



Bangladesh Water Development Board (BWDB)



Kingdom of the Netherlands



Department of Agricultural Extension (DAE)



# Technical Report 24 Community-led Agricultural Water Management Strategic Plan 2018-2019

September 2018



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## Community-led Agricultural Water Management Strategic Plan 2018-2019

September 2018

Blue Gold Program

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## Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
1	23-02-2018	Judith de Bruijne / Md. Shorab Hossain	Bart Brookhuis	Guy Jones	Draft
2	16-09-2018	Judith de Bruijne / Md. Shorab Hossain	Bart Brookhuis	Guy Jones	Final Draft

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## Contents

<b>Contents</b> .....	<b><i>i</i></b>
<b>Summary</b> .....	<b>4</b>
<b>1. Introduction</b> .....	<b>5</b>
1.1 Definition of Community-led Agricultural Water Management.....	5
1.2 From research to expansion .....	6
1.3 Upscaling In-Polder Water Management .....	6
1.4 CAWM activities in 2016-2018.....	7
1.5 Structure of this report .....	8
<b>2. Results so far</b> .....	<b>9</b>
2.1 Higher production.....	9
2.2 Improved drainage and (potential) earlier establishment of Rabi crops .....	10
2.3 Less Rabi crop damage .....	11
2.4 Increased linkages with LGIs and GoB departments .....	12
2.5 New labour opportunities for women and men .....	13
2.6 Horizontal expansion .....	13
<b>3. Challenges and lessons learnt</b> .....	<b>16</b>
3.1 Resources for small scale infrastructure for IPWM .....	16
3.2 Adjusted market environment for seeds and other inputs.....	17
3.3 Uptake of technical and agronomic practices.....	17
3.4 Collective production and sales planning .....	18
3.5 Diversification of the CAWM concept .....	18
3.6 Governmental mainstreaming of CAWM concept .....	19
3.7 Sufficient human and financial resources.....	19
3.8 Contingency planning for weather extremes.....	19
<b>4. Proposed follow-up approach</b> .....	<b>20</b>
4.1 Short-term follow up .....	20
4.2 Long-term sustainability .....	23
<b>5. Staffing, Partners and Coordination Mechanisms</b> .....	<b>24</b>
5.1 Governmental partners.....	24
5.2 Research partners.....	24
5.3 Other external service providers .....	25
5.4 Coordination .....	26
5.5 Staffing.....	27
<b>6. Activity Plan</b> .....	<b>29</b>

- 7. Monitoring & Evaluation ..... 30**
  - 7.1 Objectives of M&E study ..... 30**
  - 7.2 Methodology of M&E study ..... 30**
- Annex I - List CAWM areas 16-19 ..... 31**
- Annex II - Budget CAWM 2018-2020 ..... 32**

List of Tables

Table 1: WMG self-reported Aman harvests 2016 in batch 1 CAWM schemes..... 9

Table 2: Self-reported Rabi yields 2017 in batch 1 CAWM schemes Patuakhali ..... 10

Table 3: Dates of sowing and harvest Rabi crops in batch 1 CAWM areas Patuakhali ..... 10

Table 4: Assessment of Rabi crop damage in 2016 between CAWM and non-CAWM areas ..... 11

Table 5: Autonomous replication of crop synchronisation and BRRRI dhan 52 in 6 polders belonging to the CAWM initiative..... 14

### Summary

Improved agricultural productivity and profitability in the coastal belt of Bangladesh can be achieved with water and land use planning at catchment level or beel level, also known as In-Polder Water Management (IPWM). This can be achieved by encouraging farming (and fishing) WMG members to implement small-scale infrastructural interventions, by providing intensive guidance to improve or synchronize their cropping (or crop-fishery) systems and by practicing on-farm water management. Experiences with this approach have been gained in a pilot research project led by IRRI in 2015 in polder 30. As results have been very promising, the Blue Gold Program (with DAE in the lead) have upscaled the approach to 50 schemes (beel level) by 2018, with another 25 planned for the season of 2019-2020.

The effects of CAWM schemes on agricultural profits are positive. Within the schemes higher yields are achieved, partly because of special CAWM Farmer Fields Schools (FFS) led by DAE. The introduction of High Yielding Varieties (HYVs) also contribute to this end. HYVs have been made possible by improved water management practices. Rabi crops damage due to early rainfall has been reduced, increased linkages with local government institutes are established and new labour opportunities have been created – especially for woman. Most importantly, these CAWM-schemes work as showcases. Neighbouring farmers show a high degree of uptake and adaption to the newly introduced methods.

The main challenges for the CAWM concept is the further upscaling of the approach, as limited funds are available for CAWM-Farmer Field Schools led by DAE. The introduction of small scale infrastructure for IPWM outside CAWM schemes, bypassing the CAWM-FFS limitation, is made possible by a reallocation of funds originally destined for WMG offices. Also, the markets for both inputs (e.g. seeds) and sales of produce remain challenging.

As CAWM – schemes are strong showcases of agricultural practices and water management, horizontal learning activities will be organized as much as possible in the short term. For the longer term, the objective is to mainstream the CAWM concepts within the institutions of the Government of Bangladesh, where DAE has already shown strong ownership and willingness to incorporate the approach in its activities.



## 1. Introduction

### 1.1 Definition of Community-led Agricultural Water Management

The Blue Gold Program (BGP) has been working intensively to enhance the main water resources management (WRM) infrastructure in selected coastal polders in Bangladesh while at the same time building capacity of Water Management Organisations (WMOs) regarding organisational management and attending to the improvement of cropping system productivity and profitability.

Next to the need to strengthen embankments for water safety purposes and re-excavate major canals and repair sluices to improve drainage, flushing and water storage capacities of the polders, the MRT, ARM and others have emphasised the potential for further crop, fish and water management improvements at secondary and tertiary levels. It is believed that improved agricultural productivity and profitability in the coastal belt of Bangladesh can only be achieved if water and land use planning at catchment level and synchronisation in agricultural units<sup>1</sup> is initiated. The current fragmentation of landownership and use by many smallholders and sharecroppers, establishing crops in a non-synchronized manner, impedes opportunities for joint drainage and cropping system adaptations.

The solution lies in encouraging farming (and fishing) WMG members to plan for and implement jointly small-scale WM infra interventions and in providing intensive guidance to those WMG members to improve, and where possible synchronize, their cropping (or crop-fishery) systems and practice on-farm water management. This, in combination with encouraging WMG members to orient better on markets and strategically pursue profitable collective action, is expected to result in better production and higher incomes. The Community-led Agricultural Water Management (CAWM) initiative under the BGP embraces this approach and is pro-actively finding mechanisms and resources to implement this solution on a larger scale within the BGP area.

Under the BGP, the CAWM approach can be distinguished by four main ingredients:

1. Water Management: (sub-)catchment level water management planning, implementation, operation, maintenance by WMOs with support of relevant stakeholders (BWDB, DAE, LGIs)
2. Intensive technical and agronomic guidance by DAE-led year-round CAWM Farmer Field Schools (FFS) to WMG members to ensure they can independently synchronise cropping and manage improved varieties, concomitant crop technologies and on-farm water management.
3. Coaching WMG members to focus on both productivity and profitability. This involves market orientation, collective action, networking with suppliers, service providers and buyers and establishing linkages with LGIs and other public and private sector actors to enable resources of knowledge, inputs and co-funding.<sup>2</sup>
4. Cost-sharing of agri-inputs and small-scale water management infrastructure during the first year of introduction.

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<sup>1</sup> An agricultural unit is a lower level hydrological unit within in a polder which is embanked by small levees (often also used as inter-village roads). Also referred to as a sub-catchment.

<sup>2</sup> Note: The coaching of WMG members is supplemented by other BGP activities focussing on the development of other market actors

## 1.2 From research to expansion

Experiences with the Community Water Management (CWM)<sup>3</sup> approach have been gained in a pilot research project led by IRRI and co-supported by BGP, Institute of Water Modelling (IWM), Bangladesh Rice Research Institute (BRRI), International Water Management Institute (IWMI), BRAC and Shushilan in polder 30, Fultala village, during 2015 and 2016<sup>4</sup>. After one year of implementation, the outcomes<sup>3</sup> were so promising that BGP has started to roll-out replications to other polders and catchments<sup>5</sup>. The BGP initiated 10 schemes, targeting 10 WMGs in 8 different polders, in June 2016 and an additional 15 schemes were launched in June 2017, targeting 19 WMGs in 14 different polders. In 2018, 25 CAWM schemes have started in 13 polders (see Annex 1). With expansion of the program, not only lessons learnt on water management and production issues from the CWM pilot in polder 30 were considered, but insights coming from Value Chain Analysis (VCA) for relevant crops to be promoted under CAWM, and lessons learnt from BGP’s market orientation activities and market-oriented FFS (MFS) were used too. This is to ensure that profitability issues would be an integral part of the program.

## 1.3 Upscaling In-Polder Water Management

The Annual Review Mission 2017 has specifically stated to increase the scale of In-Polder Water Management (IPWM). CAWM can be considered as one of the entry points for IPWM. The CAWM approach is holistically linked with other IPWM-initiatives within the BGP. These include:

- Operational & Maintenance Catchment Planning (OMCP). Catchment Committees are trained by BGP TA staff to sensitize WMGs for catchment planning and to organize Catchment Planning workshops with WMAs, BWDB, DAE and LGI representatives. The workshops result in cropping pattern-, water management issues- and water level management maps and detailed water management action plans. See also “Operations and Maintenance - Procedures for Catchment Planning” (dated 26<sup>th</sup> August 2018)
- Cropping Intensity Initiatives (CIs). These are less resource-intensive cropping system demonstrations than CAWM, where land elevation and water infrastructure conditions serve as proxy for water resource management and suited for horizontal learning purposes. These farmer sites demonstrate the potential of more profitable cropping pattern, e.g. short duration T. Aman-Mustard (chance crop)- Mung bean/Sesame in areas where early drainage of water is possible due to BGP’s rehabilitated WRM infrastructure. CI is promoted in 15 BGP polders covering 96 acres of land spread over 43 trials.
- Under the Innovation Fund, the feasibility study for “Roads for Improved Water Management and Flood Protection” has been conducted by MetaMeta. Findings are promising and we are actively looking for ways to include the approach as a further means to strengthening IPWM.

