Living Polders: Dynamic Polder Management for Sustainable Livelihoods, Applied to Bangladesh

Report on
Visit to Polder 30 in Khulna and Polder 35/3 in Bagerhat

Conducted during: 8th to 10th February, 2017

Conducted by:

Nureza Hafiz
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Mukta Dutta
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General Information

Project Name: Living Polders: Dynamic Polder Management for Sustainable Livelihoods, Applied to Bangladesh

Date of Visit: 8th to 10th February, 2017

Visited Places

- Polder 30 in Batiaghata Upazila, Khulna (8th February)
- Corresponding GoB offices (9th February)
- Polder 35/3 in Bagerhat Upazila, Khulna (10th February)

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Introduction

In the coastal areas of Bangladesh with the construction of Polders to reduce flood risk, salinity intrusion and maximize the agricultural production, the other problems like land subsidence, sedimentation, water logging and salinization have become severe by the time being. By addressing these problems, 'Living Polders' project is working in the south-western region to develop a sustainable solution considering the social and physical dynamics of the area.

As a part of the ongoing baseline study a field visit was conducted in Polder 30 (Batiaghata and Gangarampur union) and Polder 35/3 (Kara Para, Dema and Mallikerber Union) during 8th to 10th February, 2017.

The main objectives of the visit were

- To get an understanding of the Infrastructure and drainage network of the polders
- To observe the erosion, accretion and sedimentation in and outside of the polders
- To know people's perception about the polders and projects implemented in the areas.

Description

Polder 30:

Poler 30 is situated in Batiaghata upazila of Khulna District; consists of mostly in Batiaghata Union and Gangarampur Union with a very small fraction of Surkhali Union and Bhandar para Union (Dumuria Upazila). Bangladesh Water Development Board (BWDB) and water management organizations of Blue Gold Program jointly manage the water control structures.

In this polder major finding of the field visit is the difference in land elevation in and outside the polder. Land elevation inside the polder is 1.0 m to 1.5 meter (3 to 5 feet) lower than the land (set back) elevation of the river bank outside the polder. In the southwest side of the polder the Jhopjhopia River is fully silted up and lands are encroached for shrimp gher.

Polder 30 has erosion problem in Hatbati village (22.743679, 89.519582) to Batiaghata village (22.738186, 89.519783) alongside the Kajibacha river bank. In Par-Batiaghata village (22.731137, 89.464776) beside Salta River there is also a retired embankment which shows the extent of erosion. Severe bank erosion observed in the downstream (22.633342, 89.520384) of Kajibacha River.

The sluice gate (22.729765, 89.468265) in the Par Batiaghata, one of the important regulators, is found malfunctioning. There is another sluice in Hajir Hat called Amtala (22.661575, 89.493936) sluice which is nonfunctional though local people made closed the khal in the mouth of the sluice by earthen embankment outside the polder to prevent the saline water break in due to tidal influence, though there were some saline water gher (fish farm) found.

From an informal group discussion in Hajir Hat (22.660483, 89.494738) and several Key Informant Interviews in deferent places of the polder area, it is found that most of the people in the polder only cultivate Aman crop fed by rain water in the rainy season. They try to conserve rain water in the internal khals so that they can use that water in dry season for irrigation purpose because those places are not suitable for ground water extraction. The shallow tube well extracts saline water and deep tube well is too deep and therefore costly to construct for irrigation purpose. As the Blue Gold Program is working there, the gate operation committees and water management organizations are functioning in a sound manner as a result of which any probability of conflict is less or at least no sign of conflict observed. There are some crab farming pilot project supervised by fisheries department outside the polder line in Gopal Khali (22.711398, 89.526030). Local agricultural officer confirmed the cropping practices of the Area when we have visited Upazila office.

From Batiaghata, three water samples were collected inside and outside of the polder to measure the quality. With the help of Sub – Assistant agricultural officer we have managed to evaluate the salinity level in some places. The river water salinity was found 7.08ppt (22.631329, 89.514977) and inside the polder salinity level ranges from 0.48 to 0.88ppt for ponds and drinking water sources in different places.

Polder 35/3:

Polder 35/3 consists of 3 unions namely Dema Union and small portion of Kara Para Union of Bagerhat Sadar Upazila and Malliker Ber union of Rampal Upazila. The administrative and management control lies with Bagerhat O&M Division, BWDB Bagerhat under Khulna Operation and Maintenance (O&M) circle. Recently Coastal Embankment Improvement Project (CEIP-1) of BWDB is working on the polder for the infrastructural development such as reconstructing polder line, sluice gates and developing the drainage situation.

The major finding of the visit in this polder is a strong conflict between saline water gher cultivators (politically influential) and agricultural farmers. The land level inside and outside the polder is almost same.

From the KII, we came to know that the Kathali River under the Dema Bridge, Mirzapur was about 45 feet in the year 1990/1996 but now became a narrow Khal because of siltation problem and illegal land encroachment (for Gher practice) of the river bank which accelerated siltation in the channel and there is no tidal influence and water flow.

