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

Study Site Visit of "Living Polders" Team

Conducted on: 10 - 13 May, 2018

Prepared by:
Nureza Hafiz
Nazim Uddin Rahi

Institute of Water and Flood management (IWFM)
Bangladesh University of Engineering and Technology (BUET)

General Information

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

Date of Visit: 10 – 13 May, 2018

Visited Places

- Beel Pakhimara, Shatkhira (10 May)
- Beel Khuksia, Jashore (11 May)
- Khulna University and Rupsa River, Khulna (12 May)
- Bagerhat (13 May)

Participants

Utrecht University (UU), Netherlands

- Dr. Hans Middelkoop, Professor, Physical Geography
- Dr. Frank van Laerhoven, Assistant Professor, Copernicus Institute of Sustainable Development
- Dr. Sanchayan Nath, Post-Doctoral Fellow
- Md. Feroz Islam, PhD Student

Bangladesh University of Engineering and Technology (BUET)

- Dr. Mohammad Shah Alam Khan, Professor, IWFM
- Nazim Uddin Rahi, M.Sc. Student
- Nureza Hafiz, M.Sc. Student

Khulna University (KU)

- Dr. Dilip Kumar Datta, Professor, Environmental Science Discipline
- Dr. Md. Atikul Islam, Professor, Environmental Science Discipline

Supervised by

Dr. M. Shah Alam Khan, Project Leader, Living Polders
Professor, Institute of Water and Flood Management, BUET, Dhaka- 1000, Bangladesh.

Locally supervised by

Dr. Md. Atikul Islam
Professor, Environmental Science Discipline, Khulna University, Khulna, Bangladesh.

Introduction

'Living Polders' project is designed on the idea "Building with Nature", where re-allowing of tide borne sediment inside the polders raising soil surface with increased fertility. Another idea was- addressing the fundamental knowledge gaps regarding physical and institutional boundary conditions to explore the potentials of 'Living Polders'. The knowledge learnt from integrated, coevolving physical and institutional processes between Delta and Polders will lead to Decision Support System (DSS) for dynamic polder management and sustainable livelihoods.

The field visit was aimed to -

i. understand the physical processes and the actual state of the selected tidal basins
ii. understand the local and institutional barriers
iii. discuss knowledge gaps and research, aligning with project goals and
iv. discuss the sample collection scheme, feasibility and analysis methods

Description

Beel Pakhimara, Shatkhira (10 May): To visit the ongoing TRM operation at Beel Pakhimara, we have started early in the morning. After arriving in Shatkhira, first we have visited the "Pilot TRM Project" operated by BWDB at Jethua Beel (22.714324, 89.253347) in Krishnakathi village, which is claimed as 'Successful TRM'. A four vent sluice gate (22.713010, 89.258404) over the Channel Jethua Khal connected with the Beel. That project was a combination of using technical interventions along with natural sedimentation process.