The IPWM approaches are complementary to each other as they differ in scheme-size, polder coverage, resource intensity, involvement of partner organizations and beneficiary participation. O&M Catchment Planning and CAWM are therefore mutually complementary. O&M Catchment Planning initiates the development of plans for preferred cropping patterns and water levels covering the entire BGP area. This is with little guidance and may lead to suboptimal planning. A showcase from CAWM could trigger and motivate, resulting in increased ambitions and optimal planning. At the same time, catchment planning may

<sup>3</sup> In the end of 2016, the CWM abbreviation was extended to include an A (Agricultural). The abbreviation was considered confusing with other terminology used within BWDB, as CWM also stands for Chief Water Management. Furthermore, the addition of “Agricultural” added extra weight to importance of proper water management to increase agricultural productivity and profitability.

<sup>4</sup> See for more information BGP IF05# report WUR – “Baseline on Community Water Management – February 2015” and BGP Technical Report 18# “Improved Water Levels Community Water Management (CWM) Pilot Polder 30 – July 2016”

<sup>5</sup> At the same time, IRRI continued its research work on CWM together with BRAC and Kansas University in polder 30 by involving additional WMGs and testing new crop technologies and water management practices as well as promoting nutrition for women under the USAID funded System Intensification Innovation Lab (SIIL) project. Though not being part of this research project, BGP is still working closely with IRRI and exchanging proceedings and results regularly.

lower thresholds to implement CAWM practices – making horizontal learning and actual adoption of CAWM practices more likely.

The upscaling of IPWM is executed through a mix of CAWM and the above mentioned initiatives. An example of upscaling of CAWM practices is the fact that small scale infrastructure, up till now only available within CAWM schemes, is made available for all WMGs with a good application.

### 1.4 CAWM activities in 2016-2018

BGP Technical Report 20# “Strategic Plan for Community Water Management” has outlined important CAWM upscaling priorities and activities for 2016-2018. CAWM have also been integrated in the relevant Polder Development Plans. Overall, most of these activities have been implemented or are on track and even additional ones have been incorporated. Below the major CAWM activities since June 2017 up to the publication date of this report are summarised. The next chapter elaborates on the outcomes of these activities.

- Selection and physical identification of CAWM areas was based on the selection criteria outlined in BGP TR 20# and executed by combined teams of zonal BGP TA staff, BWDB and DAE field staff, WMA, WMG and LGI representatives. 10 schemes were selected in early 2016, another 15 areas in early 2017 and 25 in 2018.
- CAWM Aman and Rabi crop and water management planning (and evaluation) workshops for WMG members have been organised by the BGP TA team with support of DAE/BWDB (OCWM). The upcoming ones will be fully led by DAE. The workshops were organised bi-annually and separate for each zone. During the Rabi planning workshops, the Aman season was evaluated (and vice versa). A CAWM challenge between WMGs was launched during the Rabi evaluation and Aman planning workshops in earlier 2017.
- 20 DAE-led year-round CAWM FFS started in June 2016, 30 in June 2017 and another 50 in 2018. The FFS aims to provide intensive technical and agronomic guidance on crop synchronisation, improved varieties management, new crop technologies and on-farm and catchment water management. The FFS integrates market orientation, aimed at farmer decision making, production and sales planning and strengthening group bargaining power, etc.
- DAE year-round CAWM FFS curriculum has been developed and officially published by DAE. The more than 250 pages curriculum addresses the above mentioned technical content, but also adult learning, participatory facilitation techniques and detailed session guidelines.
- DAE’s Blue Gold’s FFS session guide pays attention to in-polder water management and CAWM, and several internal workshops/meetings have been organised by DAE to inform staff on CAWM.
- Training of Facilitators year-round CAWM FFS started with a first batch in Aman 2017 and subsequently for Aman 2018.
- Planning, design and implementation of small-scale WM infrastructure has been finalised for 25 CAWM areas, and the planning for other areas is ongoing.
- Collective action among WMA/WMGs to create financial sustainability of WM infrastructure is actively promoted through the establishment linkages with UPs, BWDB and DAE group support. UP orientation sessions have addressed IPWM and number of WMGs have managed to get co-funding for small-scale infra through their UP.
- Horizontal learning visits, Farmer Field Days and crop cutting festivals on CAWM were attended by more than 760 participants from 125 WMGs in 2016/2017. During those events practising WMGs have demonstrated the benefits of proper IPWM and crop synchronisation to neighbouring non-practising WMGs.
- Monthly zonal coordination meetings between DAE and TA team are being held to monitor the progress of implementation. BWDB field staff is also invited, and attends now and then.

In total 29 WMGs have synchronised crops, practice well-coordinated water management practices and jointly manage market linkages with direct support from BGP, while this report was published. Recent

adopters are already further promoting CAWM to other WMGs through horizontal learning. In Patuakhali zone, 37 WMGs have started replicating crop synchronisation and improved T. Aman variety management without direct support of BGP after observing 6 WMGs practising CAWM. In the Patuakhali zone, the replication area multiplied 9-fold within the same catchment the practising WMG was located and 25-fold on average considering the whole polder area. We have not been able to collect data in Khulna and Satkhira, but we estimate the autonomous replication of about 4-fold in Khulna and about 2-fold in Satkhira within the catchment area. The autonomous replication is likely not solely attributable to CAWM-FFS and horizontal learning activities, but should be seen in broader perspective of BGP activities, including the CII, MFS and sluice catchment planning.

### 1.5 Structure of this report

This document builds upon BGP Technical Report 18# “Improved Water Levels Community Water Management (CWM) Pilot Polder 30”, which contained an evaluation of lessons learnt from the pilot on CWM in polder 30 from Jan 2015-Jun 2016 and BGP Technical Report 20# “Strategic Plan for Community Water Management”, which outlined a process approach and activities for CWM<sup>1</sup> upscaling and horizontal learning for the period mid 2016-mid 2018.

After two years of strategic plan implementation, the actual field practice has demonstrated a larger momentum for upscaling than expected and partnerships have been formalised. At the same, the BGP encountered unexpected challenges. From this process, lessons can be learned and it is essential to refine and further strengthen the CAWM approach. It is therefore timely to review, update and release a new version of the plan.

This revised plan outlines the results so far (Ch. 2) and lessons learnt and challenges (Ch. 3), which are logically followed up with a proposal for an adjusted approach (Ch. 4). The adjusted approach is accompanied with a revised overview of staffing arrangement, partnerships and coordination mechanisms (Ch. 5), activity plan (Ch. 6) and monitoring & evaluation mechanisms (Ch. 7).

## 2. Results so far

Based on the activities outlined in the previous chapter, the CAWM trajectory in BGP has demonstrated in the following outcomes for the involved WMGs up to this date:

- Increase in adoption of improved varieties and higher production
- Less Rabi crop damage
- Improved drainage and (potential) earlier establishment of Rabi crops
- Increased network linkages with LGIs and GoB departments
- New labour opportunities for women and men
- Horizontal expansion to other WMGs groups within the same catchment or even beyond

Some findings are based on data collected by the DAE and the TA team, while other findings are supported by anecdotal evidence. Unfortunately, the 2-year independent CAWM monitoring contract, assigned to BRAC in December 2016, needed to be terminated due to poor performance.

The sections below outline the results in detail and provide evidence where we can.

### 2.1 Higher production

The higher production of Aman rice within the CAWM areas are considered by WMG members as one of greatest achievements of the initiative. The introduction of year-round CAWM-FFS by DAE and the distribution of the HYV seeds have been highly instrumental in this achievement.

To get official statistics on higher production, and not just farmers' best estimates, we contracted BRAC to do independent monitoring and crop cuts. Unfortunately, we had to terminate the contract due to poor performance. This implies that we can only report farmers self-reported yields over the year 2016-2017. In the tables below, one can find results for both Aman and Rabi seasons.

**Table 1: WMG self-reported Aman harvests 2016 in batch 1 CAWM schemes**

WMG Name	Polder Area	Aman Harvest (ton /ha)
Gopipagla CAWM	Polder 22	7.0
Fulbaria CAWM		5.2
Bakultala CAWM	Polder 29	6.0
Ghaterkhal CAWM	Polder 31 part	5.5
Uttar Soilabunia CAWM	Polder 43/2B	6.0
Doribahir chair CAWM		6.2
Atharogachia CAWM	Polder 43/1A	5.3
Shonakhali CAWM		5.0
Morichbunia CAWM	Polder 43/2D	5.0
Daskin Bighai Daskin CAWM	Polder 43/2A	5.6
<b>AVERAGE</b>		<b>5.7</b>

The average normal Aman harvest is around 3.0 to 3.5 ton/ha in the districts BGP is working, according to DAE reports<sup>6</sup>. This implies that the introduction of HYV Aman (mostly BRRI dhan 52 variety) almost doubled Aman yields. As the design of WM interventions of the first batch started in June 2016 during the monsoon, the WMOs were not able to timely construct secondary and tertiary level WRM infra interventions to facilitate improved drainage. The good Aman harvest in 2016 can thus likely be explained by 1) the good quality HYV

<sup>6</sup> See also BGP Technical Report

seeds distributed, 2) the provided DAE-led FFS sessions which stimulated crop synchronisation and good agricultural practices in maintaining the Aman crop and 3) the fact that crop were synchronised and the main infrastructure was already rehabilitated by the BGP and functioning properly, so water could be drained out already to a great extent. This proves that introducing CAWM only makes sense in areas where main sluices have been rehabilitated and main canals have been excavated. However, more result can be expected when also secondary and tertiary level WRM interventions have been completed.

The Rabi harvest in 2017 also shows a reasonable success. For all CAWM areas under cultivation, water melon yield was a bit higher than the normal average. Mung Bean was for 3 out of 6 CAWM areas higher than normal. Sunflower and groundnut yields were a bit on the low side, but acceptable. Overall, the yields of those 4 Rabi crops can be considered good considering the erratic rains from which the areas suffered and they had comparatively less crop damage than neighbouring areas (also see section 2.3). However, the sesame yield was completely lost during a heavy rainfall in all four respective polders in 2017.

