participatory water management (PWM) in BGP polders and at the same time they also indicated the challenges for BGP in completing of all remaining physical works by June 2020. Among many recommendations, ARM recommended to engage a joint Monitoring Team (JMT) to foresee the implementation progress of all physical works and to recommend next course of action to complete all physical works as included in the RDPP. Later as part of a regular process, 4th IMSC meeting was held in December 2018 with following decisions: (a) All concerned should expedite the implementation process. b) Second revision will be initiated considering the status/progress in June 2019 to expedite/enhance the overall progress of the project to achieve maximum benefits. Following the decisions of 4th IMSC, all field divisions were active and made a remarkable progress during this reporting period, however, a number of design/ drawings could not be completed as per indicated work items in the RDPP. Such items of work are the integral part of in-polder water management and such incomplete situation of infrastructures will affect functionality of polders.

It appears that the fund for excavation/re-excavation of Khals under BGP is almost exhausted but it did not cover the full length as per polder plan and RDPP, while a huge amount of fund will remain unspent under a number of work items, which will not be possible to take up or remain incomplete. In such situation, it is important to complete all the works as per RDPP, especially the remaining khals those are indicated in the PDP and RDPP under the scope of re-appropriation of

fund and extended time of Project. Finally, considering the progress of physical works and with agreement of EKN, the last (5th) IMSC meeting held on 3rd December 2020 recommended for budget neutral re-appropriation of fund with one-year extended time for BGP to complete the works to make the polders functional.



# Annex A

## Annex A: Project Outputs

### Membership of Groups

Summary Results of WMG Tracker	Up to June 2019
No. of Total WMGs	511
No. of Total HHs in WMG allocated areas	186,339
No. of HHs represented in WMG	118,595
% of HHs represented in WMG	64%
No. of enrolled total WMG members	136,919
% of WMG female member	43%
Average No. of enrolled members in each WMG	268
No. of TA-FFS Groups	1,117
No. of enrolled Total TA-FFS members	28,010
% of TA FFS female members	88.4%
No. of DAE-FFS Groups	737
No. of enrolled Total DAE-FFS members	36,850
% of DAE FFS female members	50%
No. of MFS Groups	200
No. of enrolled Total MFS members	4,617
% of MFS female members	37.9%
No. of LCS groups	505
No. of enrolled Total LCS members	32,755
% of LCS female members	34%

## Financial status of WMGs

Summary Results of WMG Tracker		Up to June 2019
<i>Items of WMG Funds</i>	<i>Amounts (BDT)</i>	
Admission fee	244,1133	
Savings from male	17,300,002	
Savings from female	13,726,487	
O&M fee	3,553,110	
Miscellaneous fees	5,830,138	
Income/Profit	34,663,040	
<b>Total WMG Funds</b>	<b>77,513,910</b>	

## Type of Business Investment in individual IGAs

Summary Results of WMG Tracker		Up to June 2019	
<i>Investment Activities</i>	<b>Amounts (BDT)</b>	<b>% of total invested</b>	
Agriculture	14,499,373	42	
FDR	200,000	1	
Fish culture	6,099,734	18	
Land mortgage	2,797,550	8	
Livestock (cow, goat, sheep, buffalo)	2,669,565	8	
Others (specify)	400,600	1	
Poultry	3,222,666	9	
Shrimp Culture	11,000	0	
Small Business	432,7339	13	
<b>Total</b>	<b>34,227,827</b>	<b>100</b>	

## Capacity Building

Summary Results of WMG Tracker		Up to June 2019	
Training/Orientation/Workshop	No. of Participants (WMG Members)	% of Female Participants	
Account Keeping and Audit System	1,644	22%	
Collective Action Group (CAG) Workshop	1,838	33%	
Collective Action Promotion (CAP) Workshop	407	17%	
DRR	29	45%	
Gender and Leadership Development	1,838	48%	
LCS training	12,243	40%	
Management of Agricultural Machinery	4,683	35%	
Organizational Management	2,898	35%	
Participatory Monitoring	1,422	26%	
RF/FT/LF Capacity Development	758	64%	
Savings and Credit	810	20%	
Others	228	36%	
<b>Total</b>	<b>28,798</b>	<b>36%</b>	

## Training on Agricultural Development

Summary Results of WMG Tracker Modules/Topics	Up to June 2019	
	No. of Participants	% of Female
Boro, Homestead & Nutrition (DAE)	7,325	50.1
CAWM and Nutrition (DAE)	4,600	45.5
Cropping system, market linkage, production Tech. & gender (TA)	1,927	20.4
Homestead vegetables & fruits, poultry and nutrition (TA)	15,995	89.7
Mungbean, homestead vegetables & fruits & nutrition (DAE)	8,004	50.9
Mungbean, market linkage, production tech. & gender (TA)	1,290	18.3
Pond Fish, Beef Fattening & Nutrition (TA)	6,420	75.0
Pond Fish, Dairy Cow & Nutrition (TA)	1,325	78.8
Poultry, market linkage, production Tech. & gender (TA)	3,900	96.7
Sesame, Homestead & Nutrition (DAE)	1,200	49.6
Sesame, market linkage, production Tech. & gender (TA)	1,431	27.6

Summary Results of WMG Tracker Modules/Topics	Up to June 2019	
	No. of Participants	% of Female
T-Aman, Homestead & Nutrition (DAE)	13,778	49.9
T-Aus, Homestead & Nutrition (DAE)	400	50.0
Tilapia, market linkage, production Tech. & gender (TA)	615	79.7
Watermelon, Homestead Vegetables & Fruits & Nutrition (DAE)	1,400	49.1
Others	875	89.0
Total	70,485	63.1