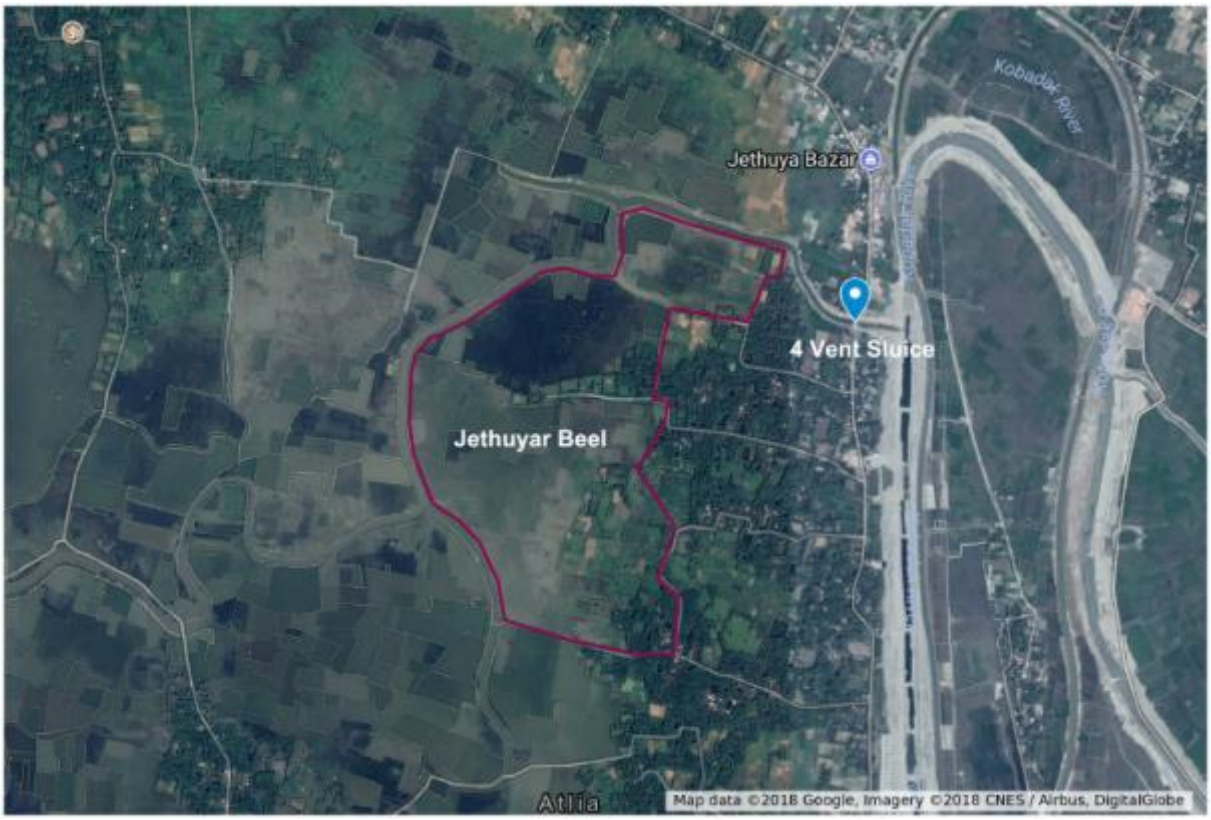


Image: Jethua Beel, link canal and regulating structure.

In the mouth of channel due to high sedimentation they had to excavate to keep the water flow uninterrupted to the farthest part of the beel. According to the local people the beel was raised by 2-3 feet varying from place to place.

Shaheed Muktijuddha Aziz - Shusheel Polli (22.7009, 89.25909), a village for the displaced families affected by TRM operation in Beel Pakhimara. Because the severe erosion on link canal mouth those families lost their lands. The land for the village was allocated and financed jointly by Government of Bangladesh and MISEREOR, Germany.

A Key Informant Interview (KII) was done, where two of the member of Union Parishad – lowest unit of Local Government, Mr. Muslim Uddin and Mr. Abdur Razzak were the Key informants. The chairman of Jalalpur Union sends his regards as he was unable to join us.

After the lunch at Teghoria Primary School (22.675587, 89.256053), Jalalpur, a group meeting was held, which was facilitated by Mr. Jaheen Shams. The attendees of the meeting were land owners of the Beel area and affected by the TRM operation, though their livelihoods are different.