**Table 2: Self-reported Rabi yields 2017 in batch 1 CAWM schemes Patuakhali**

Name of WMG	Polder No	Water Melon		Sunflower		Mung Bean		Sesame		Groundnut	
		Land	Yield	Land	Yield	Land	Yield	Land	Yield	Land	Yield
		ha	ton/ha	ha	ton/ha	ha	ton/ha	ha	ton/ha	ha	ton/ha
Dakkin Bagi Dakkin	43/2A	-	-	0.58	0.49	13	2.2	1	Nil	0.42	1.91
Dakkin Atharo Gasia	43/1A	5	33	0.72	0.61	20	1.61	0.45	Nil	5.83	1.83
Dakkin Sonakhali	43/1A	33	37	-	-	8	1.8	-	-	7	1.97
Uttar Chailabunia	43/2B	-	-	1	0.45	26	1.71	2	Nil	10	1.5
Doribaherchor	43/2B	1	30	-	-	25	2.1	-	-	4	2
Purbo Marichbunia	43/2D	-	-	0.7	0.58	23	2	-	-	2.3	1.63
<b>Total and Average</b>		<b>39</b>	<b>33.33</b>	<b>3</b>	<b>0.52</b>	<b>115</b>	<b>1.9</b>	<b>3.45</b>	<b>Nil</b>	<b>29.55</b>	<b>1.8</b>

## 2.2 Improved drainage and (potential) earlier establishment of Rabi crops

The improved drainage resulting from crop synchronisation, better coordinated operational water management and/or the implementation of small-scale WM infrastructure has enabled in a few CAWM areas early drainage and harvest of Aman rice. This in its turn provided a few CAWM-WMGs the opportunity to establish Rabi crops earlier (see also Table 3), however most of the involved WMGs did not manage to sow Rabi crops earlier. First of all, not all WMGs were able to drain their fields sufficiently after Aman harvest, because small-scale WM infrastructure was not yet in place. Secondly, many WMGs did not receive or procure Rabi seeds timely, and finally, in some cases farmers were not yet accustomed or convinced of the necessity to sow earlier.

**Table 3: Dates of sowing and harvest Rabi crops in batch 1 CAWM areas Patuakhali**

Name Of WMG	Polder No	Date of Sowing	Date of Harvest
Dakkin Bagi Dakkin	43/2A	20/01/17 to 30/01/17	25/03/17 to 13/04/17
Dakkin Atharo Gasia	43/1A	02/02/17	20/04/17
Dakkin Sonakhali	43/1A	25/11/16	10/03/17
Uttar Chailabunia	43/2B	10/02/17	25/04/17
Doribaherchor	43/2B	25/01/17	20/04/17
Purbo Marichbunia	43/2D	01/02/17	24/04/17



We got signals from the few WMGs that harvested Rabi crops earlier, they obtained better market prices. An assumed, but not yet investigated, advantage of bringing products early to the market is a higher demand and willingness to pay among traders and customers.

## 2.3 Less Rabi crop damage

The early establishment of Rabi crops also enables a harvest well before the season with erratic rains and cyclones starts in April. This ensures less Rabi crop damage and thus higher average yields. However, the last few years have demonstrated that erratic rains also occur much earlier, even in February or March. The CAWM areas have demonstrated that proper on-farm water management, as promoted under the initiative, can reduce crop damage substantially compared to areas paying little to no attention to on-farm water management. Table 4 compares 6 WMGs practising CAWM with a few WMGs who did not adopt CAWM (yet) in the Patuakhali zone<sup>7</sup> after erratic rains in early April 2017. CAWM interventions helped substantially to reduce Rabi crop damage, resulting in an average of 29% crop damage in batch 1 CAWM areas compared to an average of 56% in the same zone. The assessment has been developed by the TA team with support of the involved WMGs.

**Table 4: Assessment of Rabi crop damage in 2016 between CAWM and non-CAWM areas**

Polder	Crop-wise damaged assessed in CAWM areas %					Average damage per CAWM area %*	Average damage outside CAWM area %*
	Watermelon	Sunflower	Mung Bean	Ground Nut	Sesame		
43/2A	NA	10	25	35	100	23	40
43/2D	NA	20	30	35	100	28	50
43/2B	5	NA	20	25	80	17	35
43/2B	NA	40	35	40	100	38	60
43/1A	20	NA	35	40	80	32	70
43/1A	30	30	40	45	100	36	80
<b>AVERAGE</b>						<b>29</b>	<b>56</b>

\*Excluding Sesame

<sup>7</sup> Only the Patuakhali zone has been assessed as the crop damage from erratic rains in Khulna was minimal.

## 2.4 Increased linkages with LGIs and GoB departments

The CAWM initiative has also stimulated increased linkages with Local Government Institutions (LGIs) and governmental departments like DAE, BWDB and DoF. These linkages were stimulated from the start as LGIs, BWDB and DAE were actively involved in CAWM area selection.

The special year-round CAWM – FFS provided by Sub-Assistant Agricultural Officers (SAAOs) of DAE has ensured a tight linkage between WMGs and the respected SAAOs. A substantial number of WMG members claimed that they earlier did not know that an SAAO was active within their Union, and now they have his/her phone and can call anytime with questions. For the involved SAAOs it was also new to cooperate with WMGs, as they are used to work with a selection of farmers chattered throughout their Union. They appreciate to engage with a united group of farmers who all reside in the same agricultural unit. This makes demonstration and coaching in the field easier and they see the advantage of joint drainage.

WMGs have been stimulated to lobby with their Union Parishad (UP) during their yearly planning and budgeting meetings. The involvement of UP has resulted in a number of cases co-contribution to small-scale WM infrastructure or conflict resolution.

Though one of the main selection criteria for intensive CAWM support from BGP is the presence of functioning main WRM infrastructure, some WMGs still had no optimal main WRM infrastructure due to influential people controlling water resources for their own benefit. The CAWM initiative enabled strong engagement of BWDB and a solution to some of the problems.

### SUCCESS STORY

*In April-May 2017, Jeala-Badandanga sub-catchment WMG in polder 2 planned to cultivate Aman BRRRI dhan 52 crop under the CAWM initiative instead of Aus and Aman BRRRI 28. In this catchment water drains through Sagla sluice, but previous years influential shrimp/fish farmers were closing the sluice to keep water in. This created waterlogging. This year, when the WMG decided to implement CAWM, they realised they should drain water through the sluice and open it timely. They organised a meeting with the BWDB-XEN and he agreed to open the sluice for draining water, but he stated influential shrimp/fish farmers may close it again anytime. Therefore, the WMG decided to call UP/Upazila Chairmen and UNO to the meeting and UP/Upazila assured the farmers the sluice would be opened. The sluice was opened on 19 June 2017 in the presence of BWDB-XEN Satkhira and it appeared that slushy earth needed to be removed. For this purpose, Jeala-Badhandanga WMG, called in the other 2 WMGs in the Sagla sluice catchment: Purbo Machkhola Purbo WMG and Purbo Machkhola Pashim WMG. They organized themselves to jointly manage water and worked together to remove slushy earth from sluice up to the outfall river. The CAWM farmers also developed a small drain along their plots to connect to main channel (about 1.5km) with the cooperation of UP chairman. Shrimp/fish farmers were still trying to block the flow by the creation of a cross-dam during the monsoon, but the WMGs kept on working together to timely involve UP/Upazila chairmen to handle the situation.*

### Closure of tertiary khal created by influential shrimp/fish farmers in polder 2





## 2.5 New labour opportunities for women and men

While before the CAWM activities many of the involved areas were singled cropped, all areas are now at least double cropped and some areas there is even scope for a chance crop (like Mustard) to realise triple cropping. As one can imagine, more intensive cultivation requires more inputs in relation to time and other resources. On the one hand, we have observed that this is solved within the household by giving a more active role for female household members to be engaged in activities which were traditionally only allocated to men. The CAWM initiative has been stimulating participation of women especially, trying to make sure that they would be benefitting too (though that is challenging, demonstrated by the case study below). Husband and wife are participating in the CAWM-FFS sessions. The sessions are split up in two areas: one on field cropping practices and one on homestead production. Whether this is an effective approach should still be evaluated.

The involvement of women in Rabi crop production and marketing is more accepted than in Aman rice cultivation. However, extra labour demands during the Rabi season could not fully be solved within the household and landless polder inhabitants were benefitting from extra cultivation under CAWM too. The fact that Rabi crop production is enabled and intensified under the CAWM initiative results in higher incomes for women and men, though not equally distributed.

Due to the termination of BRAC's monitoring contract, we have unfortunately no structured data to support this statement, and can only provide anecdotal proof with the case study below.

### CASE STUDY

*During Rabi season 2017, Daskhin Sonakhali WMG in Polder 43/1A cultivated in 95% of its area watermelon under the CAWM initiative. Women were sowing the seeds, maintaining the field and carrying water from channel/river for irrigation. The expansion in water melon production enabled a lot of extra work and labourers were hired. Labour wage/day for men was Tk.500.00 and for women Tk.350.00 excluding food. In general women were happy with this extra source of income, which they said to spend on better nutrition for the family, school materials for children and other household needs. The challenge for women however remains that they are not equally being paid compared to men and must combine field work with many other household tasks (while men are sipping tea at one of the many stalls).*

## 2.6 Horizontal expansion

Perhaps the most exciting result of the CAWM initiative is the momentum it has created among neighbouring WMGs within the same polder, or even beyond in adjacent polders. Horizontal learning visits, Farmer Field Days and crop cutting festivals on CAWM were attended by more than 760 participants from 125 WMGs in 2016-2017. During those events practising WMGs have demonstrated the benefits of proper IPWM and crop synchronisation to neighbouring non-practising WMGs. Without (or only with limited) support of DAE, BWDB or BGP TA staff, neighbouring WMGs who participated in horizontal learning events, have started to synchronise their crops, adopt HYV Aman rice and trying to learn from practising WMGs the right water and crop practices in the hope for higher Aman yields and early establishment of Rabi crops. It is too early to say whether they will get similar results, in terms of yields and improved drainage, as the WMGs intensively guided by DAE, BWDB or BGP TA staff. We do foresee some constraints, which will be discussed in the next chapter, and realise that the 'automatic' adopters should be monitored as well (see Chapter 8).

