

Report on Ganges BDC Reflection Workshop 1st & 2nd April, 2012



Coordination and Change Enabling Project 5 Ganges Basin Development Challenge

Background and Rationale

Phase II of the CGIAR Challenge Program for Water and Food (CPWF) is a multi-institutional and interdisciplinary research for development initiative focused on increasing the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF does this through an innovative research and development approach that combines technical (agriculture, livestock and water) and institutional innovations (governance related) within a BDC to maximize how water is used for improving a range of ecosystem services. Phase II in the Ganges Basin began in 2011 and is scheduled to end in 2014.

This Challenge is one of a number of initiatives underway through the CGIAR Challenge Program on Water and Food (CPWF). The brackish water coastal zone of the Ganges Delta is home to some of the world's poorest and most vulnerable people, whose livelihoods are exposed to tidal surges, increasing surface water salinity and a rising incidence of severe cyclonic storms. With the aim of improving the livelihoods of Ganges coastal zone farmers in Bangladesh and West Bengal India, the five projects comprising the Challenge are focusing on areas where there is already some level of water control, especially within the polders of Bangladesh but also extending to areas outside polders in India. The goal of the Challenge is to reduce poverty and improve livelihood resilience by better utilizing the brackish water of the coastal Ganges – through improved water governance and management and by intensifying and diversifying agricultural and aquaculture systems

The CPWF is a learning institution that focuses on reflection and adaptive management in implementing research for development impact. According to CPWF, "Reflection is a key part of CPWF M&E. Reflection involves CPWF staff and key stakeholders taking the time to take stock of what has happened and revisit basic assumptions. Reflecting on whether outcome pathways (i.e., theory of change) are unfolding as expected, provides a mechanism for adaptive management for both projects and the BDC as a whole.

The first most important function of the Reflection Workshop is that it allows Ganges BDC project teams to share their individual project activities, findings, issues, opportunities and visions. This enables the BDC team as a whole to discuss, collectively, any adjustments that need to be made to better address the goal of the BDC, and to identify early results that should be built on, particularly for out and upscaling. In this way the workshop allows for self evaluation of progress. New information feedback from stakeholders, experience and learning, all feed into this reflection. Outcome targets may change, become more precise, more ambitious and more realistic. Outcome pathways and related changes to activities, actors and milestones will be made.

Workshop Objectives

- contribute to the coherence and integration of the 5 GBDC projects
- improve progress towards delivery of high quality research outputs
- Identify specific opportunities to improve the approaches
- identify early outputs by GBDC teams
- Assess whether or not the activities of GBDC are in line with the plans
- Explore the benefit of partnerships within projects and with key stakeholders and identify where and how this could be more effective.
- Assess where best to focus efforts in the time remaining and within the budget constraints that have been introduced for 2012.

Expected Outputs

- Revised project level OLMs, Gantt Charts and Milestone Plans
- Updated project interdependencies
- Emerging key messages at project and basin levels
- Milestones to Communications plans at project and program level
- Basin Schedule of events

Key Activities

- Refine the basin level research questions towards which all GBDC contribute
- Clearly articulate how each GBDC project contributes to the basin research questions
- Identify where budget adjustments can be made in 2012 that would retain the main thrust of the current research agenda, outputs, and partnerships.
- Strengthen the linkages between GBDC and CPWF to magnify learning – cross basin and via Topic Working Groups.

Workshop Structure

	Sunday 1 April	Monday 2 April
Session 1 0830 – 1000	Opening – welcome (Bill) introductions, CPWF updates (Boru) Reflection on progress to date and objectives of the workshop (Nowsher)	GBDC 5 - Reflection on outputs and progress to date. How this links with reality. Plans for the future and what this means for adjustments to OLMs and impact pathways. (Nowsher with: <ul style="list-style-type: none"> • Communications (Salma) • M&E (Emdad) • CGIAR Advisory Committee (Nowsher) • Topic Working Groups (Boru) • Gender issues (Afrina)
COFFEE 1000-1030		
Session 2 1030 to 1110	GBDC 1 – Reflection on outputs and progress to date. How this links with reality. Plans for the future and what this means for adjustments to OLMs and impact pathways. (TP Tuong)	EARLY RESULTS IN THE POLDERS What does this progress mean in the individual polders and overall basin challenge? Discussion (plenary or groups) to identify messages related to low, medium and high salinity polders, and cross polder issues. If groups, would need to report back in plenary).