Some key points were noted from the discussion –

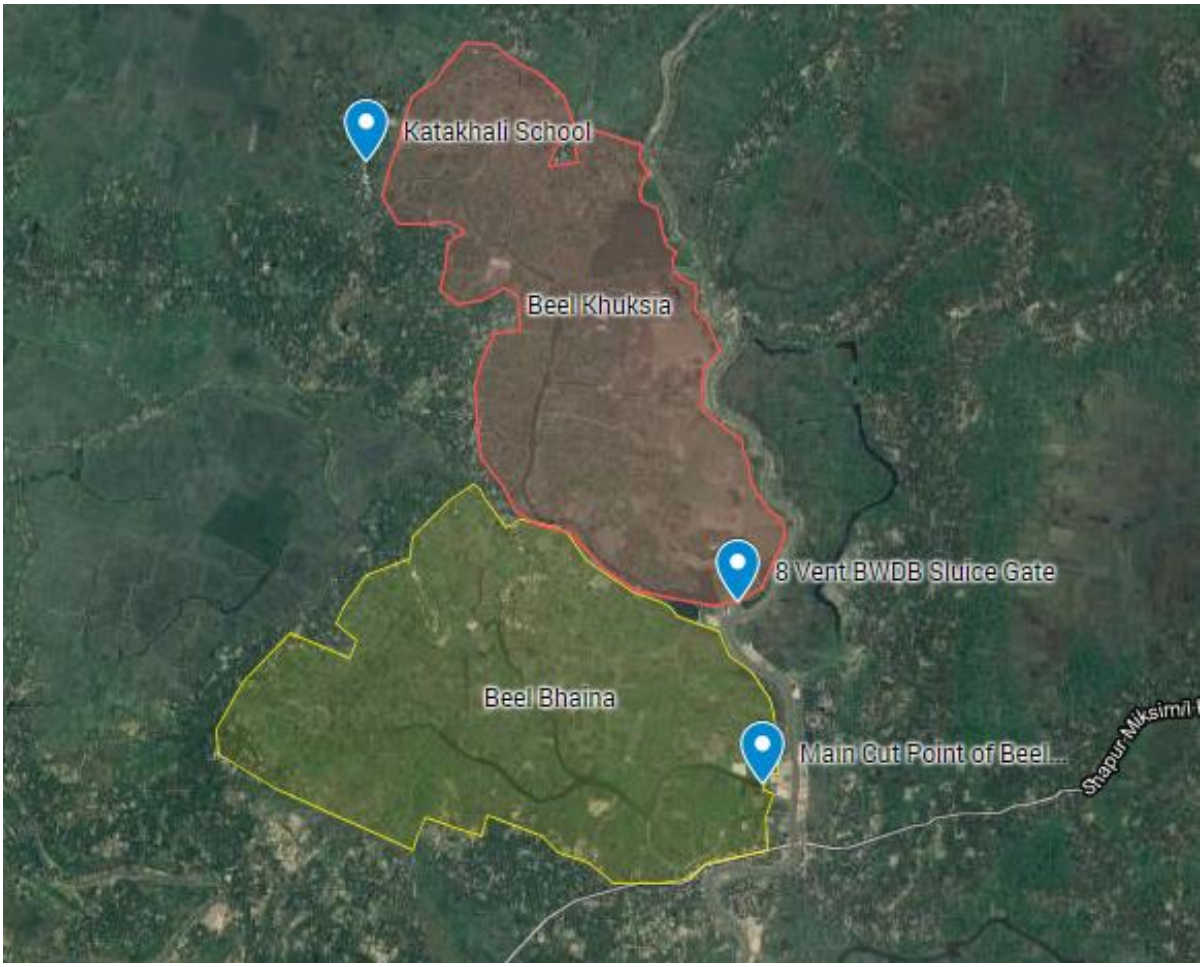
1. To ensure even sedimentation across the beel and to accelerate it local people suggested excavating the link canal to the farthest point of the beel.
2. They have asked to involve them in the intervention planning phase of the project so that they can share local wisdom for the better operation.
3. Corruption is an important issue, pointed out by them. In their opinion the ideal time to build the cross dem is in February, though it was built later in March this year (2018) and April last year, it is because of the groups who controls the navigation to the upstream of the Kobadak river.
4. Incidents like embankment and dam breaching happens due to the ignorance of the contractors as well as the powerful people who want to navigate the river according to their will.
5. People of the area have no objection about TRM operation as long as they get the compensation properly in time without difficulty and procrastinating system.
6. At some point they suggested to handover the compensation distribution program to the local Union Parishad Chairman and Members to gain their access over the process.
7. As there are crime and security concerns regarding other “gucchogram (**গুচ্ছগ্রাম**)”, the displaced people feel disrespected if there village is called “gucchogram”.