Table 5 shows that the area under HYV Aman (BRR1 dhan 52) in 2017 is 9-fold as much in same WMG catchment areas of Patuakhali zone compared to 2016. One can see that (almost) complete sluice catchments are covered; demonstrating that upscaling from one agri-cultural unit/sub-catchment to a sluice catchment covering several agri-units is possible in only one year. Taking in consideration, autonomous replication beyond catchment boundaries within the same polder area, the figure is even 25-fold.

How the autonomous replication took place need to be investigated. It is assumed it has been evoked through horizontal expansion promotion activities and other supporting extension and coaching activities by field staff of DAE, BWDB and BGP TA team.

**Table 5: Autonomous replication of crop synchronisation and BRRI dhan 52 in 6 polders belonging to the CAWM initiative**

Polder No.	Polder area (ha.)	WMG catchment area (ha)	WMG catchment area coverage in 2016 (ha)	Replication in WMG catchment in 2017 without support (ha)	Replication beyond WMG catchment in 2017 without support (ha)	Total coverage (ha)	Percentage of coverage in polder	Replication rate
<b>43/2D</b>	6500	260	21	130	301	431	7%	21
<b>43/2B</b>	5460	850	42	510	319	829	15%	20
<b>43/2A</b>	5182	300	15	210	419	629	12%	42
<b>43/1A</b>	2675	550	60	425	1158	1583	59%	26
<b>43/2F</b>	4453	0	0	0	110	110	2%	0
		<b>1960</b>	<b>138</b>	<b>1275</b>	<b>2307</b>	<b>3472</b>	<b>23%</b>	<b>25</b>

WMG members stated that the adoption rate could have been even higher, but the low market availability of seeds has prevented higher uptake. Only a limited number of farmers had the financial means to buy the HYV Aman seeds at a high market price. BGP has already taken measures in 2017 to ensure further acceleration of HYV Aman establishment in 2018 will take place. A special partnership between BADC and DAE was set up to provide seed production and preservation training to WMG members.

A SUCCES STORY

Ashim Roy from Gopipagla in polder 22 is one of the farmers who has joined BGP’s CAWM up-scaling initiative. In the very beginning, Roy did not fully trust the promoted technologies under CAWM, but after attending the provided FFS, adopting the HYV BR-52 and taking care of his Aman crop as instructed, he reported a yield of 7.2 ton/ha on 27 November 2016. All farmers of the CAWM initiative reported yields of more than 5.2 ton/ha, which is significantly higher than the normally reported 3.5 ton/ha on average for local varieties of Aman rice. The fact that Roy already harvested on 27 November, created scope to prepare his land early for Rabi crop cultivation. For the first time this year he cultivated sunflower, mung bean (Bari-6 variety) and watermelon. The pro-actively implemented solutions to retain water, to remove obstacles which hampered drainage flow and the resolution of existing conflicts about drainage, have caused a timely harvest of Aman rice and a substantial number of formerly fallow lands in Gopipagla and other CAWM areas to be turned into a diverse patchwork of Boro rice, sesame, mung bean, water melon, sunflower and vegetables in the Rabi season. Further crop transformation and diversification in Rabi season is expected next year when in-polder WRM infrastructure will have been implemented by the involved WMOs.

Now Roy is one the prominent promoters of CAWM knowledge. He and his WMO arranged two batches of horizontal learning events for sixty adjacent WMO farmers on CAWM activities. The neighbouring WMO farmers nowadays visit his field to understand the cultivation technique and are replicating the method in their catchment. Roy’s social dignity is enhanced through his success and he feels that a mental change took place among the WMO farmers to take care of in-polder water management to increase crop production and income. The horizontal learning events organised by Roy and his few WMO members were not the only ones during the Aman harvest. In total 65 batches of exposure visits and crop-cutting festivities were organised by the BGP in 2016 and many participants expressed enthusiasm to start replicating CAWM.



### 3. Challenges and lessons learnt

While the first years of growing CAWM implementation has demonstrated many positive results, there is scope for improvement and further expansion. For this purpose, it is essential to identify encountered constraints and lessons learnt. This chapter highlight those in the following areas:

Basic requirements for the success of the CAWM approach

- Available resources for planning, design, implementation, and O&M for small-scale water management infrastructure
- Adjusted market environment for seeds and other inputs
- Uptake of technical and agronomic lessons on water and crop practices
- Collective action beyond joint cultivation and water management, moving towards full synchronized cultivation, collective production and sales planning and market orientation

Enabling environment for long-term sustainability

- Diversification of the CAWM concept
- CAWM concept mainstreamed within the government of Bangladesh
- Sufficient well-qualified human and financial resources to support further CAWM at the current scale
- Contingency planning for weather extremes

#### 3.1 Resources for small scale infrastructure for IPWM

One of the main criteria for the selection of the current CAWM areas is the availability of well-functioning main WRM infrastructure, meaning that a water safety is guaranteed and main sluices, inlets and/or outlets have no defects. Nevertheless, all areas suffered from a certain degree of in-polder drainage problems requiring small-scale water management infrastructural measures, like the excavation of a tertiary canal or the installation of a fallboard on an existing culvert. The CAWM initiative paid special attention to map these constraints in a participatory manner involving the WMGs, WMA, UP members and DAE and BWDB field staff (SAAOs and XOs/SOs).

The identification of measures as such is not challenging. The design and construction supervision of required minor infrastructural works, in case WMGs require (box) culverts or substantial stretches of secondary or tertiary khal re-excavation can be resource intensive. To upscale small scale infrastructure for IPWM throughout the BGP polders, a second 'hands-off' approach has been developed that puts responsibilities for implementation closer to the WMGs and WMAs. Details can be found in the note "Procedures for implementation of small scale infrastructure for in-polder water management" (d.d. 16<sup>th</sup> September 2018). A TA fund is available to give substance to this upscaling, covering all WMGs in the BGP area.

Another issue is the financing of the small-scale water management infrastructure. While farming WMG members agree to pay for agro-inputs after the introduction of CAWM and willing to dig field channels by their own means (in kind), they are also challenged to fully finance small-scale water management infrastructure. Part of the solution may be stimulation of O&M fund collection and collective labour mobilisation, and enhancing lobby capacity towards UPs. However, additional mechanisms of co-contribution are required to accelerate the adoption process (see also Chapter 4).

### 3.2 Adjusted market environment for seeds and other inputs

Since the start of the CAWM initiative in June 2016, seed distribution has not been without problems. Both in relation to quantity and timing:

- **Quantity:** the standard DAE FFS include 25 male and 25 female participants, while the size and number of farmers involved in one agricultural unit (sub-catchment) under CAWM differs greatly; some CAWM groups even encompass 90 WMG members. Under the standard FFS model, DAE can only provide for 50 farmers seeds. Additional supplies are thus required, and have been provided over the last year ad hoc by IRRI as an emergency measure.
- **Timing:** the procedure of releasing funds for seed distribution at DAE is complex. First approval at national level for the total FFS budget is required and funds need to be released. Those funds then require transfer to Upazila level. The involved Upazila level officer receives funds from different projects and needs to coordinate this well (and timely) with his field staff (SAAOs). If the transfer process easily delay can occur and good communication is essential.

Overall, only 19% of the required seeds have been distributed on time in the Aman season of 2016. Especially the Khulna/Satkhira zone suffered: only 10% was distributed vs. 35% for the Patuakhali zone<sup>8</sup>. In Polders 31part and 29 (Khulna), 250 kg BRRI dhan 72 seed was provided by IRRI to serve as a partial compensation. The right timing for seed distribution would have been directly after Eid-al-Fitr (end of June), however the actual timing for 12 out of 14 areas was delayed.

A number of farmers was willing to buy the seeds on the market, but the specific HYVs that BGP promotes are not widely available and generally expensive. It is evident that the market environment still needs to adjust to the newly introduced cropping pattern to be able to supply seeds timely.

Another partial solution lies in creating less dependence of farmers on external provided seeds. Farmers should be enabled, to the extent possible, to preserve and proliferate their own seeds. Therefore, BGP has already set up a special partnership between BADC and DAE to provide seed production and preservation training to WMG members. This can never replace fully the necessity to buy seeds timely, but is at least complementary to successful spread.

This also teaches us that not only the cropping system but also the complete market system needs to adjust to changes. Likely, similar constraints as we have observed for seeds, might occur for tillage services, fertilisers, labour requirements, access to auto mills etc.

### 3.3 Uptake of technical and agronomic practices

The specially developed CAWM – FFS curriculum and the Blue Gold FFS session manual of DAE pays attention to the new technical and agronomic practices that crops, like HYV Aman and BARI-6 Mung bean require. Field observation shows however that this does not always results in farmers following the advice provided by DAE in relation to weeding, soil fertility management, crop spacing and water management. On the one hand, the provided advice might not match with existing practices (e.g. coincides with another peak demand), on the other hand the crop and water management practices are so different from the tradition with local varieties (e.g. draining water 15 to 30 days earlier) that a mindset change among farmers requires some stimulation. As with all mentality changes, this is not a straightforward process which can be easily achieved within one year. It requires continuous monitoring and coaching of the farmers involved. At the same, it is essential for field staff to study farmer behaviour and decision-making processes relation to investments and management, and provide tailor-made advice.

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<sup>8</sup> It should be noted that 2 selected CAWM areas were not included in the year of 2017-2018 by DAE. These areas are: Pashim Kewabunia, Polder 43/2A and Purbo Gulshakhali, Polder 43/2F.



As the CAWM – FFS curriculum includes many extra elements compared to other DAE curricula, the sessions are in general longer or more frequent. Though the average attendance rate is around 80%, which is quite good for DAE's standards, farmers feel that attending all sessions is challenging to combine with other tasks and activities. At the same time, SAAOs indicate that the CAWM – FFS curriculum contains many new elements on water management and market orientation. The curriculum itself with more than 300 pages is a large resource book to go through and it has been launched recently (in August 2017), so still more time is required for SAAOs to study, to practice it and to receive trainer facilitator guidance from senior DAE staff to actual provide high quality CAWM - FFS sessions in the field. These are another two reasons for only partial uptake of CAWM lessons so far.