11 to 1230	GBDC 2 - Reflection on outputs and progress to date. How this links with reality. Plans for the future and what this means for adjustments to OLMs and impact pathways. (Liz)	INTERDEPENDENCIES G1 – G2 & G3 – G4 G1 – G3 & G2 – G4 G1 – G4 & G2 – G3 (half an hour each)
LUNCH 1230 – 1400		
Session 3 1400 to 1530	GBDC 3 - Reflection on outputs and progress to date. How this links with reality. Plans for the future and what this means for adjustments to OLMs and impact pathways. (Aditi)	CRP1.3 Aquatic Agricultural Systems (AAS) What it is and what it means for CPWF. (Kevin)
COFFEE 1530 to 1600		
Session 4 1600 to 1730	GBDC 4 - Reflection on outputs and progress to date. How this links with reality. Plans for the future and what this means for adjustments to OLMs and impact pathways. (Zahir)	Open for discussion on issues not so far covered, or in need of addressing (identified during the meeting and posted in the parking lot) Potential for G1-4 to meet individually with G5/CPWF.
1730 to 1800	Daily evaluation Emerging key messages Interdependencies	Basin activity calendar Evaluation of workshop Closing
1830	DINNER	

Introduction

A two days Reflection event of Ganges Basin Development Challenge Program was held on April 1 and 2, 2012 at Hotel Lake Castle, Gulsan 2, Dhaka.

Mr. William J. Collis, Director – The WorldFish Center, Bangladesh & South Asia Office, started the workshop activities with his speech. He mentioned that, this is a global research program with an integrated approach to issue CGIAR of local expertise for a comprehensive effect. The CGIAR works in lined with the host Governments. The goal of the Ganges Basin Development Challenge is to initiate a real effort with the Government’s efforts. This time work is being done at the delta, i.e. the polders of Bangladesh. Lessons learnt here could be used at other places. By looking at issues of Bangladesh, CGIAR

can deal with issues those are beyond Bangladesh Government. The government has to make decisions in terms of agriculture. The outcome of this project is going to shape the future of the delta area.

After Bill Collis speech, Dr Boru Douthwaite states that, this is a global event and part of what Ganges basin projects are going to do. A group includes 11 Bangladeshi organizations, 2 Indian organizations and 2 universities, is required to monitor issues like salinity. This is what is going to take the program forward and go beyond the second phase. He also state that, Equity could be achieved by creative management. This could be used by global program to guide CGIAR's global communications. He discussed about the budget cut issue and said that, CGIAR would be wholesale of CPWF, i.e. a programmatic approach to research and development of CGIAR research programs. As part of that integration, there would be a funding cut to all six basin development challenges, 21% budget cut starting from June. This is aimed to push forward efficiency

On the basis of William J. Collis and Dr. Boru's speech there was a discussion with the workshop participants.

In the discussion part T P Toung, Consultant, G1 asked for the clarification for budget cut. In response Boru Douthwaite gave the big picture of the budget cut issue. He suggested for a solution, Ganges could be picked up by CRP 1.3. The decision was then reversed. William Bill Collis, Director WorldFish added that, CRP 5 is not focusing on things we are doing here. We want to talk individually on how to continue with good results with the new budget constraint. Future funding is very possible.

After the discussion, all Ganges projects (G1 to G5) did their presentation one by one. Individual project presentation starts with G1.

G1 key message: G1 works on the Resource profiles, extrapolation domains and land use patterns.