Dema union is mostly saline water Gher oriented, whereas the Malliker Ber union has very less Gher farmers. On the way to Raotir Gate from Mirjapur Bridge, it is observed that local gher farmers made their own inlets by cutting embankment to collect saline water (22.631877, 89.750438 and 22.631298, 89.738210).

Soabaki Khal, which is connected to all the khals inside the polder, farmers reported that as the gate (22.572338, 89.779705) is fully damaged and they cannot use any water from the khal for irrigation and they face water logging problem in monsoon. An extensive potential of conflict

among Shrimp culture and Agriculture is felt during the visit. The betubunia gate (22.560671, 89.719090) was damaged extensively but people manage to operate it with hardship.

Aman and Boro Rice is produced in this upazila on the other hand Aus Rice is not cultivated. Due to little water logging problem, the production of Aman Rice is huge. In the Bagerhat Sadar Upazila there is no Deep Tubewell and the number of Shallow Tubewell is insufficient to serve domestic and irrigation purposes. The profit from rice cultivation is less than that of shrimp farming, so people are likely to shift from agriculture to Shrimp cultivation.

A group discussion was held in the Choto Sannashir Bazar (22.546190, 89.737173) of Mallikerber union where local people mentioned possible conflicting issues between agriculture and shrimp ghers, scarcity of drinking and irrigation water. It was reported that the previous year one farmer invested about 65 thousand taka for Boro Rice and the farmer faced a great loss as he could not harvest the crop due to saline water intrusion.

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We have noticed that the dredged sand from the Ghoshakhali channel beside Mallikerber was dumped in the Choto Sannashir Bazar and adjacent agricultural lands as well as farming ponds.

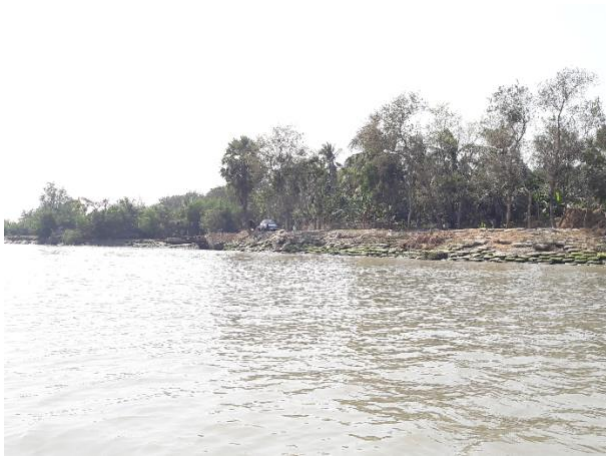
Concluding remarks

In polder 30, water drainage congestion happens as the land level elevation inside the polder is lower. As Blue Gold Program is running in this polder there is no social or conflicting issues.

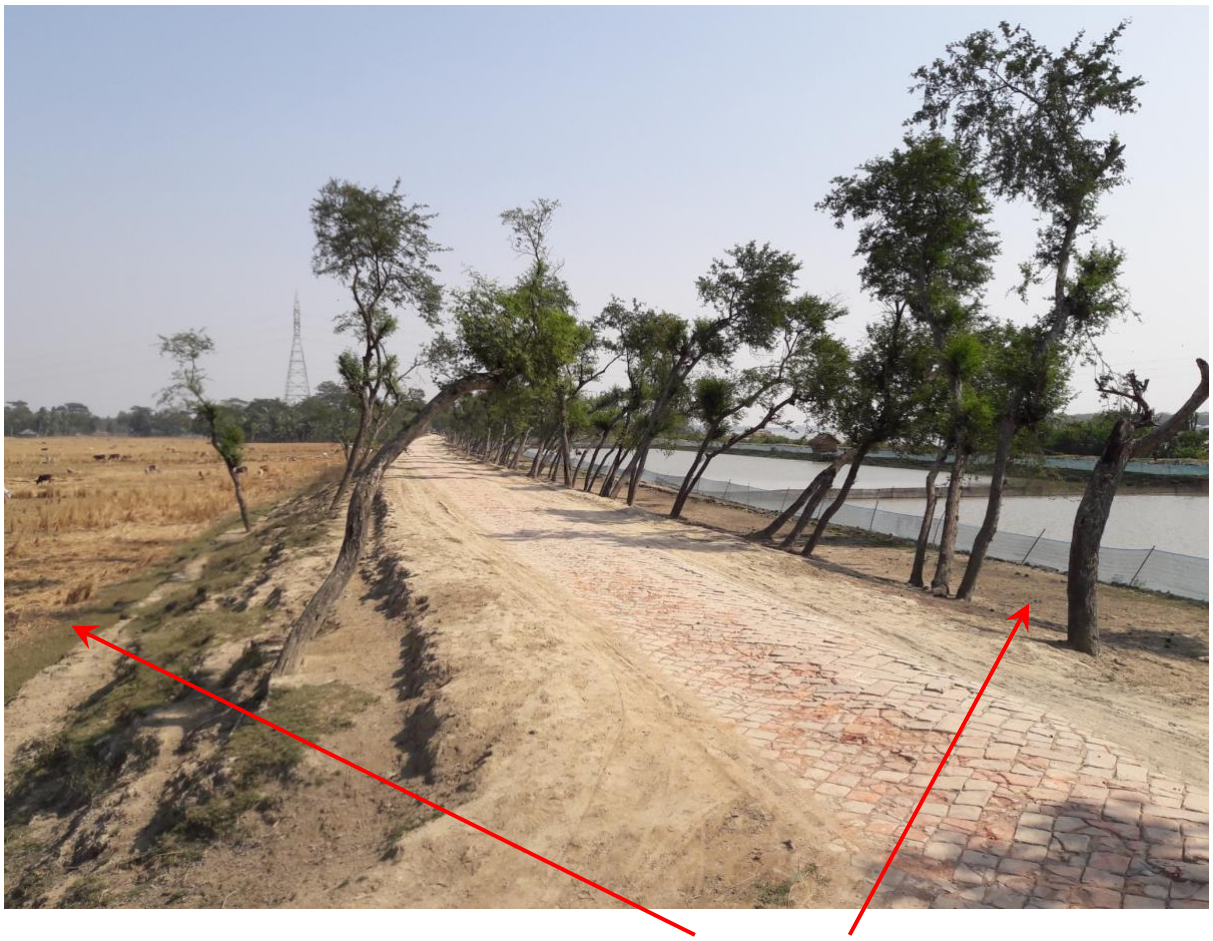
In polder 35/3, CEIP project is working to solve all the infrastructural problems and improving drainage situation. But there is no community involvement which may lead to severe conflict among livelihood groups. As the government is planning to build the connecting road for Mongla Economic zone over the polder line as well as improving the navigability of Ghashiakhali channel connecting Mongla Port, the polder may face Peri-Urban activities in the near future.

