



Water Resource Management in the Blue Gold Program

**Improved water distribution and
drainage through rehabilitation of water
management infrastructure**

WRM enhances flood protection, improves drainage and water availability, increases crop production, reduces poverty, and improves livelihoods.



CONTEXT

The Blue Gold Program (BGP) is working with poverty-stricken, polder-dweller communities in the coastal districts of Patuakhali, Khulna, and Satkhira.

38% of the population of these regions live below the poverty line, and are largely reliant on efficient water resource management (WRM) for their livelihoods.

BGP worked to improve WRM, with the support of Water Management Groups (WMGs) in the region to:

- protect communities against tidal floods, river erosion, and storm surges through embankments
- improve drainage systems through khal re-excavation and rehabilitation of water management infrastructures

These combine to ensure polder safety, improved agricultural production, and reduce damages to crops.

They also lead the way for In-Polder Water Management (IPWM) and Community-led Agricultural Water Management (CAWM).

Challenges



Coastal polder-dwellers frequently suffer from problems relating to river erosion and sedimentation, increased salinity of ground water, cyclone surges, and climate change-related disasters. While BGP interventions work to offset the damage caused by these disasters, several on-going and completed work has been affected by them.

This means that these infrastructures need to be repaired and maintained annually. BGP thus has strong focus on operations and maintenance following rehabilitation of infrastructures.

Role of WMGs



WMGs are best placed to assess the needs of their own communities, and engage with locals to decide on infrastructures that need mending.

Each WMG face their own unique problems in the form of water scarcity, waterlogging, and flooding, and require individualised solutions.

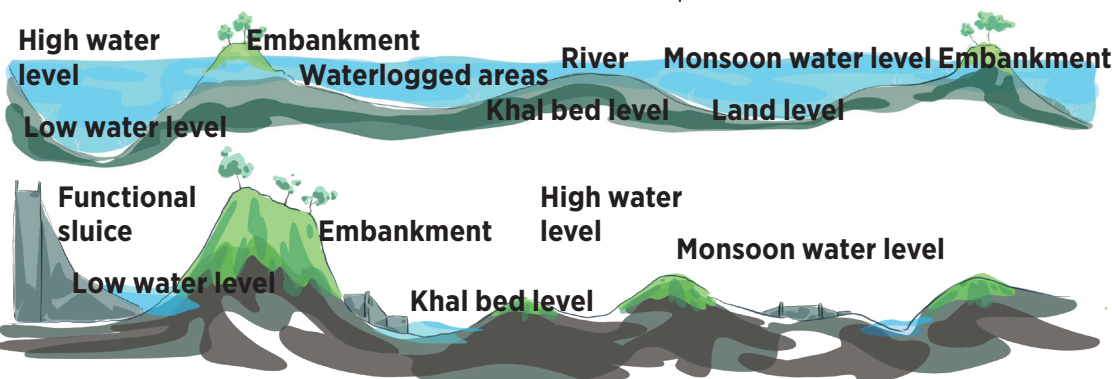
Once WMGs have settled on specific needs, BGP's Technical Assistance (TA) team, along with members of the Bangladesh Water Development Board (BWDB) confirm the need and type of work required.

Integrated Planning for Sustainable Water Management (IPSWAM)

The Bangladesh Water Development Board (BWDB)'s IPSWAM project installed sluice gates that were more efficient, user-friendly, and sustainable.

Results of WRM

- WMGs better able to control local infrastructures to reduce waterlogging and issues leading to water scarcity
- Farmers can use stored canal water in the production of watermelon, groundnuts, and other rabi crops
- Directly benefit women through economic empowerment. Half of all infrastructural work is carried out by BGP's Labour Contracting Societies (LCS), which employ poor, landless women



Rehabilitation work in Patuakhali

Embankment resectioning	202.27 km
Embankment retirement	11.43 km
Canal re-excavation	201.76 km
Sluice repairs	98
Outlet/ inlet repairs	211
Sluice construction	2
Outlet construction	5
Bank protection	0.15 km
Interior dyke	5.94 km
Cross-bundh	0.14 km
Supply of drain pipes	3,669 m
Flood damage repair	10.38 km



Payra river bank erosion

Payra river flows through the northwest side of polder 43/2A in the Sadar Upazila in Patuakhali, partially eroding the northern border. Phultola village, once located in this area, had eroded away over the years from the force of Payra's tides. This phenomenon is by no means new. Phultola's residents have experienced the gradual disappearance of their village, and with it, their livelihoods, for a long time already.

Since the programme started, protection of polder 43/2A has been one of Blue Gold's top priorities.