At afternoon, the cross dam constructed on 19th march 2018 on the Kobadak river was visited and local inhabitants were interviewed beside the link canal where erosion took place. Later on Pakhimara Beel was explored by an engine boat. Inside the beel, uneven sedimentation was clearly visible by seeing the changes in the land surface elevation higher from nearer to link canal mouth to lower to the farthest point of the beel. Some sample collection points and land level change monitoring points were also shown to the team.

We have checked in Uttaran (IDRT), Tala Upazila at that evening. Later that at night Dr. Dilip Kumar Datta joined us.

After dinner, a constructive discussion on the days visit, new research ideas, problems and challenges of ongoing researches, and role of BUET and KU student's thesis/projects was done.

Beel Khuksia, Jashore (11 May): After having breakfast at Uttaran, we left for Jashore at around 8.00 am. We reached Bhaina Bazar, Jashore after a two hour ride and stopped by the first cut point of Beel Bhaina (22.860772, 89.355318). The team walked along the embankment and observed the compartment system inside the tidal basin as well as agricultural and fisheries condition of the Beel area. Then we moved towards Beel Khuksia.



Map: Beel Bhaina and Beel Khukshia.

In Beel Khuksia, it was observed that some local people excavating their land to build "ails (land boundary divider)" as embankment for the fish farm compartments. We have talked with some local farmers near the 8 vent gate to understand the current farming practice in the area. They were happy with the Boro production as it was their first attempt to plant paddy in the raised land after TRM operation in 90's. Later on as the river bed silted up, water logging became common phenomenon now a day. Presently they do agriculture in the dry season and aquaculture in the wet season in these tidal basins.

Dr. Hans took a sediment sample from the bank for further analysis.

After exploring Beel Khuksia, we moved to Kalicharanpur Govt. Primary School (22.90881, 89.32212) at Keshabpur. We met Mr. Hashim Ali Fakir, Acting Principle, Chuknagar College. He informed us about the historical past of these beels, flood protection systems and cropping

practices of the local communities, their urges and sufferings during the TRM operation and the present state, expectations and suggestions etc. towards it.

After lunch, in the stakeholder meeting, people were outspoken and eagerly expressed their thoughts and opinion about TRM. The people of Beel Khukshia and Bhaina think that-

1. Local people are needed to be engaged in the design phases.
2. For the compensation, as their previous land ownership documents were updated and were given a card, it is just a hassle for them to re-verify all the previous documents for each cycle of TRM to get compensation.
3. The current method of fixing compensation amount is wrong and it should be based on land use.

It was a fruitful discussion because we came to know about new TRM strategies, compensation procedures etc.

After the meeting Dr. Sanchayan along with Mr. Feroz and Mr. Rahi left for Jashore airport. The other team members continued their journey to the 9 vent Bhabadaho sluice gate and then left for Khulna.

Khulna University and Rupsa River, Khulna (12 May): On 12 may, the meeting at Khulna University held mainly to discuss five agenda:

1. Sediment Sampling Plan
2. Ph.D., M.Sc. thesis projects and research uptake
3. Engagement of Policy makers and stakeholders
4. Decision Support System frameworks
5. Engagement of other Dutch consortium members

Dr. Hans talked about some important topics- Stakeholder engagement, TRM implementation and its effect on livelihoods (decision, Mandate, authority etc.), Policy engagement (planning to arrange a workshop in Bangladesh, where different stakeholders such as DC, BWDB, UP, Policy makers, LGD, Farmers, Fishermen will be present).

Afterwards Dr. Frank discussed about the Post Doc. project in brief and illustrated the complex socio-ecological framework lucidly. The framework is given on the next page (Figure 1).

Dr. Khan and Dr. Atikul Islam explained some new thesis projects regarding heavy metal assessment, tracer method etc. Ph.D. researcher, Mr. Feroz presented his sampling scheme which will help him develop his delta scale hydrodynamic model. Afterwards, Mr. Rahi and Ms. Nureza explained their M.Sc. thesis projects.