### 3.4 Collective production and sales planning

While collective action in water management and crop cultivation is evident in all CAWM areas, we have seen so far only some collective action in joint input purchase and very limited collective action in output sale. Firstly, one needs to consider that particular types of collective actions take more time to mature and create trust among farmers involved. In the end, the CAWM initiative is only running a bit more than 1,5 year and part of the agricultural inputs have been provided for free. Another other constraint is the limited experience of SAAOs to guide farmers in the areas of production input and sales planning and educate them to become financially literate. The CAWM – FFS has topics integrated on these elements, but more support is required from business development specialists towards SAAOs, FTs, RFs and WMG members, so they can take up these lessons.

As noted earlier, not only the cropping system should adjust, but the market system too. Support in networking with private sector actors is needed to ensure that the right inputs can be bought at reasonable prices and outputs sold at attractive margins.

### 3.5 Diversification of the CAWM concept

In the current working approach under the BGP, CAWM is strongly associated with the introduction of HYV T.Aman rice followed up by high-value Rabi crops through collective action of WMG members. However, this is just one possible cropping pattern which can make community-led initiatives towards production intensification a success. More recognition and testing should take place on other cropping and crop-fish patterns which can benefit from synchronisation and collective action among WMO members. First initiatives are being taking to introduce the CAWM approach to benefit areas with seasonal or perennial aquaculture production in polder 2, under the heading of Community-led Fisheries Water Management (CFWM). This approach recognises that water management infrastructure improvements at secondary and tertiary (to retain or flush water) are also essential to benefit aquaculture production.

The diversification of the CAWM concept has the potential to contribute to ARM-2017 Recommendation 2.2: *"It is also recommended to further develop the repertoire of measures in catchment and polder-level water management by the identification of opportunities to retain fresh water for dry season use within the polder, the management and reuse of water hyacinth, the management of sediment and its reuse for land improvement, local road construction or the development of flood levees, to systematically connect with flood relief and protection and to make a strong connection with other infrastructure development in the polders, especially roads."* Next to testing different cropping and crop-fishery patterns, more attention could be paid to getting the best out of resources (like water hyacinths, sediments, roads) available, while implementing small-scale IPWM infrastructure works.

### 3.6 Governmental mainstreaming of CAWM concept

The sections above have demonstrated that the underlying constraints in further upscaling CAWM are caused by novelty of the approach for BWDB and DAE. The approach was not tested on a substantial implementation scale before, as under the BGP<sup>9</sup>. The concept of CAWM is not part of BGP's Program Document and not internalised in BWDB's and DAE's original DPPs. During the revision of both DPPs some provisions became available to support CAWM<sup>10</sup>, however insufficient to consider them as a full integration and formalisation of CAWM in BGP. This partly caused by the fact that reformulation of DPPs took off at a stage that CAWM upscaling just begun, and the RDPP development did not allow for adding additional budget.

BGP has anyhow a limited timeline and phasing out of the program has started already in a number of polders. A strategy is thus essential and mainstreaming of CAWM within BWDB and DAE is vital to make this happen. For this purpose, strong coordination and cooperation between BWDB and DAE, as well with other partners like LGIs, BADC, is required on the long-term.

### 3.7 Sufficient human and financial resources

Directly connected to the mainstreaming of the CAWM concept within the respected governmental agencies is the creation of sufficient funds and well-qualified staff resources to actual execute CAWM, and connected IPWM approaches, in southern Bangladesh.

The above implementation constraints have demonstrated that there is limited capacity in BWDB to support WMG/WMAs at field level with operational sluice catchment planning and design & construction supervision of small-scale WM infrastructure. Both OCWM and district design offices could play a role.

While DAE has demonstrated the capacity to make sufficient men power at field level available, there is still a vast challenge to train up more staff in catchment/on-farm water management and collective production and sales planning.

### 3.8 Contingency planning for weather extremes

Even if BWDB, DAE and/or other governmental partners have sufficient qualified staff in place and budget for regular programs, there is also a need for emergency funds. Farmers in the coastal belt are facing regularly extreme weather events, including erosion, excessive water logging after monsoon as well as unexpected early erratic rains in Rabi season. For example, sesame crops of WMG members were completely destroyed during erratic rain events in early 2017, but new seeds could not automatically be supplied. The market price of BADC seeds was excessive and farmers could not invest anymore in a Rabi crop. Other WMG groups suffered from damage of their WRM infrastructure due to erosion.

There is thus a need for contingency planning and funds among respected governmental authorities (like BADC) to ensure the long-term sustainability of CAWM and related IPWM practices. Or even better, the market environment should be adapted too and organised in such a way that new seeds can be supplied quickly at an affordable cost to farmers in case of extreme weather events. This would even be a more sustainable solution, as farmers would not need to rely on governmental subsidies.

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<sup>9</sup> CAWM was only tested as part of research work by IRRI in polder 30 (under Fultala WMG).

<sup>10</sup> CAWM – FFS executed by DAE are financed through DAE-RDPP and a number of pipe box culverts have been included in the BWDB-RDPP (however still awaiting official approval in November 2017).

## 4. Proposed follow-up approach

DAE and BWDB are keen to continue up scaling CAWM and enhancing other IPWM practices in catchments/polders not yet covered. The previous chapter has nonetheless demonstrated that an up scaling process will not be without constraints and challenges, especially considering that IPWM practices have not been part of the original BGP DPPs of BWDB and DAE, and the concepts not yet mainstreamed within both governmental departments. On the other hand, the presence on the ground – at least for a few years – of TA teams that are well-coordinated with the local branches of DAE and BWDB – is an opportunity for replication on the short run.

The key question remains **what is a realistic target for horizontal expansion of CAWM and related IPWM practices?** The introduction of IPWM practices is most effective in polders/catchments where main WRM infrastructure is functioning well or where conditions for improved water management are positive already. The delays in WRM infrastructure implementation or the limited availability of CAWM-FFS provides little scope for DAE to roll out CAWM-FFS effectively to all catchments in batch III polders. At the same time, DAE inputs to the Blue Gold Program might end per December 2018. While in batch I and II polders main WRM infrastructure is more or less ready for operation, the TA team support will phase out soon and OCWM has little field staff available, making it hardly impossible to coach WMA/WMGs in expansion and adoption of CAWM and related IPWM practices. Due to the required reformation of WMAs in 2017 and therefore delayed capacity building on O&M, the leadership capabilities are likely to be too meagre to independently role out new approaches towards operational sluice catchment planning.

This chapter tries to explore what could be a realistic target and possible follow-up approach on the short-run (2017-2018) and the long term. It includes ways to address the lessons learnt presented in previous chapters and potential financial arrangements for the short term.

### 4.1 Short-term follow up

The previous chapter has highlighted that the current implementation of CAWM is still in an early phase and the uptake of technical and agronomic practices and collective market action by farming WMG members needs more time to mature. Furthermore, the market mechanisms are not in place to provide HYV seeds on a large scale and mechanisms to plan, design and finance small-scale WM infra have not yet matured fully. At the same time, the demand for CAWM is high among WMGs, as demonstrated by the enthusiasm after BGP's initiated horizontal learning events, and the automatic uptake of crop synchronisation and HYV Aman cultivation in neighbouring areas.

It is advised that on the short term, the BGP makes strategic choices to not support more WMGs intensively in relation to CAWM than present financial and staffing resources allow for and based on lessons learnt (e.g. experience in location selection can ensure less resources are required for next batches). In this selection process, attention needs to be paid to the fact that phasing out of from Batch I polders takes place in 2018 and for Batch II polders in 2019.

Considering the resources available within the program and lessons learnt from the period 2015-2017, the following is deemed realistic:

- As much as possible further spread on CAWM and related IPWM practices through horizontal learning events, farmer field days and cropping cutting festivals with leadership roles for practising WMGs. In this regard, it is important that lessons learnt (e.g. regarding WMG leadership) from previous events are considered. The suggestions from recent ARMs and the extension method analysis of Agro-Insight (under development) should be used as guidelines. (*Participation from secondary school students could be stimulated too, as they are the future farmers of the area.*)



- Horizontal learning will be supported by adaptive learning in which SAAOs, Farmer Trainers (FTs) and practising WMG members play a key role in teaching, guiding and coaching WMG members in other areas that want to adopt CAWM. Only 4 FTs have been involved in CAWM so far, but they are in large numbers through the BGP area (150 in total) and have a huge potential to ensure sustainability of CAWM. CDFs can also play a role in adaptive learning, especially in batch III polders where phasing out will take place later.
- Selection of new CAWM and CFWM groups will be mainly based on motivation and leadership capabilities of the WMGs (next to prevalent water management conditions to be conducive for the type of crop or crop-fishery patterns the WMG admires). Selection will be focussed on those who demonstrated interest after horizontal learning events and/or are already started adopting partly crop synchronisation and/or intensification, for example through CII.
- Another 7 polders will be included under CAWM, CFWM (and CII) in 2018 and the 3 remaining new polders by 2019, including batch III polders where there are catchments with (reasonably) well-functioning main WRM infrastructure. Selection will be initiated by both physical investigation by a mixed team from DAE, BWDB and TA team (=BGP staff) as well as by tapping motivation among the WMGs. Horizontal learning events will be organised to assess this motivation in batch III polders. It is the ambition to reach 75 CAWM areas in total, covering a mix of batch I, II and III polder catchments, by the end of 2019. Selection process will be flexible. Some will get more intensive guidance than others from the BGP staff, depending resource availability of BGP staff, on the needs of the WMGs and timing of the year. Autonomous adopters get on-demand support through adaptive learning<sup>11</sup>, while the approach for other groups will be more structured and in favour of receiving official CAWM-FFS training via DAE first.
- Next to developing a flexible, but effective and efficient, selection procedure it will be essential to plan and design the new CAWM/CFWM interventions well and avoid blue prints of straightforwardly introducing HYV T.Aman. CAWM is not a standardised activity, rather it is an approach and its implementation can be realised in many ways.
- The suggestion (ARM 2017 section 2.2) to use of available resources (e.g. water hyacinth, sediments) more effectively and to pay more attention to aspects of collective action and business development have not been materialized in yet. More attention should also be paid to select a diversity of cropping/crop-fishery patterns to be promoted under CAWM/CFWM. The initiated Crop and Aquaculture Zoning Mapping Exercise workshops in polder 2 are a good first step to address the latter point. The follow up activities of these should address other potential resource use in the selected areas as well as market potential and development. It is also recommended similar workshops will be initiated in other batch II polders and batch III polders.
- Follow up on the ARM 2017 section 2.3 recommendation to implement small scale infrastructure for improved agricultural production and profits for all polders through a 'hands-off' approach (see also section 3.1). This approach is complementary to the 'hands-on' approach used in the CAWM schemes led by DAE.
- In 5 CAWM schemes, in 5 Batch II polders, extra activities will be organized to combine O&M Catchment Planning with CAWM. This should result in show-case catchments.
- Making sure that sufficient SAAOs, CDFs and FTs are trained to provide elements of the DAE developed year-round CAWM -FFS curriculum in a participatory and interactive manner, as short tailor-made sessions under the heading of 'adaptive learning'. Special focus will be given new technical areas, like water management and market orientation. For this purpose, the number of CAWM/IPWM orientation trainings and ToF batches on DAE-led year-round CAWM-FFS should be increased and sufficient senior facilitators from DAE should be made available. Also, more CDFs will be oriented on CAWM/IPWM to provide in field support.