Images

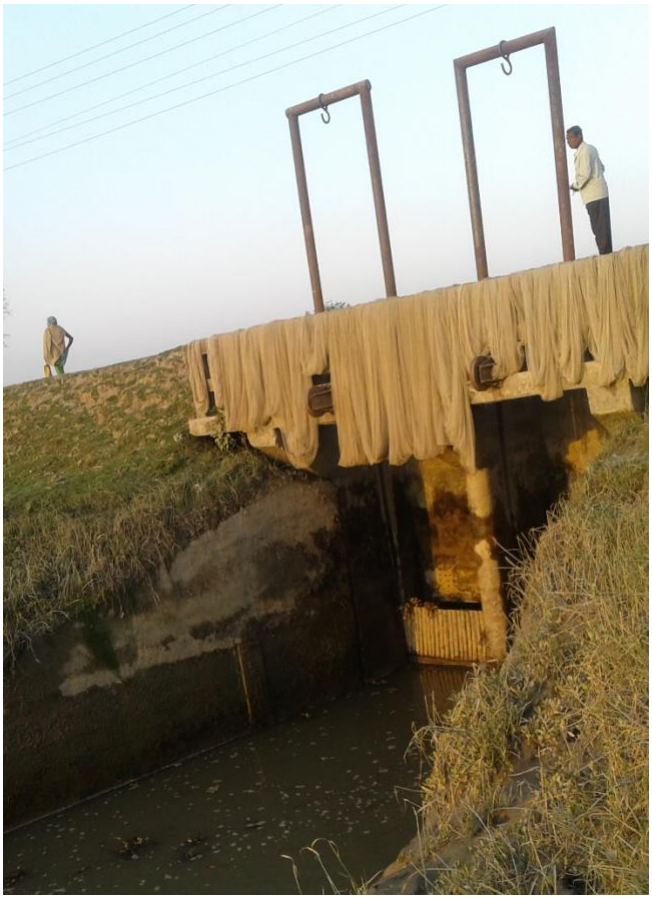
Polder 30

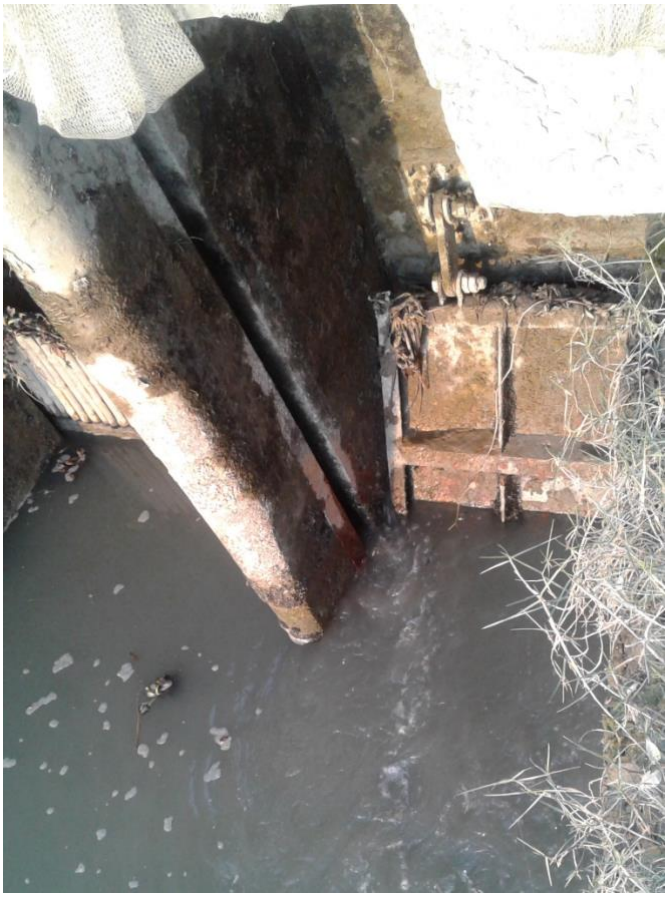


Polder line erosion beside Batiaghata bazar (22.732960, 89.518741) and near Ferry ghat bazar (22.633342, 89.520384) in Kajibacha River.