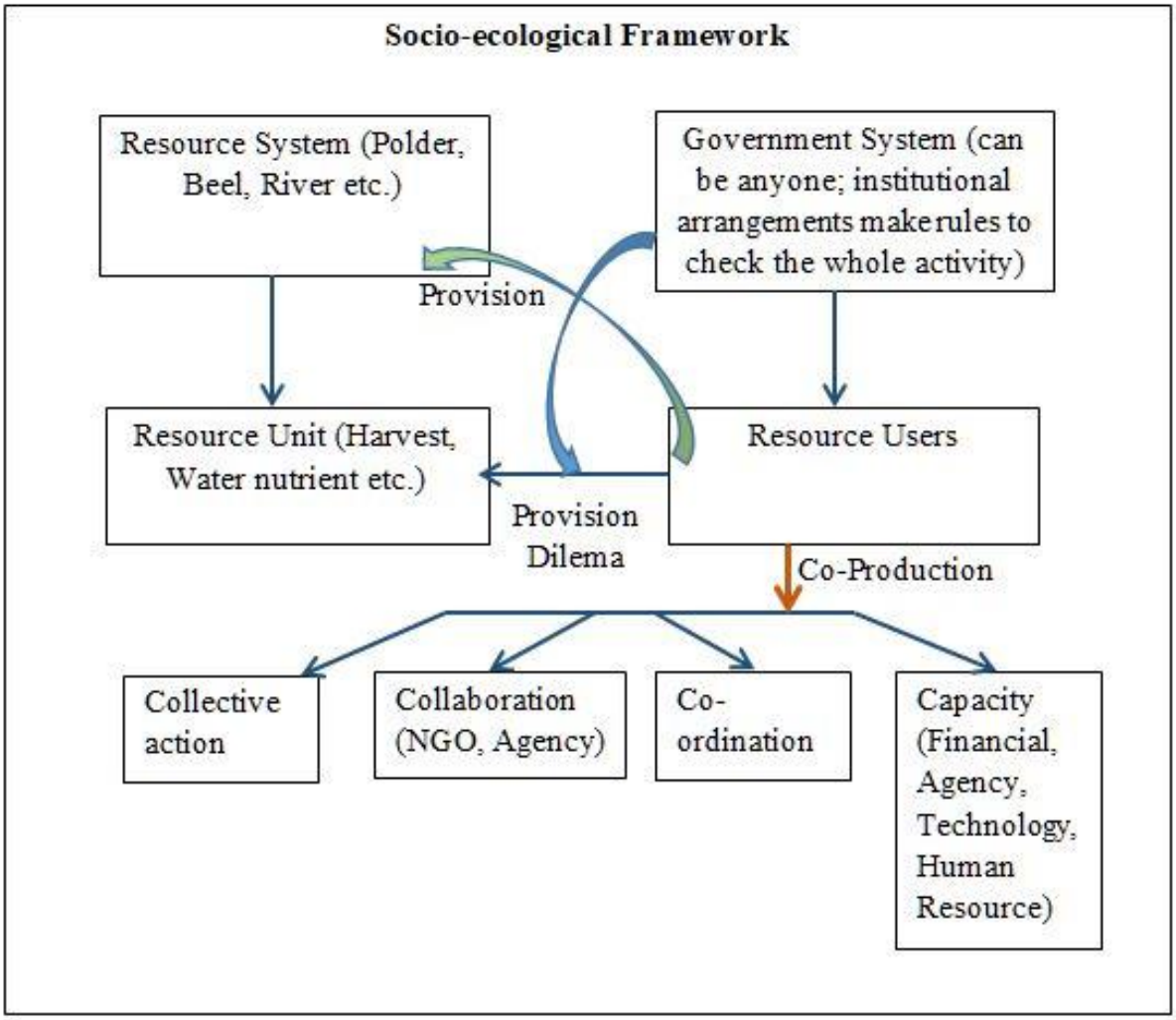


Figure: Socio-ecological Framework by Dr. Frank (Prepared by Nureza, as it was shown)

Dr. Atik arranged a wonderful platter of tropical fruits as snacks and a lunch box for the "Living Polders" team. After having lunch, Dr. Khan handed over souvenirs to the Dutch team and left Khulna University for Jashore Airport.