BGP has ensured that protection measures were sufficient in several ways:

- Discussions to assess the needs of the community
- Re-registration of WMGs
- Investigation and fixation of probable new alignments
- Engaging households to donate land to make room for the embankment

The construction of the retired embankment was completed over 2014 to 2016. The embankment, which now borders the villages of Tushkhali, Bhajna, and Matibhanga.

It is now effectively protecting crops and homesteads from floods and storm surges.

Drainage congestion of Mushurikathi khal

Mushurikathi khal is located in polder 43/2B. The Upazila Parishad (UP) had constructed a small culvert over the khal, preventing water from flowing freely across the land. The resulting siltation within the khal cause waterlogging during monsoon, and water scarcity in dry seasons.

Farmers thus found it difficult to cultivate both Rabi and Aman crops. The BGP thus decided to re-excavate the khal, following a needs assessment meeting with both the WMG in the area, and the UP through 2015 to 2016.

This resulted in:

- Re-excavation of 2.10 kms of khal
- Commitment from the UP to construct a larger culvert to replace the smaller one
- Reduction in issues relating to water scarcity and waterlogging
- Farmers are now able to cultivate both Rabi and Aman crops, along with vegetables like cucumbers, pumpkins, and bottle gourd
- Farmers in some areas considering aquaculture

The livelihoods of all residents in the community has now improved, with increased production of agriculture and aquaculture.

Re-excavation of Amodkhali khal

Amodkhali khal had so severely waterlogged its surrounding regions, that for 16 years no crops could be cultivated in the area. During monsoon, the khal caused beels, roads, households, and cropping lands to be waterlogged, and difficult to navigate.

Following BGP interventions:

- 12 km of the Amodkhali khal in Satkhira were re-excavated from 2017 to 2019
- People were able to return to their homes from temporary flood shelters
- 25 WMGs benefitted from the re-excavation
- 4,323 ha of land and 19 beels now fit for Aman crop cultivation, resulting in 12,000 additional tonnes of Aman paddy

Rehabilitation work in Khulna and Satkhira

Embankment resectioning	123.43 km
Embankment retirement	3.58 km
Canal re-excavation	220 km
Sluice repairs	61
Outlet/ inlet repairs	5
Sluice construction	11
Inlet construction	2
Culvert construction	6
Pump shed	3
Bank protection	1.39 km
Interior dyke	1.53 km
Drain pipes supplied	499 m
Flood damage repair	3.88 km



Protection of Chadgor from erosion

Problems relating to river erosion have plagued polder 29 in Khulna for the past 70 years. Changes in the flow of the river, tidal effects, and excess water pressure during monsoon of the Bhadra river kept chipping away at the banks of the polder.

Chadgor village suffered the brunt of the damage. The now retired embankment had been constructed for almost a dozen times, but to no avail.

The BWDB's IPSWAM project built the embankment twice between 2004 to 2011. The BGP took on the seemingly impossible task of rehabilitating the polder in 2014.

Unfortunately, Cyclone Komen completely destroyed the embankment in 2015. This affected 1,286 households in 18 villages, and lay waste to 684 ghears.

Following the disaster, BGP met with representatives of Water Management Associations (WMAs), WMGs, and the UP to ask landowners in the region to form a retired embankment. Construction of the embankment then started in 2016, and finished in 2017.

The residents of polder 29 are now safe from the erosion of the river bank, thanks to siltation and the additional protection from geo-bags.

Repair of the Solua sluice

The 7-V Soula sluice for the upper Shoilmari river in polder 25 was built around 60 years back. The gate became inactive over the years due to a lack of maintenance, drowning Dakatia beel for over a decade.

The Khulna-Jessore Drainage Rehabilitation project of the 1980s, took some initiative to repair the sluice, but a more stable solution did not present itself to the community.

This changed in 2019 when the BGP took charge, re-excavating 9.5 kms of the main khal, and 20 kms of the secondary khal. The programme also organised an emergency maintenance channel, to ensure potential for emergency repair work without the need for cross-dams. The results of this work include:

- The protection of 10,000 ha of land around two unions in Dumuria, three unions in Fultala, and two unions based in Dighulia
- Improvement of drainage congestion, which resulted in an increase in cultivable land, and increased production and cropping intensity

Repair of the 3-V Kuluiti sluice

Like the Solua sluice, the Kuluiti sluice of polder 28/1 was relatively untouched till the BGP undertook repair work on the sluice in 2019.

Farmers, WMGs, and WMAs took part in these rehabilitation efforts with enthusiasm, and went to the extent of clearing water hyacinth infestations in the area.

Following a series of concerted efforts by the community, the repairs to the Kuluiti sluice have benefitted 3,000 ha of land in the region.