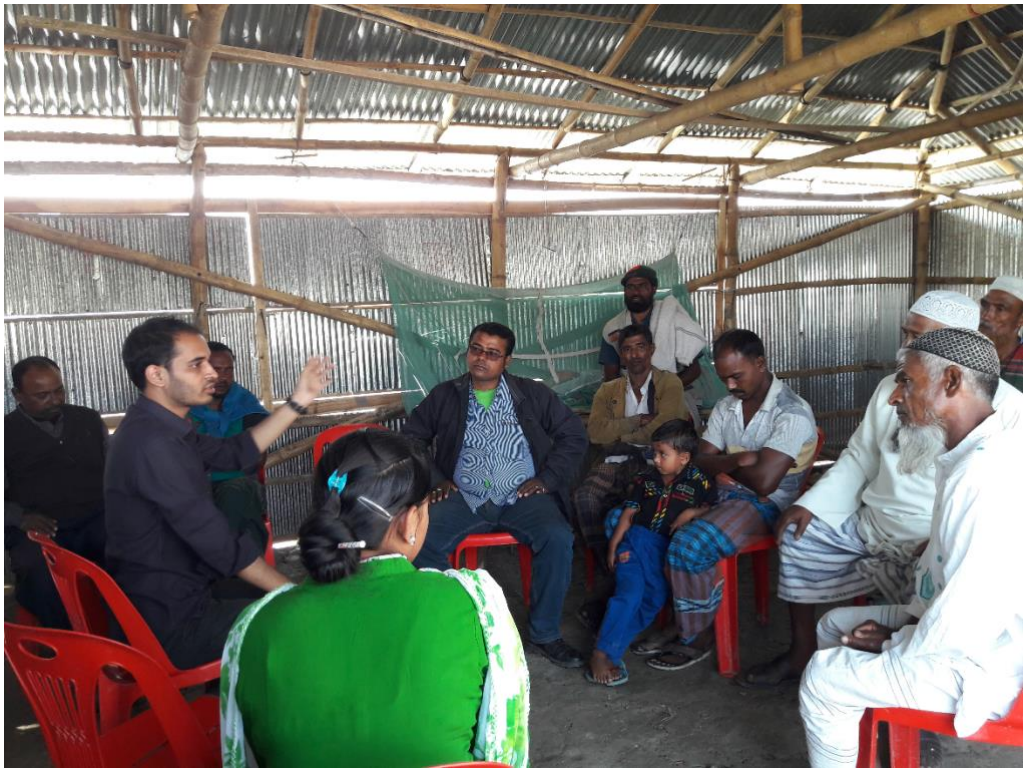


Land Elevation Difference in Polder 30, inside and outside of the polder.