Rest of the team members was shown the laboratory facilities of the Environmental Science Discipline of Khulna University by Dr. Atik and Ms. Morjina, Lab Registrar. Mr. Rahi demonstrated the working process of the sediment sampler made in BUET. Mr. Feroz also demonstrated the method of measuring settling velocity by the 'Settler Tube' made at Utrecht University.

In the afternoon, we went to explore the mighty Rupsa River by an engine boat. We travelled along the bank and stopped by the nearby Jetty. Dr. Hans collected sediment sample from the bankside. Mr. Feroz also took some water sample in the 'Settler Tube' for measuring settling velocity.

Bagerhat (13 May)

On 13 May, we had some leisure in the morning, so after having breakfast we left for Bagerhat to explore Bangladeshi heritage- The Shatgombuj Mosque and The shrine of Khan Jahan Ali. We reached Khulna at noon and had lunch in the Hotel Royal. After that Dr. Hans, Dr. Frank, and Mr. Feroz left for Jashore airport and our field visit ended formally.

Discussion

As it is pre-monsoon time on Bangladesh, due to sudden thunder storm with heavy hail and gust, we had to face difficulty to keep us all checked with the itinerary schedule.

We are very much grateful to Tawhid Sana and family for their generous help in the time of storm. Our worm hearted thanks to the local people of Beel Pakhimara, Beel Bhaina, Beel Khukshia for their attendance and lively participation, and also to the Local government leaders for their invaluable time. We convey special thanks to the Head Teachers of Teghoria Primary School and to Kalicharanpur Govt. Primary School for allowing us to use their school space. Our special thanks to Uttaran Team for their help in organizing meetings. Our warmest appreciation is conveyed to the local law enforcement agencies for their kindest support and ensuring security.

A Google based map file was created which can be visited in this link: https://tinyurl.com/LPPTeamVisit and all the pictured were uploaded in the link: https://tinyurl.com/LPPTVimage

Conclusion

The total field visit experience was important for the Dutch consortiums to understand the local condition and feasibility of sampling locations and procedures. The fruitful discussions about thesis projects, sampling schemes, data collection added a new dimension to the ‘Living polders’ project.

Photos

Day One: Beel Pakhimara, Shatkhira (10 May)

Image 1: On the way to Beel Pakhimara, Tala, Shatkhira.

Image 2: Four vent BWDB sluice on Jethua Khal

Image 3: Four vent BWDB sluice on Jethua Khal (inner side)

Image 4: Discussion at Jethua Pilot TRM site

Image 5: Shaheed Muktijuddha Aziz Shusheel Polli

Image 6: Shaheed Muktijuddha Aziz Shusheel Polli

Image 7: Key Informant interview with Mr. Abdur Rajjak, UP Member at Beel Pakhimara

Image 8: Lunch at Teghoria primary school

Image 9: Introductory session of Group Meeting with the land owners

Image 10: A glimpse of Group Meeting

Image 11: A glimpse of Group Meeting

Image 12: Remaining water controlling structure (constructed before TRM) on the link canal

Image 13: Interview with the people beside link canal

Image 14: Three internal canal mouths in Beel Pakhimara

Image 15: Bank protection work in the link canal

Image 16: Baliya Bridge over the link canal

Image 17: Preparation to explore inside the Beel

Image 18: Discussion about the present scenario about the Beel

Image 19: Investigation on the deposited soil and excavated soil from the Canal bed

Image 20: Dinner at IDTR, Uttaran.

Day Two: Beel Khukshia (11 May)

Image 21: Frist cut point at Beel Bhaina

Image 22: Agriculture in dry season and fish farming in wet season is the cultivation practices in Bhaina area

Image 23: Two vent sluice gate in Bhaina

Image 24: Fish Farm at Beel Bhaina

Image 25: Interview with local farmer at Beel Khukshia

Image 26: Eight vent sluice gate at Khukshia

Image 27: Discussion about the past and present scenario.