In G1 presentation T P Toung, Consultant, IRRI shared that G1 has completed latest liaison with BWDB. He Introduced BWDB representatives and identified as most important. In G1 presentation they have shown and discussed their expected output and achievements of last year. In their presentation they have revisited their work packages, share their outputs/progresses, future activities with the participants and answer their queries:

Outputs/progresses and Future activities of IRRI

Outputs/progress

Medium resolution seasonal rice maps published

- **Rice cropping patterns in Bangladesh** (2012) Murali Krishna Gumma, Andrew Nelson, Aileen Maunahan, Prasad S. Thenkabail, and Saidul Islam. *Rice Today, Vol 11, No 1*
- **Mapping seasonal rice in a high cropping intensity environment of Bangladesh using MODIS time-series data and spectral matching techniques** (submitted) Murali Krishna Gumma, Andrew Nelson, Aileen Maunahan, Prasad S. Thenkabail, and Saidul Islam. *ISPRS Journal of Photogrammetry and Remote Sensing*

Future activities

Sharing data/information with Partners

- Inventory of satellite data
- Provision of remote sensing imagery to G1 partners
- Provision of Bangladesh poverty map and mediums resolution rice area map to G1 partners

Land use mapping/salinity mapping and domain methodology

- Detailed land cover mapping for 2009 and 2012
- Development of improved soil salinity index/mapping using remote sensing. Testing and validated with SRDI data
- Draft of methodology for extrapolation domains

Outputs/Progresses of LGED

Outputs/progress

Mouza boundaries for target polders

- Smallest geographic unit for Bangladesh
- Vital for detailed socio-economic characterization using 2001 or 2011 census data
- Also necessary for geo-locating household survey data that does not have GPS coordinates

Future Activities

Provision of transport network and census data

- Road network map including market locations
- Census questionnaire and parameters
- Census data, socio-economic data at Mouza level
- Description of ongoing LGED activities and development plans for polders and coastal region

Outputs/Progresses of IWM

Outputs/progress

Salinity, water level and other monitoring in the coastal zone

- Regular monitoring of water salinity on alternate days, low and high tide

Future Activities

Hydrology, Water level and salinity mapping

- Continue the monitoring of water salinity and level
- Maps of maximum water salinity and its interpolation methods
- Water salinity threshold maps showing the date of start and end dates of 1 ppt and 4 ppt for 2010, 11 and 12
- Minimum and maximum water levels and maps assessing potentials of gravity irrigation and drainage for three polders
- Acquisition of metrological data – Temp, Rainfall, Humidity and evaporation
- Acquisition of rainfall days data for December 2008 to May 2009 for correct interpretation of monthly soil salinity measurements

Climate change impacts and Scenarios (From G4)

- Impact of climate change on coastal zone...increase in temperature, high rainfall..2030-2050 (15-18 months)
- Scenarios of external hydrological drivers (CC, Upstream flows, SLR)

Outputs/Progresses of SRDI

Outputs/progress

Soil Salinity monitoring at Project sites

- In the three target polders there are four soil salinity monitoring sites which are synchronized with IWM water salinity monitoring sites. [Polder 3, 30, 43/2F]

Soil Salinity monitoring of SRDI-networks

- We continue monitoring soil salinity in 65 SRDI-sites distributed all over the coastal zone. In most places we take one sample each site per month. But from March to May we monitor twice a month.
- We are measuring salinity of surface (0 – 15 cm) and sub surface (15 – 30 cm) soil

Future Activities

Land use mapping/salinity mapping and domain methodology

- Continue the monitoring of soil salinity in 65 stations
- Detailed soil survey in April 2012
- Provision of the methodology for the detailed salinity maps 2009/12
- Provision of rice area map for 2004 (pre cyclone assessment)
- Provision of maps of land types and associates
- Provision of soil texture map
- Acquisition of district level crop calendars

Future Activities of BWDB

Metadata inventory and reports on coastal polder activities

- Provision of metadata of available information
- Information on water level, recharge, constraints, gates, etc.
- Other stations measuring salinity and water flow?
- Surface and ground water assessments
- Coastal Embankment Improvement Project report

Ganges (G1) achievements of last year:

The first product that G1 has developed is the seasonal rice area map for Bangladesh, including the entire coastal zone. These three maps have caused a lot of discussion amongst Bangladeshi scientists at IRRI (Los Banos) because in several cases the maps challenged their perceptions of where, and most importantly when rice is cultivated. The coastal region south of Barisal was one example where several scientists could not believe that there was rice in the aus season in 2010, since their experience was that there was never an aus crop there. Yet, other researchers stated that in the past few years, farmers in this region had started planting rice in the aus season, resulting in a new rice/rice cropping pattern in the aus and aman.