**Agricultural Demonstration/Trail Plots Development**

Summary Results of WMG Tracker Demonstration/Trail Plots of Crops	Up to June 2019	
	No. of Participants	% of Female
Beef Fattening	309	81%
Dragon Fruit	77	36%
Drumstick	173	100%
FYM	758	87%
Groundnuts	22	9%
Mung bean	424	47%
Mustard	400	75%
Passion Fruit	30	57%
Pond Fish	265	60%
Poultry Housing	727	98%
Sapodilla	26	73%
Sesame	125	60%
Summer Tomato	53	38%
Sunflower	33	0%
T-Aman	526	4%
Tilapia	33	64%
Vegetables	1,548	81%
Wheat	6	33%
Others	196	28%
Total	5,731	69%

## Horizontal Learning

Summary Results of WMG Tracker		Up to June 2019	
Horizontal Learning Activities	No. of Participants	% of Female	
Exchange visits to Cage/Pan Culture/Fisheries	723	42.0%	
Exchange of FFS/MFS learning	13,832	55.6%	
Exchange visits to CAWM schemes	1,563	36.9%	
Exchange visits to better performing WMGs	5,034	39.3%	
Farmer's Field Day (DAE)	61,911	51.1%	
Farmer's Field Day (TA)	160,578	60.0%	
Others (different types of agricultural technologies)	259	40.5%	
Total	243,900	56.8%	

## Agricultural Modern Technologies adopted

Summary Results of WMG Tracker		Up to June 2019	
Technologies adopted on different crops/items	No. of Participants	% of Female	
Beef fattening technique	13,674	47%	
Black Sesame seed	2,883	20%	
Drying Sesame in Blue net	4,882	26%	
Fish feed processing	19,955	38%	
Hajol	35,637	92%	
Hybrid vegetables seed	31,366	46%	
HYV Rice seed	45,376	18%	
IPM	37,226	24%	
Line sowing	31,199	14%	
Napier grass	2,527	34%	
Pond Layering for fish culture	12,063	43%	
Poultry housing	22,162	87%	
Proper use of agricultural inputs	28,409	21%	
Vaccination	41,238	63%	
Vegetables bed technique	29,279	52%	
Others	671	66%	
Total	358,547	44%	

## Development and Repair/Rehabilitation of Water Management Infrastructure

Summary Results of WMG Tracker <i>Infrastructure Activities</i>	Project Target	Up to June 2019	
		Achievement	% of achievement
Re-sectioning of Embankment (Km)	330.010	321.359	97.4
Retired Embankment (Km)	20.58	12.944	62.9
Re-excavation of khal (Km)	545.000	353.378	64.8
Repair of sluice with gate (Nos)	186	102	54.8
Repair of outlet/inlet with gate (Nos)	235	232	98.7
Construction of Drainage sluice (Nos)	31	10	32.3
Construction of Drainage outlet (Nos.)	17	0	0.0
Construction Irrigation inlet (Nos.)	8	2	25.0
Construction of Culvert (Nos.)	32	6	18.8
Pump shed construction (Nos)	6	0	0.0
Low cost bank protection (Km)	4.250	0.742	17.5
Internal dyke (Km)	21.000	0.600	2.9
Closure/Cross-budh (Km)	0.140	0.135	96.4
Supply of Drain pipe (meter)	9000	0.0	0.0
Flood damage Repair (Nos.)	0.000	1.064	na
GoB O&M (Nos)	0.000	8.496	na

# Annex B



## Annex B: Achievements of BGP in water management and agriculture from July to December 2019 (Non-cumulative)

### I. WATER

Ref		July-December 2019 (Non-cumulative)	
	<b>Result</b>		
I.R1	Number of people benefitting from improved water security and water safety in the project area	5958	
	<b>Outcome</b>		
I.OC1	Number of people supported in flood protection activities	325	
I.OC2	Number of people supported on improving drainage and water availability/irrigation	615	
I.OC3	Number of people supported for improved water shed/polder protection	325	
I.OC4	Number of WMA and of WMO supported	WMG	WMA
	Note: No new WMG has been registered during reporting period (all WMGs have got the registration).	0	1
I.OC5	Number of professionals trained in water management	65	
I.OC6	Number of people benefitting from operational plans for IWRM		
I.OC7	Number of ha with operational plans for IWRM	42200 ha	

### II. AGRICULTURE

#### A. Productivity and Income

Ref		July-December 2019 (Non-cumulative)	
	<b>Result</b>		
IIA.R1	Number of family farms that doubled their productivity and/or income	NA	
	<b>Outcome</b>		
IIA.OC1	Number of family farms that increased productivity or income (by male/female headed and age %<35)	18890	
	Total(direct)	6290	
	Total (Indirect)	12580	
	Total (direct + indirect) HHs	18890	
IIA.OC2	Number of family farms with improved access to input and/or output markets (by male/female headed and age %<35)	14401	

Ref		July-December 2019 (Non-cumulative)
IIA.OC3	Number of family farms whose farming enterprise became more resilient to shocks (by male/female headed and age %<35)	6290
	<b>Output</b>	
IIA.OP1	Number of family farms directly reached by the project (by male/female headed and age %<35) <i>Note: No new WMG has been registered during reporting period(all WMGs have got the registration). However, 8 new members have been enrolled in WMGs from 8 HHs.</i>	8
IIA.OP2	Number of family farms indirectly reached by the project (by male/female headed and age %<35)	6

**B. Sustainable farming and land use**

Ref		July-December 2019 (Non-cumulative)
	<b>Result</b>	
IIB.R1	Number of hectares converted to sustainable farming and land use (including pastures & fishing grounds)	2439.23
	<b>Outcome</b>	
IIB.OC1	Number of hectares of farmland used eco-friendlier (including pastures & fishing grounds)	2439.23
IIB.OC2	Number of hectares of farmland that became part of improved watershed/polder management (including pastures & fishing grounds)	1487
IIB.OC3	Number of hectares of farmland that agro-ecologically become more resilient to shocks (including pastures & fishing grounds)	1487
	<b>Output</b>	
IIB.OP1	Numbers of hectares of farmland directly reached (including pastures & fishing grounds)	2439.23
IIB.OP2	Number of hectares of farmland indirectly reached (including pastures & fishing grounds)	1487