Image 28: Key informant interview with Mr. Hashem Ali Fakir, Acting Principle, Chuknagar College

Image 29: Glimpse of the Group Meeting

Image 30: Glimpse of the Meeting

Image 31: Nine vent sluice gate on Bhabadaho River

Image 32: Bhabadaho River

Day Three: Meeting at Khulna University and Site Seeing (12 May)

Image 33: Discussion about Policy Makers and Dutch Consortium engagement

Image 34: Dr. Frank's discussion about the framework and DSS

Image 35: Discussion about Delta scale modeling and Sediment Sampling scheme

Image 36: Laboratory facilities visit of Environmental Science Discipline, Khulna University

Image 37: Laboratory facilities visit of Environmental Science Discipline, Khulna University

Image 38: Rupsa Bridge

Image 39: Exploring Rupsa River

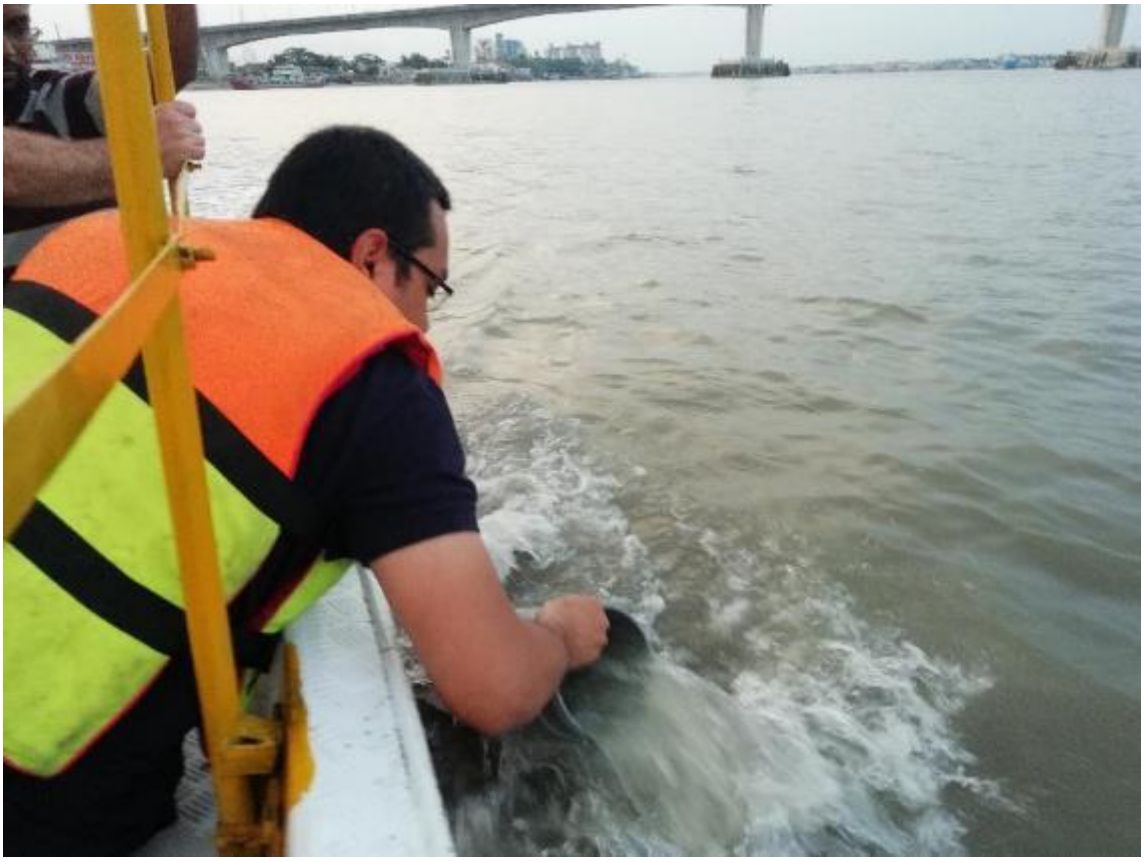


Image 40: Water sample collection at Rupsa River with settling tube

Day Four: Bagerhat (13 May)