This feedback supported the need for regular assessments and updates of land use in what is a very complex and dynamic land use system. It also reinforced the view that land use intensity is already increasing in parts of the coastal zone and that there is plenty of scope for the adoption of the rice/aquaculture systems that the Ganges Basin Project is testing.

After G1 presentation, there was an Interactive session held among all participants.

Arsenic contaminated issue raised by **Md. Sarafat Hossain Khan from BWDB**. Arsenic contamination is an important issue and G1 has some data but they should have methodological data as well said by Md. Hossain. In response **Md. Zahirul Haque Khan** informed, they have BWDB monitoring stations and assessments are done and seen how much is it affecting. They have this issue in their program. He informed that Arsenic contamination has been far away from the coastal zone. It's a very crucial issue. But it is found in deep water not in shallow water. **T P Tuong, IRRI said that**, This project is tiny in respect of money. If our partners supply us with Ganges Water assessment only then we can do it. Meta data is a description of what we have. So we would have to see what is available. For arsenic we would take this into account in next session. **AHM Kausher, IWM** informed that BWDB has ongoing climate change projects. 614 tube well were installed. IWM is involved with this. There would be sufficient data on that. At the end of interactive session, Dr. Boru Douthwaite mentioned that it is Good to see G1 and G4 is working together.

After presentation and interactive session of G1, project leader of G2, Liz Humphreys, IRRI did G2 presentation.

G2 Key message: G2 works on Productive, profitable and resilient agriculture & aquaculture systems. In the presentation G1 shown and shared their project activities, outputs, achievements, opportunities and future plan.

Activities/Progresses of G2

Activities/Progresses:

Development and finalization of contracts with all partners

Recruitment of staff completed

Field trip for site selection, trials rice variety & cropping systems, rice-aquaculture & year-round aquaculture

- Jan 2011 – site familiarization field trip to Barguna District, Barisal
- May 2011 – (with G3 & G4) to Barisal, Khulna and Satkhira (site familiarization – discussions with groups of farmers, key informants, CSISA hub managers; biophysical observations; site selection for G2 on-farm crop-related activities)
- Oct 2011 – (with G1, G5) to Barisal, Khulna and Satkhira (G2 review of crop trials on all 3 polders, visited some CSISA field sites, meetings with CSISA hub managers at Barisal and Khulna)
- March 2012 – (with G1, G4 & G5) to Barisal, Khulna and Satkhira
 - Better understanding of constraints & opportunities – socio-economic, cultural, institutional, environmental, production systems
 - Cross-disciplinary insights & increased collaboration
 - Team building & bonding within the Gs, across the Gs, with management

Research

- **Development of detailed research plans**

Rice varieties

- Variety selection for each polder, expt design, implementation & monitoring plans
- Seed multiplication, distribution, training & monitoring plans
- 3 seasons/yr (aman, boro, aus) - polders 3 & 43/2/F
- 2 seasons/yr (aman, boro) – INDIA
- aman only - polder 3

1. Rice-based cropping systems

Expt design, implementation & monitoring plans

a. On-farm demonstrations/trials

- aman-rabi-aus – polders 30 & 43/2/F
- aman-boro – polder 30, INDIA
- aman-boro-aus – polder 43/2/F

2. Rice-based cropping systems

Expt design, implementation & monitoring plans

b. Controlled experiments

- aman-rabi-aus – polders 30 & PSTU, Barisal
- aman-boro-aus – PSTU, Barisal
- aman-SHRIMP – polder 3

3. Homestead production systems

a. literature review

b. survey

- Sampling strategy (1,300 HH over 3 polders; INDIA tba)
- Questionnaire design (with CSISA)

4. Year-round aquaculture systems

Expt design, implementation & monitoring plans

Literature reviews

- a. Homestead production systems (in progress)
- b. Brackish water aquaculture (1st draft)

Project leader of G2 shared the good news of their project activities. Good news 1: several varieties performed very well. At both salinity levels using old seedlings, some did not. Good news 2: we got much poorer crops when we planted much younger seedlings at deeper water levels. She also mentions that, Boro variety trials are in progress in India in polders 30, 43. Problem in India is with pumping ground water.

G2 project leader raised some issues and shared her idea how to deal with them.