## C. Knowledge technology and innovation

Ref		July-December 2018 (Non-cumulative)
	<b>Outcome</b>	
IIC.OC1	Number of farmers that adopted research results/ knowledge/ new technologies (by male/female headed and age %<35 as well as Dutch origin or not)	6290

## D. Food- and agribusiness

Ref		July-December 2019 (Non-cumulative)
	<b>Outcome</b>	
IID.OC1	Number of jobs supported in agricultural value chains (by male/female headed and age %<35)	498
IID.OC2	Number of value chains performing better	06 (Mustard, T-Aman Rice, Vegetables, Mung, Moringa, Poultry egg etc.)
IID.OC3	Number of businesses co-investing in food & nutrition agribusiness activities (by Dutch/non-Dutch)	NA

## E. Gender

Ref		July-December 2019 (Non-cumulative)
	<b>Outcome</b>	
IIE.OC1	Number of women empowered on food security /agriculture/ nutrition	13795
	<b>Output</b>	
IIE.OP1	Number of women that benefitted from FNS interventions	13795

# Annex C

## Annex C: Building Organisations

### Status of WMOs (July-December, 2019)

Polder No.	WMG		WMA		Collection of Savings	O&M Fund				Catchment		AGM		WAP up dated		O&M agreement signed
	Formation	Registration	Formation	Registration		Collection		Utilisation		Committee formation	Up dated O&M Plan	WMG	WMA	WMG	WMA	
						WMG	Amount (Tk.)	WMG	Amount (Tk.)							
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	17
22	0	0	0	0	89740	2	8800	0	0	3	3	12	1	12	1	
26	0	0	0	0	25245	0	0	0	0	0	6	15	1	15	1	
29	0	0	0	0	504200	15	17900	16	51600	0	11	56	2	56	2	
30	0	0	0	0	318820	8	41425	11	18330	0	10	40	1	40	1	
31 (Part)	0	0	0	0	20640	2	420	0	0	0	7	12	1	12	1	
25	0	0	0	0	106915	12	38300	14	49550	0	10	61	2	61	2	
27_1	0	0	0	0	4930	4	8000	1	600	5	5	15	1	15	1	
27_2	0	0	0	0	24000	12	11000	0	0	3	3	6		6		
28_1	0	0	0	0	47800	2	6140	1	6000	5	5	12	1	12	1	
28_2	0	0	0	0	60060	3	9520	2	4700	5	5	12		12		
34/2 Part	0	0	0	0	9840	5	205940	1	184000	5	12	19	1	19	1	
Sub-total: Khulna	0	0	0	0	1212190	65	341305	46	314780	26	77	260	11	260	11	
43/1A	0	0	0	0	9,460	0	0	0	0	0	5	14	2	14	2	0
43/2A	0	0	0	0	43,450	5	37000	5	28000	0	6	20	1	20	1	1
43/2B	0	0	0	0	129,695	2	6000	2	6000	0	6	28	3	28	3	0
43/2D	0	0	0	0	0	3	2450	3	2450	0	17	27	5	27	5	0
43/2E	0	0	0	0	5,480	4	3130	4	3130	0	7	12	2	12	2	0
43/2F	0	0	0	0	441,724	7	17820	7	17820	0	16	27	3	27	3	0

# Blue Gold Program

Polder No.	WMG		WMA		Collection of Savings	O&M Fund				Catchment		AGM		WAP up dated		O&M agreement signed
	Formation	Registration	Formation	Registration		Collection		Utilisation		Committee formation	Up dated O&M Plan	WMG	WMA	WMG	WMA	
						WMG	Amount (Tk.)	WMG	Amount (Tk.)							
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	17
55/2A	0	0	0	0	56,821	12	65500	6	54500	0	12	13	1	13	1	0
55/2C	0	0	0	0	118,270	16	65900	14	60900	0	7	16	2	16	2	0
47/3	0	0	0	0	23,490	3	9200	3	9200	0	7	8	1	8	1	1
47/4	0	0	0	1	35,020	3	20000	3	20000	0	18	18	1	18	1	1
Sub-total: Patuakhali	0	0	0	1	863,410	55	227,000	47	202,000	0	101	183	21	183	21	3 (3P; 3WMA)
2 & Ext.	0	0	0	0	50260	4	1970	0	0	0	0	63	0	63	3	1
Sub-total: Satkhira	0	0	0	0	50260	4	1970	0	0	0	0	63	0	63	3	1 (1P; 3WMA)
Total: All Zones	0	0	0	1	21,25,860	124	570,275	93	516,780	26	101	506	32	506	35	4 (4P; 6WMA)

# Annex D

## Annex D: Training

### Training details for capacity building under Blue Gold Program (July-December 2019)

No.	Training Activities	Participants	Total Batches	No of participants			Objective/Rational
				M	F	T	
1	CAWM Rabi Planning Workshop (1 Days) (2019-2020)	DAE Representatives (DD, UAO, SAAOs), WMA, Farmers	2	80	6	86	To aware current progress, achievement, challenges and lessons learnt from CAWM/SSWMI implementation process and select appropriate <i>rabi</i> crops To aware the potential marketing challenges
2	Training on Catchment O&M Planning Process for O&M sub-committee members (5 Days)	O&M sub-committee members, WMA member	3	75	20	95	To make the Catchment Committee Members /Facilitators skilled facilitator and well equipped for preparation WMG and Catchment wise O&M plan preparation
3	Facilitating the process of WMG wise WM Planning Process by O&M sub-committee (half day)	WMG members, sub-committee members	131	840	898	1738	To develop knowledge and skills on preparation of Water Management Maps & Plan involving WMG members/farmers.
4	Catchment Pre-workshop Meeting (half day)	WMA, sub-committee, UP	28	489	140	629	To prepare catchment level Water Management Plan collecting/integrating WMG level data/plans which have linked and common interest's throughout the catchment.
5	Catchment Planning Workshop (Union Wise) one day	Upazila level officer (DAE & BWDB), UP, WMA	8	270	53	323	To review and validation of Catchment O&M Plans; identify the areas of support by the UP & implementing partners in implementing WM actions; to identify the ways strengthen linkages/partnership with UP and GoB partners.
6	Seminar on O&M Agreement Signing in between BWDB & WMA	EKN, BWDB, DAE, UP, WMA	2	86	20	106	To make WMA & BWDB agreed on the roles & responsibilities on O&M of water management infrastructures; signing and formal handing over the documents among the partners.