Image 41: Shat Gambuj Mosque, Bagerhat

Image 42: Mausoleum of Khan Jahan Ali

Image: Living Polders Team

Contact List

Name	Address	Number
Saidur Rahman	SDE, BWDB	01706-317217
Jaheen Shams	Uttaran	01794-603351
Dilip Sana	Uttaran	01712-860594
Milton Kashyap	Uttaran	01722-545561
Tawhid Sana	Uttaran	01780-478778
Muslim Uddin	Dohar, Tala	01903-112811
Mizanur Rahman	Khulna Police	01772-818221
Unnamed	Khulna Police	01779-575591
Bikash	Bhaina, Jashore	01728-240697
Hashem Ali	Principle, Bhaina	01716-462841
Ful Mia Kobir	Khuksia	01969-794026
Joshim	Khuksia	01713-911256

Itinerary of the visit

Date	Personnel	Time (BD Time)	Activity
9th May	BUET	2.30 pm	Dr. MSA Khan leaves for DAC airport
	UU	05.15 pm	Arrival at Jashore Airport
		05.30 – 08.30 pm	To Khulna
		08.35 – 08.45 pm	Check in at Hotel City Inn
		09.00 – 10.00 pm	Dinner
10th May	KU	07.30 am	Arrival at City Inn
	UU + BUET + KU	07.00 – 07.50 am	Breakfast and check out
		08.00 – 10.30 am	To Beel Pakhimara
		10.30 - 10.50 am	Snacks
		11.00 – 01.00 pm	Visit in Beel Pakhimara and KII
		01.00 – 02.00 pm	Lunch
		02.30 – 05.00 pm	Stakeholder Meeting/FGD
		05.10 – 06.00 pm	To Uttaran Training Center
		06.00 pm	Dr. Dilip Datta joins at Uttaran
		06.10 – 06.20 pm	Check in at Uttaran
		07.00 – 08.00 pm	Dinner
		08.00 – 09.00 pm	Discussions
11th May	UU + BUET + KU	06.30 – 07.10 am	Breakfast and check out
		07.20 – 09.00 am	To Beel Khukshia
		09.30 - 9.50 am	Snacks
		09.30 – 01.00 pm	Visit in Beel Khukshia and KII
		01.00 – 02.00 pm	Lunch
		02.30 – 05.00 pm	Stakeholder Meeting/FGD
		05.10 – 06.30 pm	To Hotel City Inn
		07.00 – 07.20 pm	Check in at City Inn for 2 nights stay
		07.30 – 08.30 pm	Dinner
		08.30 – 10.00 pm	Discussions
12th May	UU + BUET	07.30 – 08.30 am	Breakfast
		08.40 – 9.00 am	To KU
		09.30 – 12.00 pm	Discussion about Sampling Plan, Sediment Management, Socio-economic aspects (+ M.Sc. Projects)
		12.20 – 01.20 pm	Lunch
		01.30 pm	Dr. M S A Khan leaves for Dhaka
		02.30 – 04.30 pm	Site seeing
		06.00 – 06.30 pm	To Hotel City Inn
		07.00 – 08.00 pm	Dinner
		08.00 – 09.00 pm	Discussions
13th May	UU + RA	07.30 – 08.30 am	Breakfast and check out
		08.40 – 9.00 am	To KU
		09.30 – 12.00 pm	Lab visit, sampling test/demo, other
		12.10 – 01.00 pm	Lunch
		01.10 – 04.30 pm	To Jashore Airport
	Dr. H Middelkoop	06.40 – 07.40 pm	To Hotel
		07.50 - 08.00 pm	Check in at RIGS INN, 09 23/A, Dhaka 1212
		08.00 - 9.00 pm	Dinner
14th May	UU	10.40 am	Dr. Frank Leaves Dhaka
	Dr. H Middelkoop and Mr. F Islam		Discussions with Mr. Tamim al Hossain and Lunch
		08.00 - 9.00 pm	Dinner
		09.10 - 10.30 pm	Check out and to the DHK Airport
15th May	Dr. H Middelkoop and Mr. F Islam	01.40 am	Leaves Dhaka