- Funding uncertainty: According to budget GBDC
- Lack of GBDC advisory committee
- Unrealistic start date: we needed 6 months or so to gear up
- Lack of funds
- Inability to implement effective early drainage system. This could be improved by shifting to polder 43.

End of presentation Project Leader, G2 shared the opportunity and future plan. They have few opportunity she has mentioned; CPWF innovation grant, CIBA and CSSBI to collaborate and Coordination to water depth. They have plan for future to build on to what they have started, Implement community watershed management activity and maps of many things.

After G2 Project leader presentation, Jahangir Alam from BSMRAU did the presentation on Aquaculture and rice-based system in brackish water coastal areas. In his presentation Dr. Alam did a detail discussion on Importance of fisheries & aquaculture, Importance of brackish water aquaculture, Historical development of shrimp industry, Causes of low and stagnant production, Opportunities for increasing productivity & profitability etc. he has identified some causes of low production, such as:

- 75% traditional extensive, 24% improved extensive. 1% semi intensive.
- Poor land use system due to siltation and presence of organic materials.
- Faulty management such as poor water quality management, poor health management.

He also shared some opportunities in this issue:

- 67% areas under shrimp farming with salinity in coastal area being suitable for shrimp. Now it is done in rotation with rice culture.
- Improved rice Aman – shrimp system
- Dry season is good. It is better not to go for more than two. It is possible to get 550kg/hectare. Nearly 7 varieties of rice at about 4 to 5 ton/hectare
- Economic benefit for rice prawn.
- Technology is there. 2000 ??are suitable for semi intensive shrimp culture.
- Modified closed system: stocking density 9-15 gm. yield rate of 1250-1885 kg with FCR.
- Opportunity for rice: HYVs are available, in addition to local varieties.
- Species diversification: shrimp tilapia, shrimp mud crab, shrimp pangas

After the presentation of Dr Alam, Kazi Kabir from G2, WorldFish Center did his presentation

on homestead farming system. He also said detail about the survey. After all three presentations by G2 team, interactive session was held among all participants.

Sarafat Hossain, BWDB congratulated to the team for their nice presentation on economic analysis. He mentioned that, social issues have been ignored here, what should be reflected. He mentions that, traditionally when BWDB started this polderation, main issue was shrimp development. Most shrimp farmers targeted in an unplanned way. Even in last Aila they had damages in a great scale. This issue should be reflected in report. Polders in sub-polders should be included. There is a great impact in landless farmers while converting from the agro to shrimp farmers.

In response to **Sarafat Hossain, Jahangir Alam said**, In the review of Bangladesh, there are huge data on social impact of shrimp culture. They say shrimp culture has positive impact but should be done in a structured way. So these are prone to policies at government level. He believes, shrimp culture and rice are not complacent. They could be done if done in the right way. Nature has given the opportunity. Salinity is increasing but shrimp is only fraction of the reason. Unplanned shrimp culture tends to hold up saline water and is not flushed. 60 % and more shrimp culture gher are in lands suitable for rice culture.

Aditi Mukherji, project leader, G3 shared her opinion about shrimp culture. She said that, Shrimp culture is economically attractive. But need to find why it is more attractive. Drinking water sources get affected due to salinity of unplanned shrimp gher. Planning is needed but it might not work in south Asian countries where generally first hand planning does not work.

T P Tuong, consultant, G1 agreed with the review. He said that, lots of emphasis is on economy but not on environment. It would be nice and balanced if both were there. It is important to realize when the ponds are returned to their own operator, there has been improvement. It depends on whole social structure like who owns, who farms etc.

In response of what T P Tuong said, Dr. Aditi Mukherji said, these South Asian countries are not easy where there would be rules etc. Government aspirations are much higher than implementation ability. Government might have rules but when go to the field, the implementation army is totally absent. To say everything is in the hands of water board is a very simplistic diagnosis. First hand planning should be land zone planning.

After G2 interactive session Dr. Aditi Mukherji, IWMI, Project Leader, G3 did the presentation and discuss G3 project progress.

G3 key message: G3 works on water governance and community based management. In G3 presentation, G3 project leader shared the research questioner, revisit the project sites and

remind their partners, share their filed survey and data collection, status of mapping by IWM, SHUSHILAN quality survey etc.