# Annex E

## Annex E: Reports and videos

No	Name	Date
<b>Agro Insight Report</b>		
AIR	BGP Communication interventions and extensions method	Mar, 2018
<b>Inception Report</b>		
IR 01	Blue Gold Inception Report, November 2013	November 2013
<b>Annual Work Plan</b>		
APR 01	Annual Plan 2014	06 Feb, 2014
APR 02	Annual Plan 2015	29 Apr, 2015
APR 03	Annual Work Plan 2015 - 2016	14 Jul, 2015
APR 04	Annual Work Plan 2018 - 2019	16 Jun, 2018
APR 05	Annual Work Plan 2019 - 2020	25 June, 2019
<b>Progress Reports</b>		
QPR 01, 2013	Progress Report 2013, Q2+Q3 (April – September 2013)	10 Dec, 2013
QPR 02-03, 2013	Progress Report 2013, Q4 (October – December 2013)	26 Feb, 2014
QPR 01, 2014	Progress Report 2014, Q1 (January – March 2014)	15 May, 2014
QPR 02, 2014	Progress Report 2014, Q2 (April – June 2014)	04 Aug, 2014
QPR 03, 2014	Progress Report 2014, Q3 (July – September 2014)	17 Nov, 2014
QPR 04, 2014	Progress Report 2014, Q4 (October – December 2014)	15 Feb, 2015
QPR 01, 2015	Progress Report January-March 2015	Apr, 2015
QPR 02, 2015	Progress Report April-June 2015	Jul, 2015
HYPR 01, 2015	Progress Report July – December 2015	Mar, 2016
HYPR 01, 2016	Progress Report January - June 2016	Sep, 2016
HYPR 02, 2016	Progress Report July – December 2016	Apr, 2017
HYPR 01, 2017	Progress Report January – June 2017	Aug, 2017
HYPR 02, 2017	Progress Report July – December 2017	Feb, 2018
HYPR 01, 2018	Progress Report January – June 2018	July, 2018
HYPR 02, 2018	Progress Report July – December 2018	Jan, 2019
HYPR 01, 2019	Progress Report January – June 2019	July, 2019
QPR 04, 2018	Water Management and Productive Sectors Innovation Funds, Oct–Dec, 2018	15 Feb, 2019
<b>Technical Reports</b>		
TR 01	Proceedings of the Workshop on Blue Gold Draft Inception Report Presentation, 26 June 2013	Sep, 2013
TR 02	Health & Safety Measures	18 Dec, 2013
TR 03	WMO Functionality Assessment in four polders	12 Dec, 2013

No	Name	Date
TR 04	Introduction to the M&E Manual	17 Dec, 2013
TR 05	Geo information for Blue Gold: Inventory of needs, data collection and roadmap for implementation	01 Dec, 2013
TR 06	Household Survey Report – Polder 22, 30, 43/2D and 43/2F	31 Mar, 2013
TR 07	Field Trip Reports 2013	31 Mar, 2014
TR 08	Operational Manual for Output and Outcome Monitoring	Apr, 2014
TR 09	Water Management Organizations - Comparative Analysis	Apr, 2014
TR 10	Outcome of WMO functionality assessment, Volume 2	02 Sep, 2014
TR 11	Training Plan 2013-2019	15 Jan, 2015
TR 12	Partnership Strategy 2014-2019 of the Blue Gold Program	12 Jan, 2015
TR 13	Engaging Local Government Institutions in Water Management – DRAFT Sourcebook	19 Mar, 2015
TR 14	Baseline Survey Report	31 Mar, 2015
TR 15	Communication Strategy	05 May, 2015
TR16 (A &B)	Field Trip Reports of 2014	09 Jun, 2015
TR 17	Semi Annual Outcome Monitoring Report TR 17. A - Second OUTCOME Monitoring Report up to September 2015	05 May, 2015 September 2015
TR 18	Farm Level WM - Pilot CWM P30_FINAL.PM.08092016	July, 2016
TR 19	Improved water management levels (Community Water Management Pilot Polder 30, Batiaghata, Khulna)	July, 2016
TR 20	TR 20 Strategic Plan for Community Water Management TR20A: BGP Strategic Plan CAWM 2018-2019	July, 2016 September, 2018
TR 21	Field Trip Reports of 2015	July, 2016
TR 22	Agricultural Changes in Blue Gold Polders from 2012 - 13 to 2016 - 17	Mar, 2018
TR 23	Agro- Economic Baseline Survey Report	May 2018
TR 25	Improving Productivity of land in Bangladesh: The Outcomes for Blue Gold Interventions 2013-2018	29 Oct, 2018
TR 26	Improving Productivity of land in Bangladesh: The Outcomes for Blue Gold Interventions 2013-2019	Oct, 2019
<b>Technical Notes</b>		
TN 01	Use of ODK software in FFS Cycle 3 FFS	May, 2015
TN 02	Tilapia Value Chain Analysis	July, 2015
TN 03	Benchmark Report on Mung Bean	Sep, 2015
TN 04	Local Poultry Value Chain Analysis	Sep, 2015
TN 05	Mung bean Value Chain Analysis	Sep, 2015
TN 06	Moringa oleifera Cuttings	Dec, 2015
TN 07	FFS Cycle 4 Benchmark and End Data	Dec, 2015