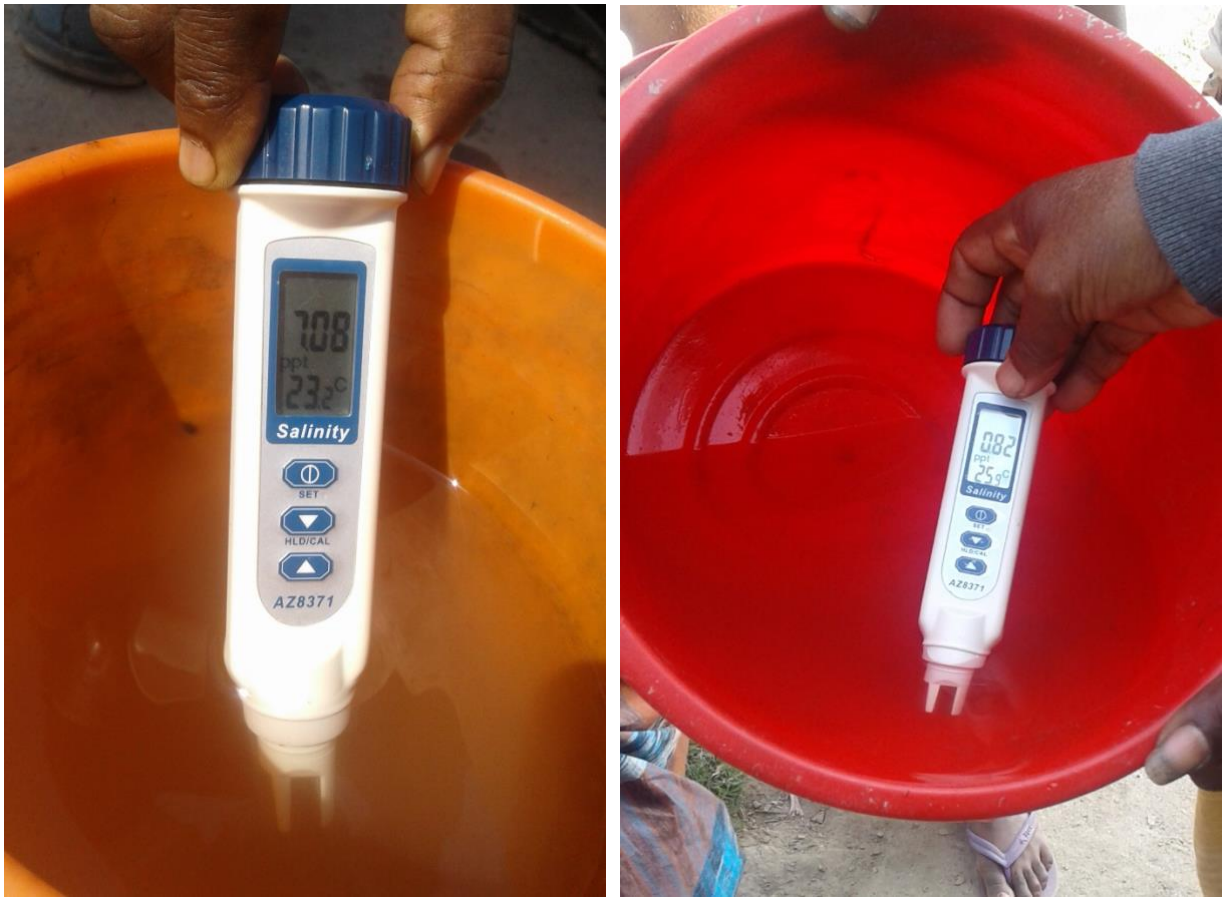




Poorly functioning Sluicegate in the Par Batiaghata (22.729765, 89.468265)



Informal group discussion in Hajir Hat (22.660483, 89.494738)

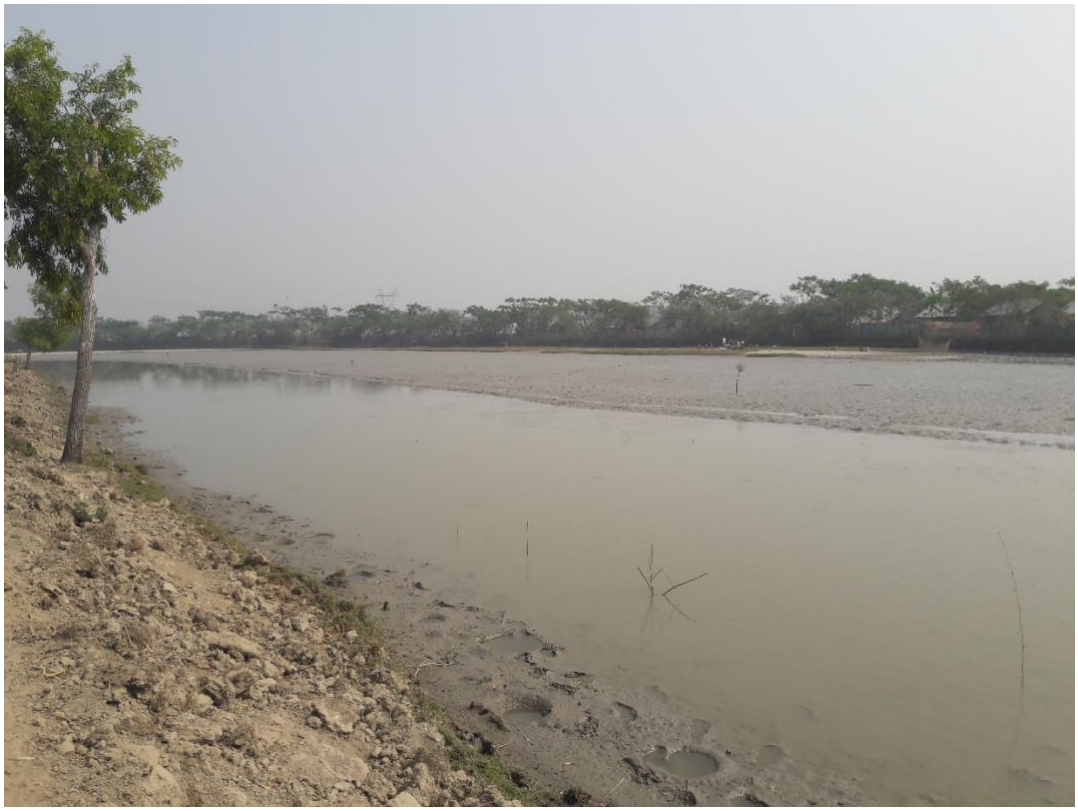


(a) (b)