Activities/Progresses of G3

Literature reviews (IWMI)

- Review of 108 cases of water users' association in Asian countries (Completed)
- Review of water policies in Bangladesh (Completed)
- Review of coastal policies in Bangladesh (Completed)
- Review of WMOs in Bangladesh (Completed)
- Review of role of gender in water management (1st draft)

Infrastructure and participatory mapping for understanding physical resource base (IWM)

- Infrastructure maps
- Participatory maps

Qualitative surveys (FGDs and KIIs) to understand characteristics of community and water management institutions (SUSHILAN)

- **FGD – 3 types of FGDs with**
 - General Stakeholders, e.g. paddy and shrimp farmers, elderly, educated, informed
 - LCS Group Members (Men and Women Separately)
 - WMO/WMA/WMCA/WMG Members
- **KI/ Individual Interviews**
 - WMO Chair & Secretary, Two Women Members in 2 interviews
 - BWDB/LGED/Union Parishad (separately)
 - Fem-headed HH, PAP, paddy farmers, Person with pending case for polder cuts

In-depth case studies on economics and conflicts (BAU)

- 4 Master students in Agricultural Economics writing their theses on water governance and food security
- Quantitative study based on household interviews on various livelihood indicators in selected sites (polder 31, Jabusha and Latabunia)
- Their study focuses on economics of paddy vs. shrimp cultivation and shift to golda (prawn) farming
- Field work completed and students presented their preliminary results on 31st March
- Work started in January and will finish by June 2012

Understanding official perspectives (IWMI)

- **Problem identification: KIIs with senior officials (IWMI)**
 - Interview senior officials and donors
 - What type of investment in water resources and the coastal areas?
 - Perceptions on community participation
 - Success stories and challenges
 - Recommendations for improving community participation

At the end of G3 presentation, G3 project leader shared her views how gender is important in G3 component. After Aditi's presentation an interactive session with long discussion held on G3 presentation.

There is a discussion on qualitative data, how G3 sorted out these qualitative data as these are many. In response it is informed that there are structured processes for sorted out the data. It also knows that same questions were asked to different people so it helped to keep track. Software called Atlas TI has used which coding mode is easy. There is a detail discussion on polder maintenance; reason of decline, Government involvement, Donors involvement etc. Representative from BWDB stated that, main issue is vision. The vision is water resource management in addition to agricultural development. Only farmers are involved others are not, so there is conflict. Another reason is shortage of money. There is some service charge. Should involve all the steps not only paddy culture. That is another challenge. Hence there is less confidence. These are not income generating people. They need lots of things and so they think why I should bother. On community participation issue a detail discussion held. There is a discussion on poor management vs. better management. BWDB representative appreciate G3 initiative. There is a suggestion came, G3 should get some message from this. IPSWAM is the last stage. Water board polder is big and difficult. Now while lesson learnt, G3 can actually command it, about what system could be successful, sustainable in future, like overdriven projects, initiatives etc. There is a discussion on media's role to consulting farmers about how to use government policies. At the end of the discussion G3 research consultant Ms. Camelia Dewan talked about NGO's participation, influence NGOS to change their policies through Community Participation Andolon etc. After long discussion of G3 presentation, G4 project leader Zahirul Haque Khan, IWM does G4 Presentation

Key Messages: G4 works on the assessment of the Impact of Anticipated External Drivers of Change on Water Resources of Coastal Zone

Activities/Outputs of G4

- MOU with the partner institutions: IWMI, IWFM-BUET and BWDB
- Selection of the study area and development of work plan
- Secondary and field data collection and analysis
- Field visits and Community consultation
- Literature review
- Participation in IFWF3
- Selection of external drivers
- Climate change projection
- Selection and calibration of water flow and salinity models
- Development of SWAT model

Activities/progresses of G4

1. Field data collection analysis

- At the selected polders (3, 30 and 43/2F) the following primary data are being collected:
 - Salinity in the adjacent Rivers and in the Khals & Ghers inside the Polders
 - Survey of the drainage system: cross section of khals & embankments and geometry of regulators
 - Water level measurement in the Khals & adjacent rivers
 - Water flow measurement (tidal) in the adjacent Rivers
 - Topography & land level survey of the three polders for detailed Digital Elevation Model (DEM)