No	Name	Date
TN 08	Nursery Management in Khulna and Patuakhali	Jan, 2016
TN 09	Trial ponds of fish FFS 2015	Mar, 2016
TN 10	Nursery Management training	Jun, 2016
TN 11	FFS Cycle 5	Jun, 2016
TN 12	FFS Cycle 6	Sep, 2016
TN 13	Water melon cultivation & fish culture in mini pond, polder 22	Oct, 2016
TN 14	Trail ponds 2017	May, 2017
TN 15	Report data FFS Cycle 7	May, 2017
TN 16	Report data FFS Cycle 8	May, 2017
TN 17	Market Oriented Farmer Field Schools (MFS): Impact Assessment report	Nov, 2017
TN 18	TN 18A: Report data FFS Cycle 9 TN 18B: Comparing benchmark & end data FFS Cycle 9 TN 18C: Cycle 9 FFS report	Nov, 2017 Nov, 2017 Mar, 2018
TN 20	Cycle 9 FFS	4 April, 2018
TN 21	Report on 10th Cycle FFS	25 Sep, 2018
<b>Workshop &amp; Training Report</b>		
Training Module Developed and compiled		
TM 01	Module on Organizational Management Training for WMGs	2014 (revised 2016)
TM 02	Module on LCS Works Management	2014 (revised 2016)
TM 03	Module on Management of Agricultural Machineries Training for WMGs	2015
TM 04	Module on Saving and Credit Management Training for WMGs	2015
TM 05	Module on Accounts Keeping and Audit System training for WMGs	2015 (revised 2016)
TM 06	Module on Gender and Leadership Development Training for WMGs	2016
TM 07	Outline for Training on Construction Monitoring & Quality Control for WMAs	2014
TM 08	Outline on BGP Orientation for Union Parshad	2015
TM 09	Module on Community Agriculture Water Management Farmers Field School (CAWM-FFS) (Part-1: T Aman)	2017
TM 10	FFS Training Module: Homestead Fruit Farming & Market Linkage Development.	December, 2018
TM 11	FFS Training Module: Beef Fattening & Market Linkage Development	December, 2018
TM 12	FFS Training Module: Homestead Vegetable Gardening & Market Linkage Development.	November, 2018
TM 13	FFS Training Module: Poultry Farming & Market Linkage Development.	October, 2018

No	Name	Date
TM 14	FFS Training Module: Fish Culture & Market Linkage Development	April, 2019
<b>Training Technical Note</b>		
TTN 01	TNA Report on Gender Training for WMG	2015
TTN 02	Report on Training Need Assessment (TNA) for IGA Management Training for WMGs members	Dec, 2015
TTN 03	Report on Training Performance Evaluation of Organizational Management (OM) for WMG	May, 2016
TTN 04	Workload assessment of CDF	May, 2016
TTN 05	Concept Note: Refocusing Training	Jan, 2018
<b>PDP Reports</b>		
PDP 22	Polder Development Plan for Polder 22	Apr, 2015
PDP 43-2F	Polder Development Plan for Polder 43-2F	15 Jun, 2015
PDP 43-2D	Polder Development Plan for Polder 43-2D	30 Sep, 2015
PDP 22-29-30	Polder Development Plan for Polder 22-29-30	10 Nov, 2015
PDP 2	Polder Development Plan for Polder 2	15 Dec, 2016
PDP 43/1B	Polder Development Plan for Polder 43/2B	28 Nov, 2016
PDP 27/1	Polder Development Plan for Polder 27/1	10 Apr, 2017
PDP 28/1	Polder Development Plan for Polder 28/1	10 Apr, 2017
PDP 25	Polder Development Plan for Polder 25	10 Apr, 2017
PDP 22	Polder Development Plan for Polder 22 v2	Dec, 2017
PDP 26	Polder Development Plan for Polder 26	Dec, 2017
PDP 29	Polder Development Plan for Polder 29	Dec, 2017
PDP 30	Polder Development Plan for Polder 30	Dec, 2017
PDP 31 Part	Polder Development Plan for Polder 31 part	Dec, 2017
PDP 2	Polder Development Plan for Polder 2	Dec, 2017
PDP 43/1A	Polder Development Plan for Polder 43/1A	Dec, 2017
PDP 43/2A	Polder Development Plan for Polder 43/2A	Dec, 2017
PDP 43/2E	Polder Development Plan for Polder 43/2E	Dec, 2017
PDP 43/2F	Polder Development Plan for Polder 43/2F v2	Dec, 2017
PDP 43/2D	Polder Development Plan for Polder 43/2D v2	Dec, 2017
PDP 43/1B	Polder Development Plan for Polder 43/1B	Dec, 2017
<b>Working Paper</b>		
BGP - WP1	Theory of Change	30 Nov, 2015
BGP - WP2A	Exit Strategy v2	Feb, 2016
BGP - WP3	Building organization	2 Jun, 2016
BGP - WP4	Vocational Training	23 Aug, 2016