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<sup>11</sup> An example could be 'Amodkhali khal' in polder 2 where farmers themselves made production shifts without BGP support, but where now tailor-made efforts are required to work on sustainability for example in terms of maintenance organisation, some basic demonstration of options and market development.

- Coaching and motivating CAWM- WMGs who finished the DAE-led year-round CAWM-FFS and adopted a large part of the promoted practices to continue without free input support, and select among the members horizontal and adaptive learning WMG leaders. SAAOs and FTs should take the lead in the follow up coaching and technical support, while CDFs will support when necessary.
- DAE has a substantial number of FFS still scheduled for 2018-2019, 216 to be divided between Aman and Rabi season. Large part will likely take place in new BGP polders. The program aims for 50 FFS in 2018-2019. Pending on provisions in the new DPP by DAE, the program aims for a similar amount for the 2019-2020 season.
- Further strengthening of linkages with UPs to make sure that WMG are supported in CAWM efforts and horizontal learning activities, including co-funding of small-scale WM infrastructure.
- Continuation of the partnership with BADC and DAE to ensure good seed production and preservation for the CAWM and CII groups. Also work towards solutions for contingency planning in case crops are lost due to unexpected weather events. These efforts should consider market development and not cause market distortion.
- More elaborate support from SVC TA team to enable an increase in collective production and sales planning, implementation and monitoring among CAWM and CII groups.
- Overall, is vital to monitor the effectiveness of the proposed approach and horizontal spread of learnings. (See also chapter 7)

### Finance

As the IPWM concept has not been part of the original DPPs of both BWDB and DAE, different possibilities to ensure sufficient financial and human resources are being reviewed. While farming WMG members agree to pay for agro-inputs after the introduction of CAWM and willing to dig field channels by their own means, they are challenged to fully finance small-scale WRM infra. Part of the solution lies in stimulating O&M fund collection and collective labour mobilisation, and enhancing lobby capacity towards UPs. However, additional mechanisms of co-contribution are required to accelerate the adoption process. For the short-run the following funding proposed:

- Apply the procedures for the TA fund disbursement of EUR 0.5 million budget available for WMG offices, which now can be utilised to realise co-funding of small scale infrastructure for IPWM for all WMGs. This means that WMGs that are not included in an CAWM-area may also be eligible for co-funding. They may be reached through a 'hands-off' approach, described in the TA note 'Procedures on implementation of small scale infrastructure for IPWM'.
- The RDPP-BWDB provides scope to provide about 3000 small drainage pipes.
- DAE is ready to roll out another large number of CAWM-FFS in 2018 to provide technical and agronomic guidance to WMGs, for 2019 it is not sure yet how many FFS can be used for CAWM.
- DAE group support (BDT 20,000/group) is also still available for more than 400 FFS groups and could be utilised for co-funding of agri-inputs or small drainage pipes/fallboards.
- For co-funding of horizontal learning activities, training of staff, policy-knowledge workshop/seminars and other support activities, it is advised to use existing allocations within the TA team budget.

A tentative budget has been enclosed in Annex 2.

### 4.2 Long-term sustainability

It is evident that BGP cannot fulfil its full ambitions towards CAWM and related IPWM practices to reach all WMGs in an intensive manner by 2020. Nevertheless, its potential seems high for the whole coastal belt of Bangladesh, covering 139 polders in total.

Taking a long-term outlook, BGP has the potential to combine all its IPWM activities to one integrated approach at different levels within the polder environment and through an integration of sustained activities stimulating the polder economy. Shortly, summarised this approach consist of the following elements:

- **Lowest level – agricultural unit/sub-catchment:** Crop/crop-fishery synchronisation within one agricultural unit ensuring that WMG members have the same water level operational need and opportunities for collective action in production and market orientation.
- **Medium level - sluice catchment:** WMGs representing several agricultural units/sub-catchments coming together to decide how to manage water levels and to determine which barriers need to be taken away to ensure smooth drainage.
- **Highest level - polder:** WMA(s) representing all WMGs in one polder, collecting all data on required, small-scale infrastructural improvements to take away drainage problems caused by poor road planning or other barriers, and lobbying towards Upazila and Union Parishads for needed resources to implement these improvements. The WMAs could also play a leadership role in mobilising resources and funds in case of extreme weather events.

It has been advised by the ARM-2017 that policy dialogue will be set up between BWDB and DAE to discuss the potential integration of IPWM practices in upcoming projects and as standard practice in general programs. In these dialogues, it is vital to include other governmental stakeholders like LGIs, BADC and LGED as well, since they could play a role in supporting some of the needs that CAWM and related IPWM practices require.

DAE is keen to take a leadership role in setting up a national level policy-knowledge workshop on CAWM inviting staff from all 13 coastal districts (DDs, UAOs, EOs) in early April 2018. It aims to inform and persuade relevant Ministries, the Planning commission, IRD and researchers to adopt CAWM on a larger scale within the coastal belt of Bangladesh.

Research activities around CAWM together with the monitoring & evaluation of the CAWM upscaling process, and subsequent lessons sharing at implementation and policy level should step-by-step result in the standardization of the CAWM approach. It can be effectively used for demonstration of effective and holistic improvement of water management and agriculture at the WMG level ensuring horizontal learning. This will facilitate the uptake of its principles in future projects and programs.

MetaMeta and IRRI, already closely involved within the BGP, have indicated their willingness to support further research and policy-knowledge dialogue discussions on CAWM and related IPWM practices.

## 5. Staffing, Partners and Coordination Mechanisms

While developing BGP TR.20, the first strategic plan on CAWM, there was still uncertainty about which partners to involve and to which extent, how to set staffing arrangement and how to coordinate between various organisations on CAWM. By now, things have started to crystalize.

This chapter reflects on the proposed staffing and coordination mechanisms and the actual practice right now. It also tries to provide an outline for the future.

### 5.1 Governmental partners

From the start of the CAWM upscaling initiative, the intention has been to let the government of Bangladesh through DAE and BWDB be the main driver from long term sustainability, and moving away from a set up led by BGP TA team, IRRI and BRAC as under the polder 30 pilot project. After 1,5 year of implementation, one could say the BGP is moving the right direction.

#### DAE

DAE has taken a leadership role in providing technical and agronomic guidance to WMGs and the development of supporting CAWM-FFS curricula and FFS sessions manuals. As explained in earlier chapters it has already conducted 50 year-round CAWM-FFS for a total of 2500 WMG members, and it has been training up its staff and organising special workshops on CAWM.

#### BWDB

BWDB staff capacity at field level is limited within the BGP area. Nevertheless, their support has been commendable. For example, BWDB's XENs provided support to control influential people obstructing canals with cross-dams, and BWDB's SOs/XOs have been coaching CAWM groups and helping them to identify drainage problems.

#### LGIs

The enthusiasm among UPs for CAWM is encouraging, and their involvement in area selection, conflict mediation and in some cases co-funding of small-scale WM infrastructure has been remarkable.

#### BADC

Earlier a partnership with Bangladesh Agricultural Development Centre (BADC) was not envisioned, but the participation of their experts under the CAWM initiative has proved to be vital. As crop intensification and early establishment of Rabi crops requires the introduction of HYV Aman, which is not yet widely available on markets in the polder areas. BADC experts together with DAE have been successfully providing seed production and preservation to WMG members under the CAWM initiative.

#### LGED

Local Government Engineering Department (LGED) has so far not been involved in CAWM, but intensive discussions took place under the feasibility study Roads for Water, conducted by MetaMeta and BUET. They could play a key role in supporting WMGs who especially suffer from poor drainage due to road obstruction.

### 5.2 Research partners

#### IRRI / Khulna University

Under the USAID funded System Intensification Innovation Project (SIIL), IRRI has also continued its research efforts on CAWM focussed on testing new crop technologies, strengthening of nutritional aspects among women and mechanisation possibilities in polder 30. Kansas University and BRAC are partners in

the program and Khulna university professors and students are involved in the collection and analysis of data. During half yearly Coastal Platform Knowledge Sharing workshops, various organisation working in the coastal belt of Bangladesh in the field of agriculture are presenting their activities, progress and results. BGP has been attending from its initiation and sharing its experiences with researchers, NGO practitioners and governmental officials during these seminars. A next session is planned for May 2018.

### **BAU -> Patuakhali University of Science & Technology**

Earlier efforts to involve BAU in research work have unfortunately not been successful. We developed a special TOR for gender specific research in the CAWM pilot and subsequent CAWM schemes around April-May 2016, and had agreed with one BAU professor to let students execute the research in the period June – October 2016. In June 2016, the TA team spend a week to train up the students in the field, but in the end the team decided to execute its own research on gender issues, not sticking to our TOR. We still did not receive any research findings.

In the meanwhile, the TA team decided to let a gender research to be conducted by Patuakhali University of Science & Technology including both CAWM and non-CAWM sites. Field work started in October 2017.

## **5.3 Other external service providers**

### **BRAC**

Directly connected to research work on CAWM, is the initial plan of the BGP to let an external service provider to independent monitoring and evaluation (M&E) on the CAWM. The M&E results would be used to strengthen and stirring CAWM activities in the right direction, as well for knowledge sharing with research and governmental partners.