(These data will be utilized for establishment of present drainage condition, salinity level and flow availability and Calibrate and validate the models)

2. Khal alignment and cross-section survey

- All the Khals inside the Polder
- @ 400 m interval
- Using Echo-sounder, DGPS & Level machine

3. Land level survey

- In polder 3, 30 and 43/2F
- @ 150 X 150 m grid
- Using Total Station

4. Water Flow Measurement

- Half-hourly discharge measurements for 13hours, once in spring tide and once in neap tide
- Sep-2011, Jan-2012, Apr -2012
- Using ADCP, DGPS

5. Joint filed visit with all other Gs

6. Literature Review

- Policies:
 - National Water Policy and National Water Management Plan: identifies the region as 'one that needs urgent attention'.
 - Coastal Zone Policy and Integrated Coastal Zone Management Plan
- Completed and ongoing water management projects in the study area
 - "Integrated Environmental Management: A Case Study on Shrimp-paddy Land Use Strategies in the Southwest of Bangladesh"
 - "Khulna Jessore Drainage Rehabilitation Project (KJDRP)"
 - "Southwest Area Integrated Water Resources Planning and Management"
 - "Integrated Planning for Sustainable Water Management (IPSWAM)"
 - Studies on past and present land use practices
 - Studies related to climate change: including impact of sea level rise, salinity intrusion and polder management

7. Selection of external drivers

8. Triangulation Workshop

9. Climate Change Projections

Future activities of G4

Future work plan of IWMI:

- Collection of data on land use and hydrology in the entire Ganges basin
- Development of future scenarios based on external drivers
- Development, calibration and validation of SWAT model in the entire Ganges Basin
- Simulation of rainfall and land-use change for recent years for assessing trans-boundary flow, sub-catchment flow and water balance at different reaches of the catchment
- Assessment of effect of land-use change on water resources for 2020, 2030, 2050
- Assessment of effect of population growth/demographic changes on water resources

Soil Water Assessment Tool (SWAT)

Methodology for the Entire Ganges Basin

- Use Soil and Water Assessment Tool (SWAT) to simulate hydrology for the Ganges Basin.
- Delineate sub-basins
- Input: landuse, soil, and weather data
- Calibrate from 1995 to 2000 (Tentative, based on available data)
- Validate from 2001 to 2005 (Tentative, based on available data)
- Run with different rainfall scenario

Future work plan of BUET:

- Continuation of literature review to find the available knowledge and knowledge gaps
- Development of future scenarios based on external drivers
- Downscaling of GCMs using RCM models and use of available simulation results for climate change projections
- Finalization of the climate change projections
- Assessment of impacts and development of adaptation strategies
- River morphology and future morphological changes

Future work plan of BWDB

- Continuation data collection and analysis
- Collection of relevant study reports and review
- Development of future scenarios based on external drivers
- Plan for improved water infrastructure
- Out scaling of research results

Future work plan of IWM

- Continuation of surface water salinity, water level and water flow data collection
- Development of scenarios based on drivers through participatory method:
Transboundary flow + climate change?
Water management + governance + Infrastructure development?
- Calibration and validation of flow and salinity models
- Establishment of baseline condition
- Simulation of the scenarios
- Assessment of impact of different scenarios on water resources
- Adaptation strategies

From the presentation of G4 project leader it is found that, most of the polders in Shatkhira and Khulna have some drainage conditions. After the presentation of project leader of G4 Farhana Akhter Kamal, Principal Investigator, G3 presented some slides on salinity measurement of different rivers of polder number 3, 30 & 43/2F. She shared detail information about salinity in different rivers of Polder 3, 30 & 43/2/F.

After G4 team presentation a detail discussion on the presentation was held. Some points discussed by the participants which are; appropriate wording of changing of flow/increasing or not, importance of incorporate different stakeholder of Delta Plan, External drivers, highlight G1 & G4 working partnership. In the discussion session some quire has arises, What are the boundary conditions? What are they? What G4 do with them? How does swat help evolving this? G4 might also have more tools if they have different climate changes then swat. There was a discussion on improvement of drainage management.