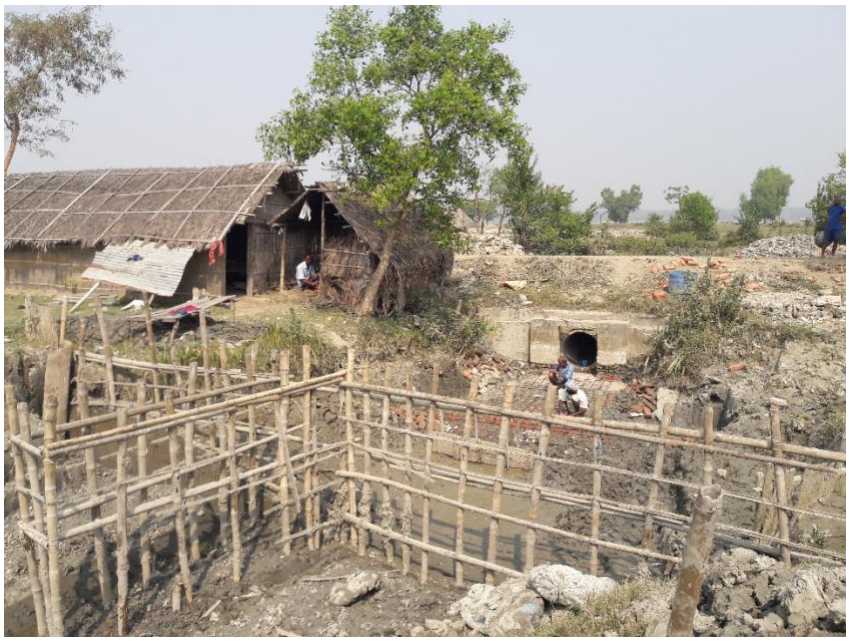
Salinity concentration in River (a) and pond (b) water inside and outside of the polder respectively

Polder 35/3

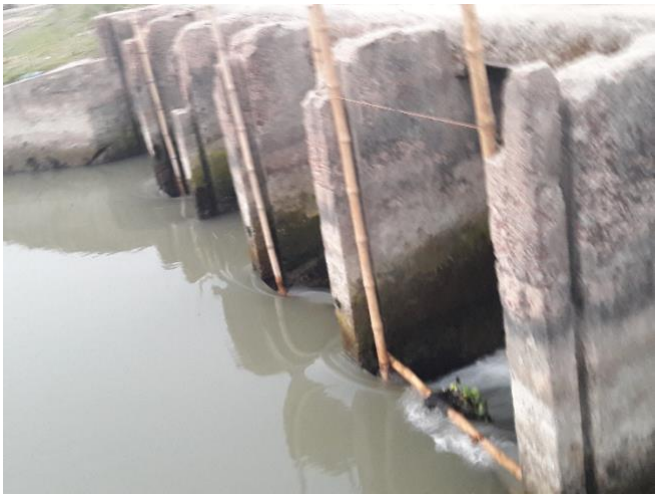
Silted up Narrow Mirzapur Khal in the middle and illegally encroached land for shrimp cultivation