No	Name	Date
BGP - WP5	Theory of Change rev 2	25 May, 2016
BGP - WP6	MRL Plan	31 Aug, 2016
BGP - WP7	Polder Growth & Business Development	31 Aug, 2016
BGP - WP8 Participatory Monitoring Report	WP8A: Participatory Monitoring Oct-Nov 2016 WP8B: Participatory Monitoring April-May 2017 WP8C: Participatory Monitoring Oct-Nov 2017 WP8D: Report on Participatory Monitoring WP8E: Report on Participatory Monitoring WP8F: Report on Participatory Monitoring 2019_v1 WP8G: Report on Participatory Monitoring WP10B: Report on Participatory Monitoring, WMA	Feb, 2017 Oct, 2017 5 Apr, 2018 Apr-May 2018 26 Jan, 2019 April, 2019 December 2019 December 2019
BGP – WP9 WMG Tracker Report	WP9A: June 2017 WP9B: WMG Tracker Report - December 2017 WP9C: WMG Tracker Report to MARCH 2018 WP9D: WMG Tracker Report up to JUNE 2018 WP9E: WMG Tracker Report up to SEPT 2018 WP9F: WMG Tracker Report up to DEC 2018 WP9G: WMG Tracker Report up to MARCH 2019 WP9H: WMG Tracker Report up to June 2019	22 Nov, 2017 Apr, 2018 20 June, 2018 27 Aug, 2018 26 Jan, 2019 18 Feb, 2019 16 May, 2019 June, 2019
<b>Retreat Report</b>		
RR 01	Retreat Report - 2014	16-17 March, 2014
RR 02	Retreat Report - 2015	04 Aug, 2015
RR 03	Retreat Report - 2016	April, 16
RR 04	Retreat Report - 2017	April, 2017
<b>Annual Review Mission Action Plan</b>		
ARM 01	Action Plan 2014	5th August, 2015
ARM 02	Action Plan 2015	26 November, 2015
ARM 03	Blue Gold Draft Report 2016	24 October, 2016
ARM 04	Aide Memoire – Annual Review Mission 2017	26 Feb, 2018
ARM 05	Aide Memoire – Annual Review Mission 2018	11 Jan, 2019
<b>Development Project Performance</b>		
DPP 01	Blue Gold Program (BWDB component): Program for Integrated Sustainable Economic Development by Improving the Water and Productive Sectors in Selected Polders	March 2013
DPP 02	Blue Gold Program (BWDB component): Program for Integrated Sustainable Economic Development by Improving the Water and Productive Sectors in Selected Polders.	May 2013
DPP 03	Development Project Proposal (DPP) for Transfer of Technology for Agriculture Production under Blue Gold program (DAE Component).	May 2013

No	Name	Date
<b>Innovation Fund</b>		
IF 01	Long Term Perspectives for WMOs/Cooperatives	
IF 02	Community Based Water Management (CWM)	Jan, 2014
IF 03	Feasibility study for Action Research Pumped Drainage in Polder 2	Dec, 2014
IF 04	Pearl cultivation study	Jan, 2015
IF 05	MIS & GIS portal	Sept, 2015
IF 06	Opportunities for Moringa sector development in Bangladesh	July, 2015
IF 07	Feasibility Study on Renewable Energy Supply	Dec, 2015Feb
IF 08	Small Pond Fish Productivity, Diversity and Resilience	Feb, 2016
IF 09	Aquifer recharge for agriculture	Feb, 2015
IF 10	The Study of River Bank Erosion Management in Polder 29, Khulna, low cost river bank protection.	April, 2016
IF 11	Kawra pig-rearing	Dec, 2016
IF 12	Feasibility study Water App	2017
IF 13	Roads for Water Management and Flood Protection	
IF 14	Study to promote natural cold storage	2017
IF 15	Community Based Integrated Water Management	Sept, 2017
IF 16	Increasing the quality in Mungbean production of small farmers	Dec, 2017
IF 17	Feasibility Study on Insects for Fish Feed	
IF 18	Web Campaign "Ondernemen in Bangladesh"	Dec, 2017
IF 19	Cage Aquageoponics System	
IF 20	Ecopond and Empowerment of Women (Ecopond II)	
IF 21	Relevant Actors for Sustainable Intensification of Tilapia Culture	Sept, 2017
IF 22	Feasibility Study on Women's Business Centers (WBC)	Oct, 2017
IF 23	Piloting	March, 2019
IF 24	Blue Gold Innovation Challenge	
IF 25	Market Study for Moringa Business	
IF 26	Feasibility study Agricultural services	Feb, 2018
IF 27	Feasibility Study of Sustainable Water Management through Indigenous Finance and Technology Research (SWIFT)	April, 2018
IF 28	Piloting	Feb, 2019
<b>M&amp;E Report</b>		
M&E 01	Blue Gold Baseline Survey Technical Proposal	April 2014
M&E 02	Manual for Outcome monitoring Data Collection: Guideline for collecting information by using tablet through ODK system.	
M&E 03	Operational Manual for Output and Outcome Monitoring: Mission report 11 March – 13 April 2014	April 2014

No	Name	Date
M&E 04	Proceedings of the Internal Meeting on Lessons Learned on ODK Usage of Blue Gold Baseline Survey (BGBS)	12 June 2014
M&E 05	Report on Sharing results of Outcome Mapping WMG	9-11 March 2015
M&E 06	Mid-term Report EO for M&E of Blue Gold Intervention	28 Sep, 2018
<b>Journal</b>		
J 01	Impact on Production and Consumption of Orange Sweet Potato Varieties in Homestead Vegetable Production System of Poor Farming Households in Bangladesh	1 June 2016
J 02	Effect of sugar beet silage on milk production of dairy cows in Bangladesh	31 August 2016
J 03	Development of year-round vegetable farming technologies on brackish water shrimp Gher dykes in southern Bangladesh	2016
<b>Mid-term Review Mission Report</b>		
MTR 01	Aide Memoire Annual Review Mission Blue Gold Program	Sep, 2014
MTR 02	Aide Memoire: Mid Term Review Blue Gold Program	Oct, 2015
<b>News Letter</b>		
NL 01	BGP Barta Issue - 1	June 2015
NL 02	BGP Barta Issue - 2	Sep, 2015
NL 03	BGP Barta Issue - 3	Dec, 2015
NL 04	Polder Tidings	May, 2016
NL 05	New Age - Blue Gold Innovation Challenge	25 Dec, 2016
NL 06	SIAGI project brief	
NL 07	Dynamics of rural growth in Bangladesh sustaining poverty reduction	
NL 08	BGP Barta Issue - 4	March 2016
NL 09	BGP Barta Issue - 5	June 2016
NL 10	BGP Barta Issue - 6	Sep, 2016
NL 11	BGP Barta Issue - 7	Dec, 2016
NL 12	BGP Barta Issue - 8	June, 2017
NL 13	BGP Barta Issue - 9	Sep, 2017
NL 14	BGP Barta Issue -10	Dec, 2017
NL 15	BGP Barta Issue -11	March, 2018
NL 16	BGP Barta Issue - 12	8 Aug, 2018
NL 17	BGP Barta Issue - 13	17 Oct, 2018
NL 18	BGP Barta Issue - 14	20 Jan, 2019
NL 19	BGP Barta Issue - 15	12 June, 2019
<b>Value Chain Analysis Report</b>		
VCAR	Mustard Value Chain Analysis Report	20 Feb, 2017