In December 2016, the BGP contracted BRAC to execute independent monitoring, but in August 2017 the contract was terminated due to poor performance. For this reason, BGP has decided to put other arrangement in place for M&E purposes (see chapter 7).

### **FHRC**

Another partnership was created with Flood Hazard Research Centre (FHRC) to test a new approach to participatory water management action planning and networking with WMGs within the BGP area under the Blue Gold Innovation Fund. FHRC has generated experience with this approach in other areas of Bangladesh and Nepal. The approach was expected to be a direct inspiration for TA, DAE and BWDB field staff to adopt in ongoing activities to stimulate participatory (in- polder) water management practices. Though the involved pilot WMGs (2) were satisfied with the methods used and the results booked, FHRC failed in convincing BGP zonal and polder teams, DAE and BWDB in adoption of this approach. From the start, FHRC did not openly involve TA staff, BWDB and DAE in setting up its pilot project and did not demonstrate flexibility to adjust their existing approach. This resulted in frustrations, and in the end TA staff, BWDB and DAE considered FHRC's methods applied to form WMG cluster forum platforms as too informal and not building upon existing initiatives around WMA formation and strengthening. The TA team was also not fully satisfied with the documentation and evaluation of the used process under the one-year pilot project, focussing too much on results and lacking analytic reflection on methods applied how these could be integrated with existing governmental frameworks.

At this stage, no further follow up will be given to FHRC approach and integration with IPWM initiatives.

### **United Purpose (formerly Concern Universal)**

The BGP has in several aspects overlap with United Purpose projects both in terms of water management and business development. For 2017, it was decided to first start a collaboration with United Purpose for Women Business Centres under the Blue Gold Innovation Fund. By now, an additional contract has been signed with United Purpose under the Blue Gold Innovation Fund to start per 1 January 2018 the "Sustainable Water Infrastructure Finance and Technology" pilot project. It has the potential to find a solution for one of the largest challenges to upscale CAWM. This project will namely test different finance models to ensure WMGs can independently mobilise resources for small-scale infrastructure planning, design,



implementation, and O&M. It will work with 29 WMGs in 2 polders in the Patuakhali zone to explore whether O&M fee collection, profits sharing from joint livelihood activities, lobbying with UPs or mobilising BWDB or DAE group support funds are most effective in achieving objectives around small-scale WM infrastructure development.

### MetaMeta / BUET

A partnership with MetaMeta and BUET was not envisioned in BGP TR.20, but the feasibility study on Roads for Improvement Water Management and Flood Protection under the Blue Gold Innovation Fund has demonstrated obvious links with the CAWM initiative. The upscaling of CAWM up to sluice catchment and polder level requires the analysis of roads networks and the way they obstruct drainage. It is expected that partnerships with MetaMeta and BUET will be further strengthened in policy level discussions on IPWM.

## 5.4 Coordination

The BGP TR.20 included a provisional diagram of coordination mechanisms between various stakeholders. The first year of CAWM implementation has shown that it has been too ambitious to have such an extensive manner of coordination in place.

### General coordination

The envisioned coordination mechanisms on CAWM included 4 focus areas:

- Water governance
- Crop and water management capacity building
- Water resource infrastructure
- Horizontal Learning activities

One could say that especially “Crop and water management capacity building” under the leadership of DAE and “Horizontal Learning activities” led by WMGs have taken off well (see also early sections of this report). More attention is still required for “Water governance” to be directed by OCWM and UPs, as well as “Water resource infrastructure”.

OCWM staff and UPs have been well informed on CAWM, participated in various activities and gave their opinion, but it is too early to say they have taken up a full leadership role. Limited staffing capacity at OCWM and the novelty of the approach for UPs are likely the main reasons. On the other hand, the WMGs themselves have demonstrated to uptake a larger directing role in the required “Water governance” with support of BGP TA team. It is realistic to invest in the upcoming year of further upscaling especially energy in further strengthening WMGs/WMAs leadership role, creating linkages with other development actors and lobby capacity with UPs. At the same time, further coaching of UPs in conflict resolution between WMGs and planning of small-scale WM infrastructure could be an effective manner of sustaining IPWM governance.

An active role for BWDB’s planning and design circles in CAWM has not really taken off, due the enormous workload of main WRM infrastructure. The limited implementation of small-scale WM infrastructure was done with support of TA team staff and partial co-funding by TA resources. Further discussions are required whether BWDB planning and design circles are the best mechanism to realise small-scale WM infra. Other options, directly through Upazila level offices, should be further explored. Perhaps flexibility in whether BWDB engineers, LGED engineers or DAE agricultural engineers are responsible for design and construction supervision (when BGP phases out) should be explored.

### Polder and zonal coordination

The wish to establish small CAWM coordination committees consisting of CDFs, SAAOs, SOs and XOs in every single WMG area practising CAWM was too optimistic. This took not off, because CAWM areas have been established in Batch I and II polders where BGP’s CDFs are phasing out. Furthermore, BWDB field staff is thinly spread over all BGP polders and has not the capacity to attend coordination meetings in each

single CAWM-WMG area. However, coordination on CAWM is taking place at zonal level via monthly meetings between PCs, PCCs and SAAOs. If time allows these meetings are joined by XOs from BWDB. The advantage of the coordination at zonal level is that involved field staff can share CAWM challenges and best practices from their specific polder area, and coach each other to overcome/uptake those.

CAWM orientation trainings, and Aman and Rabi crop and water management planning and evaluation workshops for SAAOs, CDFs and XOs/SOs have also been instrumental in the exchange of problems, successes, and joint strategic planning. The workshops were also attended by Upazila Agricultural Officers, Sub-Divisional Engineers and higher-level staff from OCWM.

Exchange on CAWM visioning and planning for SAAOs, coming from different zones, took place during a first batch of Training of Facilitators on CAWM – FFS. This has also demonstrated to be effective in lessons learnt sharing and opened venues for SAAOs to test approaches dealing with challenges or best practices from other zones.

It is advised that the focus on coordination at zonal level will continue under the second year of CAWM upscaling between field staff and zonal senior level staff from DAE, BWDB and the TA team. It needs to be explored how field staff from BWDB can be more actively involved. Attendance of WMA and UP representatives during coordination meetings could be another effective way to stimulate strong IPWM governance in the long-run.

## 5.5 Staffing

Based on the role of various partners and coordination mechanisms, this section contains an evaluation of staffing arrangements during year one and a proposal for future staffing.

### DAE

The staffing involvement of DAE has been beyond expectations. DAE has been able to involve a high number of SAAOs in the CAWM initiative, and about 50 year-round CAWM-FFS have been rolled out in 2016-2017. Also, UAOs, DAOs and Dhaka based staff had an active role in supporting and promoting CAWM. DAE is keen to involve even more staff employed under the BGP to the CAWM initiative and train up additional SAAOs in the special year-round CAWM-FFS curriculum.

One of the main proposed ideas is the more active involvement of 150 Farmer Trainers (FTs)

### BWDB

The large delay in WRM infrastructure implementation and limited staff capacity of OCWM has resulted in limited BWDB field staff (both XOs and SOs) involvement in the CAWM upscaling process so far. Though there is willingness and interest, a realistic scenario must be sorted out. For now, it is better to assume that a similar engagement as in year 2017-2018 will take place. The 10 newly recruited and trained BWDB-CDFs, who will at least temporarily work under BGP with other CDFs, should be given priority to be have a lead role in CAWM upscaling.

### TA Team

The TA team employed full-time a Community Organisation Expert, directly reporting to the TA Team Leader, to lead the CAWM upscaling initiative. A TA Drainage/WM expert supports him to do technical planning and design of small-scale WM infrastructure. TA Zonal Socio-economists and Polder Coordinators (PCs) and Polder Co-Coordinators (PCCs) were involved to maintain direct contact with the involved WMGs/WMA and oversee performance.

Additionally, a special CAWM-CDF, experienced in new cropping technologies and water management practices supporting HYV Aman and other improved Rabi crops, was hired in Patuakhali zone to coach on a day-to-day basis the involved WMGs and collect performance data. The success of his actions has shown that this type of field level support is complementary to DAE's provided CAWM-FFS and vital in the successful uptake of CAWM by WMGs. The TA team therefore appointed, during the start of Aman 2017, another 2 CDFs to focus on CAWM mainly. This is perhaps a little contradictory to the ambition of giving all CDFs a similar task and responsibility package towards WMOs. However, it is unrealistic to expect that all CDFs can master a sufficient knowledge and practical skills on improved crop varieties to directly coach WMG members in the field, especially considering that some CDFs do not even have an agricultural diploma or experience.

Overall, the TA team staffing arrangement was effective, but could be strengthened further by giving PCs and PCCs more responsibilities in CAWM instead of full coordination by the TA Community Organisation Expert.

The TA staffing arrangement should continue to focus on the exit strategy in which DAE and BWDB take over on the long term, and continue activities as outlined under coordination in section 5.4.



## 6. Activity Plan

The main activities, timeframes and lead responsible staff required for the further implementation of CAWM in 2018-2019 are given below. This is a revision of the earlier Activity Plan as presented in BGP TR.20.

Activity	Time frame	Lead responsible
1 Selection, physical identification and farmer listing of batch 3 areas (incl. new polders)	Mar – Apr 2018	WMGs, UP, BGP TA
2 Orientation meetings WMG on CAWM	Apr – May 2018	DAE, BGP TA
3 Aman crop and water planning workshops batch 3 areas	May 2018	DAE
4 Distribution of seeds for HYV-Aman	Jun 2018	DAE (IRRI for advice)
5 Start of batch 3 year-round CAWM – FFS	Jun 2018 – Jun 2019	DAE
6 SSWMI for IPWM interventions for batch 3 areas	Jul – Sep 2018	BGP TA, BWDB
7 Horizontal learning events	Sep2018 – July 2019	DAE, WMGs
8 Construction of SSWMI for IPWM by WMGs in batch 3 areas	Dec 2018	WMGs
9 Rabi crop and water planning workshops batch 3 areas	Dec 2018	DAE
10 Development communication materials –CAWM video	Jan - Dec 2018	Outsourced
11 Monthly coordination meetings at zonal level	July 2017 – Jun 2019	DAE, BWDB, BGP TA
12 Monitoring of implementation	July 2018 – Jun 2019	Self-assessment, MRL team, freelance consultant

## 7. Monitoring & Evaluation

Unfortunately, the 2-year independent CAWM monitoring contract, assigned to BRAC in December 2016, needed to be terminated due to poor performance.