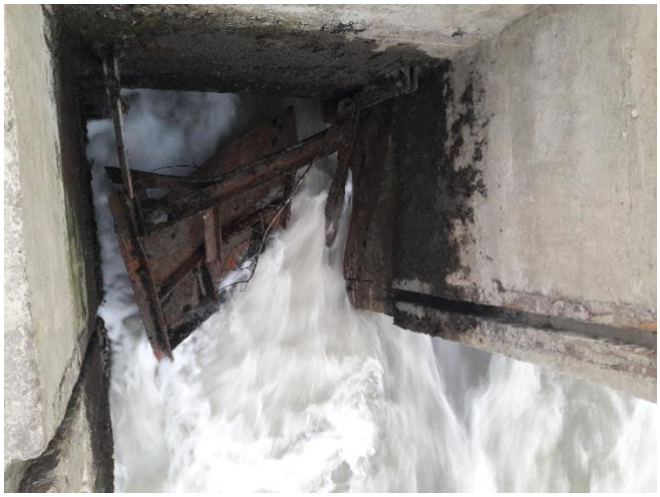


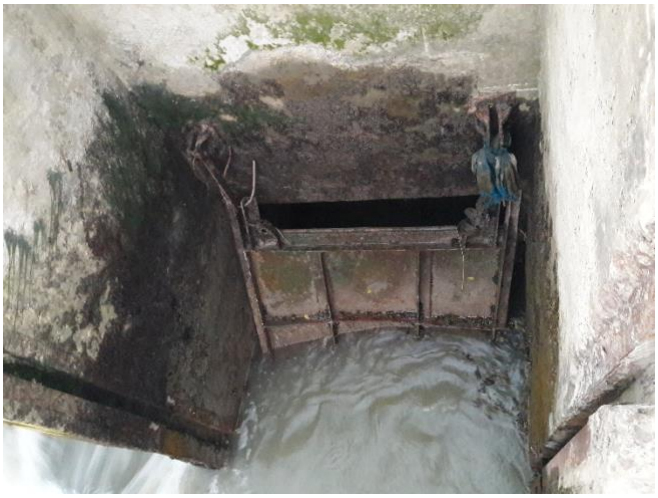
Saline water gher inside the polder



People are building drainage inlet by cutting embankment themselves

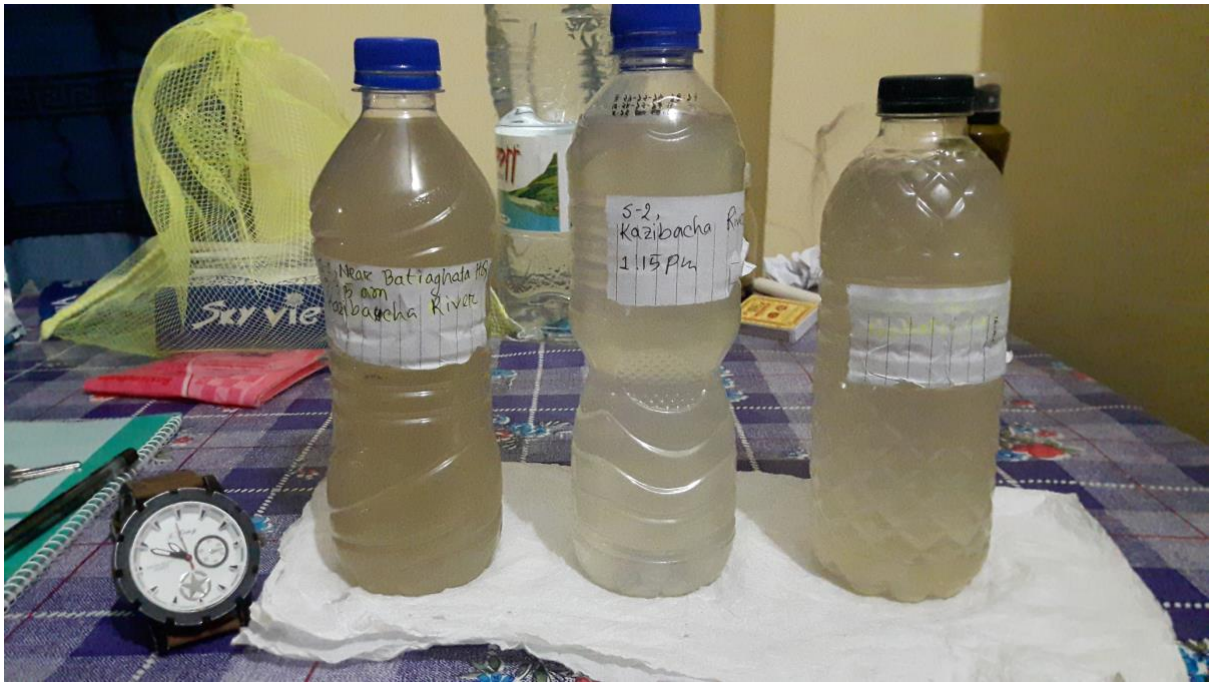






Fully nonfunctional sluicegate in Soabaki (22.572338, 89.779705).

Informal group discussion in Choto Sannashir Bazar (22.546190, 89.737173)



Collected water sample from polder 30

Annex

Contacts

Contact Name	Date	Designation	Phone number
Nazrul Islam Khan	08-02-17	Member, Hatbati, Word No 9, Batiaghata, khulna	1711326760
Nasir Uddin Khan	08-02-17	Businessman (Sand), Beside Batiaghata Upazila HQ, Khulna	1919442424
Ujjal	08-02-17	Blue Gold	1753212111
Horidash	08-02-17	Par Batiaghata	1931051757
Kolimullah	10-02-17	Molliker Ber	
Jahangir Alam	08-02-17	Agriculturist, Batiaghata upazila, Khulna	1715209047
Md. Mamun	08-02-17	Fisheries officer, Batiaghata, Khulna	1729178378
Md. Gaffar	08-02-17	Block Officer, Boyarvanga, Batiaghata, Khulna	1719059912
Amir Ali	08-02-17	Assistant Fisheries officer, Batiaghata upazila, Khulna	1760533444
Mallik Nazrul Islam	09-02-17	Assistant Agricultural Extension officer, Rampal Upazila, Bagerhat	1716679896
Md. Anisur Rahman	10-02-17	Sub-Assistant Agricultural Extension officer, Bagerhat Sadar Upazila, Bagerhat	1722962588
Md. Lultu		Director, NGO Forum, Khulna regional Office, Khulna	1711131152
Sankar Kumar Mazumder	10-02-17	Agriculture officer, Rampal, Bagerhat	1715508814
Engr. Md. Abdul Hannan	09-02-17	Executive Engineer, CEIP-I, BWDB, Khulna	1712101250, 88041000000
Mr. Khushi	09-02-17	Executive Engineer, BWDB, Bagerhat Sadar and rampal, Bagerhat	1711224829
Not Available	09-02-17	Fisheries officer, Bagerhat Sadar Upazila, Bagerhat	1716109332
Shamimara Nipa	08-02-17	Agricultural Extension officer, Batiaghata, Khulna	1731003464
Mr. Pijush	09-02-17	BWDB, Executive engineer, BWDB, Batiaghata, Khulna	1912145943
Md. Shipon		Driver, Shonadanga, Khulna	1771100055
Md. Jakir		Jagrata Juba Shongho (JJS), khulna	1711828833
Mukta Dutta		B.Sc. Student, Environmental Science, Khulna University, Khulna	1782844857
Sabiha Yeasmin Neela		B.Sc. Student, Environmental Science, Khulna University, Khulna	1613131015