## Video Materials Published by Blue Gold Program

Sl o.	Title	Video in brief	Date of publishing	Location
<b>General</b>				
1.	A short video overview of the BGP	Inception BGP	09/01/2014	<a href="https://www.facebook.com/bluegoldprogram/videos/648147021898302/">https://www.facebook.com/bluegoldprogram/videos/648147021898302/</a>
2.	Blue Gold Program orientation	BGP orientation	21/01/2015	<a href="https://www.facebook.com/pg/bluegoldprogram/videos/">https://www.facebook.com/pg/bluegoldprogram/videos/</a>
3.	Dutch Minister Visiting BGP	Special visit	11/07/2015	<a href="https://www.youtube.com/watch?v=QLDSovOmApU&amp;feature=youtu.be">https://www.youtube.com/watch?v=QLDSovOmApU&amp;feature=youtu.be</a>
4.	Popular Theatre on Blue Gold business messages	Drama Nil Sona	12/05/2016	<a href="https://www.facebook.com/bluegoldprogram/videos/1063282707051396/">https://www.facebook.com/bluegoldprogram/videos/1063282707051396/</a> <a href="https://youtu.be/ieb8rFwaSfE">https://youtu.be/ieb8rFwaSfE</a>
5.	There is no religion except work	Music video	21/08/2016	<a href="https://youtu.be/wODsHm6gWk">https://youtu.be/wODsHm6gWk</a>
6.	EKN visit Khulna 2017	Special visit	20/12/2017	<a href="https://youtu.be/kt9BhAWTgpU">https://youtu.be/kt9BhAWTgpU</a> <a href="https://www.facebook.com/bluegoldprogram/videos/1593758870670441/">https://www.facebook.com/bluegoldprogram/videos/1593758870670441/</a>
7.	ToF course for CDF at Kustiya 1 <sup>st</sup> batch	Capacity Development	26/02/2018	<a href="https://youtu.be/l-Aqsib3VKE">https://youtu.be/l-Aqsib3VKE</a> <a href="https://www.facebook.com/bluegoldprogram/videos/1661988843847443/">https://www.facebook.com/bluegoldprogram/videos/1661988843847443/</a>
8.	Women empowerment	HL session	04/03/2018	<a href="https://www.youtube.com/watch?v=-PnuR30-GNc&amp;t=50s">https://www.youtube.com/watch?v=-PnuR30-GNc&amp;t=50s</a>
9.	International Women's day	Empowerment	08/03/2018	<a href="https://www.youtube.com/watch?v=TQo3YzL0lug&amp;t=48s">https://www.youtube.com/watch?v=TQo3YzL0lug&amp;t=48s</a>
10.	Visit of Doug Wilson, Khulna	Special visit	16/05/2018	<a href="https://www.youtube.com/watch?v=IbUNAutERi0">https://www.youtube.com/watch?v=IbUNAutERi0</a>
11.	World Environment Day 2018	Environment	11/06/2018	<a href="https://www.youtube.com/watch?v=Z2afnlzjs8o">https://www.youtube.com/watch?v=Z2afnlzjs8o</a>
12.	Planning workshop of CAWM	Workshop	14/07/2018	<a href="https://www.youtube.com/watch?v=0iSFOOCGLFg">https://www.youtube.com/watch?v=0iSFOOCGLFg</a>
<b>WRM</b>				
13.	<a href="#">Earthwork technique</a>	Animated video	26/08/2015	<a href="https://www.facebook.com/bluegoldprogram/videos/927276007318734/">https://www.facebook.com/bluegoldprogram/videos/927276007318734/</a>
14.	<a href="#">Destruction by river erosion</a>	River erosion	19/01/2015	<a href="https://www.facebook.com/bluegoldprogram/videos/826375310742138/">https://www.facebook.com/bluegoldprogram/videos/826375310742138/</a>
15.	<a href="#">Water Infrastructure, Blue Gold</a>	O&M	05/02/2017	<a href="https://www.facebook.com/bluegoldprogram/videos/1292243807488617/">https://www.facebook.com/bluegoldprogram/videos/1292243807488617/</a>