The BGP TA team together with DAE is currently setting up a new semi-independent M&E impact study for CAWM. The new set up will start the BRAC-CAWM M&E proposal as a starting point, but will develop a simplified and focussed approach for its qualitative part.

### 7.1 Objectives of M&E study

The main objective of the study is to assess the impact of BGP's CAWM and its concomitant horizontal learning activities on agricultural production and household incomes.

To be more specific, the study it expected to have the following sub-objectives:

1. Assess the intensity of actual adoption of crop, water and O&M practices promoted under CAWM
2. Assess the number of newly established linkages with LGIs, LSPs and private sector suppliers and buyers
3. Measure changes in yields by officially approved DAE cropping cut methods
4. Assess changes in cropping intensity, patterns and systems
5. Assess costs and benefits for the most common cropping patterns and systems
6. Assess changes in household incomes with gender disaggregated figures
7. Assess the effect of horizontal learning and the rate in which other WMOs are adopting CAWM practices (both in relation no. farmers and area coverage)
8. Assess the impact on labour demand, labour wages and labour division (both intra- and inter household)
9. Assess the impact on women's social and economic status
10. Assess WMO member satisfaction with CAWM approach and interventions.

To keep the study as simple as possible, it will not assess impact on poverty, nutrition, household assets, irrigation assets, livestock numbers, savings, micro-credit use, education, health of household members, migration patterns, amount of land and tenure arrangements.

### 7.2 Methodology of M&E study

The new CAWM M&E methodology will have two elements:

1. Quantitate data collection on harvests during crop cutting in both CAWM and non-CAWM areas, Crop cuts will be attended and recorded by experienced DAE officials.
2. Qualitative surveying and focus group discussions (FGDs) with CAWM-WMG members, horizontal learning event attendants, automatic adopters of CAWM practices (without intensive support of BGP staff) and non-adopters. Qualitative part of research will be done by a national freelance M&E consultants and trained enumerators from BGP will be used.

Special attention in developing the qualitative surveying and FGDs will be:

- Effectiveness of the CAWM approaches and activities
- Reasons for adoption versus non-adoption
- Perceived impacts on household income, nutrition, intra-household labour division and gender issues
- Use of GoB accepted indicators, so actual data can be easily compared with data from Bangladesh Bureau of Statistics (BBS)

Part 1 of the approach has already started and part 2 will be further developed when a national freelance M&E consultant has been recruited.

## Annex I - List CAWM areas 16-19

### Blue Gold Program

Community Led Agriculture Water Management

Cumulative total of CAWM

Period 2016-2019

Polder No	Name of CAWM/WMGs	Implementing Year	Land (ha)	No of CAWM/Polder
2	Giala Badhon Danga	2017-2018	17	6
	Kaikhali Fulbari	2017-2018	19	
	Marichap	2018-2019	21	
	Gosh Khali	2018-2019	22	
	Hazi Khali	2018-2019	18	
	Chalar Beal	2018-2019	27	
22	Full Bari	2016-2017	17	3
	Gopepagla	2016-2017	19	
	Sener Ber	2017-2018	20	
29	Bokul Tola	2016-2017	15	3
	Gazendro pur 1	2017-2018	26	
	Gazendro pur 2	2017-2018	24	
31 Part	Ghater Khal	2016-2017	11	2
	Bunarabad	2017-2018	15	
25	Tolna	2018-2019	21	4
	Rudaghora	2018-2019	36	
	Chachuri	2018-2019	40	
	Katenge	2018-2019	20	
26	Zialtola	2018-2019	20	1
27/1	Shagiara	2018-2019	20	1
27/2	Bahadurpur	2018-2019	23	1
28/2	Guptomari	2018-2019	22	1
30	Fultala (Pilot)	2015-2016	20	1
34/2	Fulbari	2018-2019	20	1
43/2A	Dakshin Bighi Dakshin	2016-2017	18	4
	Pachim Borobeghi	2017-2018	20	
	Pachim matevanga	2018-2019	23	
	Pachim kewa bunia	2018-2019	22	
43/2D	Purbo morich bunia	2016-2017	25	4
	Uttor bazar Ghona	2017-2018	18	
	Paksia	2017-2018	21	
	Patukhali	2018-2019	120	
43/2B	Doribaerchor	2016-2017	21	2
	Uttor chailabunia	2016-2017	25	
43/1A	Daksin Sonakhali	2016-2017	16	4
	Daksim Attaro Gachia	2016-2017	40	
	Chaula	2017-2018	21	
	Purbo Kawabunia	2017-2018	25	
43/2F	Uttar Angul Kata	2017-2018	21	3
	Uttar Khekuani	2017-2018	19	
	Purbo Gulisha Khali	2018-2019	20	
55/2A	Daksin Dharindi	2017-2018	19	4
	Moddio Dharindi Chandipur	2018-2019	27	
	Hazi-Khali Khal	2018-2019	30	
	Shantipur Moishadi	2018-2019	40	
55/2C	Kollan Kalos Prodan Khal	2017-2018	21	3
	Ullashir Khal	2018-2019	83	
	Rahitpura Khal	2018-2019	60	
47/4	Amtoli Khal	2018-2019	40	3
	Varnir Khal	2018-2019	40	
	Pakshia Para khal	2018-2019	40	
	Cumulative Total			51

Tentative budget for CAWM (2018-2019)

Project budget	INFRASTRUCTURE	Sites	No. sessions	Unit cost	Total Costs	Costs TA	Scheme Costs TA	Comments
C06	Infrastructural improvements	50	1	100,000	5,000,000	5,000,000	200,000	2 per CAWM
	<b>AGRICULTURE</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	
C07	Inputs Aman season	25	1	30,000	750,000	750,000	30,000	Based on purchase request form shorab.
C07	Inputs Rabi season	25	1	70,000	1,750,000	1,750,000	70,000	Based on experience Shorab.
	<b>DAE Capacity Building</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
T02	2 day SAAO planning workshop	4	2	50,000	400,000	400,000	16,000	based on experience
T02	SAAO facilitation 5 day	3	1	500,000	1,500,000	1,500,000	60,000	based on experience
	<b>Farmers Capacity Building</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
	DAE-led year-round CAWM-FFS training	25	2	76,000	3,800,000	0	0	DAE budget
T03	Horizontal learning visits	25	3	20,000	1,500,000	1,500,000	0	Travel costs participants. Do not accrue to average scheme costs (HL)
T04	Development of communication materials	1	1	500,000	500,000	500,000	20,000	Booklets, leaflets etcetera
T04	Video CAWM	1	1	1,800,000	1,800,000	1,800,000	0	Under contract. Does not accrue to average scheme costs (HL).
T07	Crop cutting festival	3	3	80,000	720,000	720,000	28,800	Based on experience shorab and Aowlad.
	<b>COORDINATION</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C07	Coordination meeting (XO/SO/SAAO)	10	1	20,000	200,000	200,000	8,000	Budget support to extra presence of XO/SO in CAWM areas, not yet used
	<b>MONITORING</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C09	Self assessment	25	3	10,000	750,000	750,000	30,000	To be conducted in line with other self assesment approaches and FFS.
C09	M&E in dept study	1	1	1,000,000	1,000,000	1,000,000	40,000	With help of national consultant
	<b>MISCELLANEOUS</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C07	Miscellaneous	25	1	10,000	250,000	250,000	10000	
	<b>TOTAL in BDT</b>				<b>BDT 19,670,000</b>	<b>BDT 16,120,000</b>	<b>BDT 644,800</b>	
	<b>TOTAL in EURO</b>				<b>€ 207,052.63</b>	<b>€ 169,684.21</b>	<b>€ 6,787.37</b>	

### Tentative budget for CAWM (2019-2020)

Project budget	INFRASTRUCTURE	Sites	No. sessions	Unit cost	Total Costs	Costs TA	Scheme Costs TA	Comments
C06	Infrastructural improvements	0	1	150,000	0	0	0	no start up of infrastructure anymore
	<b>AGRICULTURE</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	
C07	Inputs Aman season	25	1	30,000	750,000	750,000	30,000	Based on purchase request form shorab.
C07	Inputs Rabi season	25	1	70,000	1,750,000	1,750,000	70,000	Based on experience Shorab.
	<b>DAE Capacity Building</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
T02	2 day SAAO planning workshop	4	2	50,000	400,000	400,000	16,000	based on experience
T02	SAAO facilitation 5 day	3	1	500,000	1,500,000	1,500,000	60,000	based on experience
	<b>Farmers Capacity Building</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
	DAE-led year-round CAWM-FFS training	25	2	76,000	3,800,000	0	0	DAE budget
T03	Horizontal learning visits	25	3	20,000	1,500,000	1,500,000	0	Travel costs participants. Does not accrue to average scheme costs (HL).
T04	Development of communication materials	1	1	500,000	500,000	500,000	20,000	Based on experience, Booklets, leaflets etcetera
T07	Crop cutting festival	3	3	80,000	720,000	720,000	28,800	Based on experience shorab and Aowlad.
	<b>COORDINATION</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C07	Coordination meeting (XO/SO/SAAO)	10	1	20,000	200,000	200,000	8,000	Budget support to extra presence of XO/SO in CAWM area
	<b>MONITORING</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C09	Self assessment	25	3	10,000	750,000	750,000	30,000	To be conducted in line with other self assesment approaches and FFS.
C09	M&E in dept study	1	1	1,000,000	1,000,000	1,000,000	40,000	With help of national consultant
	<b>MISCELLANEOUS</b>		<b>No. sessions</b>	<b>Unit cost</b>	<b>Total Costs</b>	<b>Costs TA</b>	<b>Scheme Costs TA</b>	<b>Comments</b>
C07	Miscellaneous	25	1	10,000	250,000	250,000	10000	
	<b>TOTAL in BDT</b>				<b>BDT 12,870,000</b>	<b>BDT 9,320,000</b>	<b>BDT 372,800</b>	
	<b>TOTAL in EURO</b>				<b>€ 135,473.68</b>	<b>€ 98,105.26</b>	<b>€ 3,924.21</b>	