Date	Time	Activities
8th February, 2017 Wednesday Polder 30 field visit	07:00 – 08:00	Arrival , check in Khulna
	08:00 – 09:00	Way to Polder 30
	09:00 – 10:00	Batiaghata Agricultural extension office (Ms. Shamimara Nipa)
	10:00 – 17:00	Field visit, lunch, FGD, KII
	17:00 – 18:00	Returning
	18:00 – 19:00	Summarizing
9th February, 2017 Thursday Upazila office of Polder 30 (Batiaghata) and 35/3 (Rampal Upazila office)	09:00 – 09:30	To Upazila office Batiaghata
	09:30 – 12:30	Meeting with officials
	12:30 – 14:30	To Upazila office (Rampal), lunch
	14:30 – 16:00	Meeting with officials, Rampal (Polder 35/3)
	16:00 – 17:00	Returning
	17:00 – 18:00	Summarizing
10th February, 2017 Friday Polder 35/3 field visit	07:00 – 08:30	To Bagerhat sadar
	08:30 – 17:00	Field visit polder 35/3, lunch, FGD, KII
	17:00 – 18:00	Returning to khulna
	18:00 – 19:00	Summarizing
	22:00 – 22:30	Preparation for returning dhaka

Checklist

Water Issues

Hazards

- Type of hazards (e.g. salinity – soil, river, GW; storm surge; river bank erosion; flooding, water logging, etc.)
- Intensity of hazards, spatial distribution

Water availability for drinking water

- Source of drinking water
- Any issues with availability – what is the percentage coverage?
- Technology used (e.g. HTWs, DSWs, PSF, rainwater harvesting, piped distribution, etc.)
- Quality of drinking water (e.g. salinity, arsenic)
- Type of sanitation facility
- Problems/ issues with current sanitation facility
- Alternative options?
- Health hazard, who are more affected – women, children? How?

Water availability for agriculture

- Problems/issues with availability (e.g. salinity, lowering of GW table)
- Cause of the problems
- Any adaptation measures practiced? (e.g. change in agricultural varieties; new technology; improvement of irrigation canals)

Water issues in Aquaculture

- Problems/issues with availability (e.g. salinity, lowering of GW table)

Socio economic

- Different livelihood groups
- Who are more vulnerable and why?
- Poverty – what is the extent of poverty? (in terms of income, no. of meals/day etc.)
- Property/land ownership
- Which vulnerable groups are poorer?
- Literacy rate?
- Road communication?
- Access to market (growth centers)?
- Access to health facilities

Interventions

Ongoing interventions/planned – structural, non-structural

Key physical components of infrastructure (physical observation), different initiatives, projects

How effective the structural interventions have been

- How effectively they have performed
- If not very effective, what were the issues or limitations?
- How resilient they have been against hazards and disasters
- How quickly they can be recovered and rehabilitated after hazard/disaster? What are the obstacles?
- Are people more resilient (have increased coping capacity) compared to pre-intervention situation?

- Any operation rules?
- What is the management system – say for gate operation, mainetance?
- Have the interventions been gender friendly, i.e. brought about gendered outcomes?
- Have there been any innovative/autonomous interventions, how effective they have been?
- What are the gaps? How the existing interventions can be made better? What else can be done?

Key institutional interventions, different initiatives, projects
How effective the institutional interventions have been

- What is the institutional arrangement linked to different issues
- How effectively they have performed
- If not very effective, what were the issues or limitations?
- How effective has been the coordination between different institutions concerned (including LGIs, BWDB, LGED, etc.)
- Are people more resilient (have increased coping capacity) compared to pre-intervention situation?
- Have the interventions been gender friendly, i.e. brought about gendered outcomes?
- What are the gaps? How the existing interventions can be made better? What else can be done?

Livelihood and Income Linkage

What is the major source of income?
What are the major source of livelihoods?
What was it like some 10/20 years back?
Has the situation improved?
If yes, why?

- Better flood control and drainage (during monsoon)?
- Improved availability of irrigation water? How?
- Better/innovative technology? (e.g. better cultivars, irrigation methods?)
- Better management of other hazards, like salinity, erosion, etc.?
- Ecosystem resources better preserved? What have been done in this regard?
- Different livelihood groups (e.g. agriculture, fisheries), including marginalized, women, children, and other vulnerable groups equally benefitted?
- Conflicts between, say, agriculture and fisheries?
- Any other conflict? (e.g. gate operation, khal encroachment, etc.)

Historical timeline of development pathways

Year of polder construction
What was it like before construction?

- Bio-physical setting (e.g. hazards, water availability- quantity, quality)
- Socio-economy (livelihoods, poverty, infrastructure –roads, etc.)

What changes have taken place since polder construction?

- Hazard minimized?
- Agriculture productivity increased? If yes, how?
- Livelihood increased? If yes, how?

- Livelihood diversified? If yes, how?
- Poverty level decreased? If yes, how?
- Infrastructure improved?
- Which livelihood groups benefitted, which did not? Why?
- If not positive change, why?