## Blue Gold Program

Sl o.	Title	Video in brief	Date of publishing	Location
16.	In polder water management	WMG initiatives	26/03/2018	<a href="https://youtu.be/pH-DZQ_OuM0">https://youtu.be/pH-DZQ_OuM0</a>
<b>WMO</b>				
17.	<a href="#">Paschim Choto Bighai WMG Elec.</a>	WMG election	03/11/2014	<a href="https://www.facebook.com/bluegoldprogram/videos/784432451603091/">https://www.facebook.com/bluegoldprogram/videos/784432451603091/</a>
18.	<a href="#">Nandipara Madarbunia WMG</a>	Organizational	06/01/2015	<a href="https://www.facebook.com/bluegoldprogram/videos/820267171352952/">https://www.facebook.com/bluegoldprogram/videos/820267171352952/</a>
19.	Blue Gold Mela (fair) 2015	Organizational	09/03/2015	<a href="https://www.facebook.com/bluegoldprogram/videos/847578588621810/">https://www.facebook.com/bluegoldprogram/videos/847578588621810/</a>
20.	<a href="#">WMG exchange visit</a>	Horizontal Learning	17/01/2016	<a href="https://www.facebook.com/bluegoldprogram/videos/992210057491995/">https://www.facebook.com/bluegoldprogram/videos/992210057491995/</a> <a href="https://youtu.be/GFH73r3q1-k">https://youtu.be/GFH73r3q1-k</a>
<b>Agriculture &amp; Economical</b>				
21.	Crop Cutting Festival 2017,	CAWM	06/12/2017	<a href="https://youtu.be/iA2pl6TvpZ8">https://youtu.be/iA2pl6TvpZ8</a>
22.	12 months agricultural activities	Folk Song	24/04/2016	<a href="https://www.facebook.com/bluegoldprogram/videos/1052306724815661/">https://www.facebook.com/bluegoldprogram/videos/1052306724815661/</a>
23.	<a href="#">Business Development, Blue Gold</a>	Pictorial video	05/02/2017	<a href="https://www.facebook.com/bluegoldprogram/videos/1292247077488290/">https://www.facebook.com/bluegoldprogram/videos/1292247077488290/</a>
24.	Crop cutting festival 2017, Khulna	CAWM	10/12/2017	<a href="https://youtu.be/7zfzv0lJA_8">https://youtu.be/7zfzv0lJA_8</a>
25.	Blue Gold DAE Fair 2017, Khulna	Agriculture	20/12/2017	<a href="https://youtu.be/PcckWSmtnoM">https://youtu.be/PcckWSmtnoM</a>
26.	Summer tomato, Satkhira	Agri. business	06/01/2019	<a href="https://youtu.be/JAMfIS3Wy5w">https://youtu.be/JAMfIS3Wy5w</a>
27.	Hajol making process	Agriculture	03.01.2019	<a href="https://youtu.be/R5e9ucBELD4">https://youtu.be/R5e9ucBELD4</a>
28.	Jyostna Begum, Success story	Poultry rearing	09/01/2019	<a href="https://youtu.be/cGJfspouoHE">https://youtu.be/cGJfspouoHE</a>
29.	Aman rice production, Satkhira		09/01.2019	<a href="https://youtu.be/L6m4ha2Cofo">https://youtu.be/L6m4ha2Cofo</a>
30.	Umme Hani a successful woman	CAWM	15/06/2019	<a href="https://youtu.be/ebO-qfaZ0TY">https://youtu.be/ebO-qfaZ0TY</a>
<b>Television news</b>				
31.	Semi intensive fish culture	FFS, BTV	27/09/2015	<a href="https://www.youtube.com/watch?v=PxWUyhzoA4&amp;feature=youtu.be">https://www.youtube.com/watch?v=PxWUyhzoA4&amp;feature=youtu.be</a>
32.	Local poultry production	FFS, BTV	27/09/2015	<a href="https://www.youtube.com/watch?v=mJ0xuEehCyU&amp;feature=youtu.be">https://www.youtube.com/watch?v=mJ0xuEehCyU&amp;feature=youtu.be</a>

Sl o.	Title	Video in brief	Date of publishing	Location
33.	Watermelon at polder 22	FFS, BTV	07/06/2015	<a href="https://www.youtube.com/watch?v=Kw3-v20Yr-s&amp;t=460s">https://www.youtube.com/watch?v=Kw3-v20Yr-s&amp;t=460s</a>
34.	<a href="#">Increase Cropping Intensity</a>	Boishakhi TV	14/08/2017	<a href="https://www.facebook.com/bluegoldprogram/videos/1478873002159029/">https://www.facebook.com/bluegoldprogram/videos/1478873002159029/</a>
35.	Re-excavation of Amodkhali khal,	WRM, news 24	09/11/2017	<a href="https://youtu.be/-P2X1LHiEbE">https://youtu.be/-P2X1LHiEbE</a>
36.	<a href="#">Amodkhali Khal re-excavated at</a>	WRM, DBC	15/11/2017	<a href="https://www.facebook.com/bluegoldprogram/videos/1558865664159762/">https://www.facebook.com/bluegoldprogram/videos/1558865664159762/</a>
37.	Pen culture, Satkhira	Channel 9	08/12/2017	<a href="https://youtu.be/Vp-2qhcZgV4">https://youtu.be/Vp-2qhcZgV4</a>
38.	Crop cutting festival	Boishakhi TV	20/01/2018	<a href="https://www.youtube.com/watch?v=TY4EMivFs7I">https://www.youtube.com/watch?v=TY4EMivFs7I</a>
39.	Poltry rearing, BGP, Patuakhali	"BTV news"		<a href="https://youtu.be/ttRxhABIZfE">https://youtu.be/ttRxhABIZfE</a>
40.	Bashok leaf	Bangla vision	08/10/2018	<a href="https://youtu.be/jqNFsgGURho">https://youtu.be/jqNFsgGURho</a>
41.	CII	Business	31/07/2019	<a href="https://youtu.be/IQIxVSxX2TM">https://youtu.be/IQIxVSxX2TM</a>
<b>Videos from Innovation Fund</b>				
42.	Integrated farming		July, 2019	<a href="https://vimeo.com/showcase/5998174/video/336863657">https://vimeo.com/showcase/5998174/video/336863657</a>
43.	Beef fattening.		Sep, 2019	<a href="https://vimeo.com/showcase/6286124/video/357265743">https://vimeo.com/showcase/6286124/video/357265743</a>
44.	Polder replica focusing business			<a href="https://www.youtube.com/watch?v=EzL6yDSSldc&amp;t=60s">https://www.youtube.com/watch?v=EzL6yDSSldc&amp;t=60s</a>

<sup>i</sup> 5 performance grades (A-E) are based on their overall average achievements (expressed in %); 'A' => 80%; 'B' =70% -79%; 'C' =60% -69%; 'D' =50%- 59%; and 'E' =< 50%.