After G4 presentation and interactive session the first day workshop activities has ended up with thanks by Boru Douthwaite

The 2nd day session has started with the presentation by Kevin T. Kamp, Deputy Regional Director, WorldFish Center on CRP 1.3

CRP 1.3, Agro Aquatic program is about working together as a whole team. It has potential specifically for the poor and vulnerable. One bad thing is the real level of poverty. How can we break this cycle and reduce poverty in a real way? We can do this by working together. The farmers have their research. We need to take that research to build research capacity of farmers. And aid farmers in their own research for some of their own problems. This is about moving from the hands of the researcher in the hands of farmer.

Gender transformative:

Some programs in the past dealt with Women's' role outside home and beyond. What is the impact of these researches specifically to women? This is about improving women's accessibility to productivity and resources.

CRP in Bangladesh:

Eight hubs defined in other programs. CRP 1.3 would like to start with the southern hubs. We talk about Khulna and got to widen that out a little and include a larger salinity affected area. We are going to work on crops and fish.

Management of local water resource:

This is the key to move this program forward. What we would like to do is to begin to create communities of farmer researchers. We got to work better to engage our researchers in Bangladesh to work close with these communities and build relations

Culture of learning:

We are not driving research or agenda. We are working for people who are moving with

research and agenda and seek help of us.

We want women to participate in this research. We want women to raise their voice in decision making in policy levels.

We should take the strength on this room on field level to move forward. An interactive session was held after Kevin's presentation.

There was a question raised by Aditi Mukherji, PL, G3, How is the mandate different from the NARS? CGIAR by definition looks international. NARS is local. Is our mandates are overlapping? In response Kevin Kamp said, it is different mandate. It is like how we can support NARS internationally. All these should be focused on local agendas to address local problems.

Dr Boru, CPWF added few points with Kevin Kamp. He said, As AAS program representative, CPWF is responsible for this group. We are beginning to see the benefits of working together, as a program, as a team. Partnerships we building and benefits are coming. We want to grow that. We need space to do that. So we need a strategy to go forward. From 1.3 perspectives, there is lot of difference that 1.3 claim. There are differences in terms of space, for this work to go forward, then 1.3 in my point of view, a great opportunity. Hence I joined 1.3 to take forward what the CPWF is trying to do. That endorses what Kevin is asking on us. Response to Aditi is part of our global learning would be about R&D. how we develop partnerships to reach people, whom we have not been able to reach with conventional approach etc.

There was a discussion on process of migrating to the Ganges BDC, team up for 1.3, partners of the team etc. After presentation and interactive session on CRP 1.3, each G presented their early results in the polders.

Result sharing by Ganges project 2

NO BRAINERS

PRETTY SURE – promote now (plus some participatory evaluation/adaptation)

HYPOTHESIS for which we have some evidence, but needs more testing

HYPOTHESIS with less evidence – needs testing in this region

Polders 3, 30, 43/3/E

1. Need for improved polder infrastructure to enable improved water management (inside the polders e.g. drainage networks, canal desalting, levees to separate high and lowland, storage for irrigation; as well as at the edges (sluice gates, levee repair etc).
2. Need for community/watershed level water management
3. Need for production system zones

Polders 30 & 43/2/F

1. Introduction of shorter duration varieties needs synchronization planting/variety duration at village level to avoid problem of rat devastation of earliest maturing fields
2. Need for community/watershed level water management to reduce problems of water stagnation & to increase availability of fresh water for irrigation in the canals
3. Benefit of mulching for rabi crops
4. Zero till systems for quick turn around (earlier establishment & reduced input costs)
Improved drainage towards end of aman will allow earlier establishment of rabi crops
5. (which will be beneficial for winter crops, especially wheat – ACIAR project findings – and for earlier establishment of summer/early kharif crops to reduce risk of damage from early kharif rains)

Polder 43/2/F

1. Plenty of fresh water all year round in the rivers (G4)
2. High yielding short duration aman rice varieties with good management perform well here – roughly double yield of local variety (G2) ; performance under farmer management?
3. There are good short duration Aus varieties available for the region (PN10, BRR1)
4. Findings 1-3 mean huge potential for double & triple cropping with aus-aman-boro & aus-aman-rabi (boro crop irrigated, a couple of irrigations for aus, PN10)
5. Suitable productive rabi crops include maize, sunflower & wheat (BRAC, supported by results of G2 in relation to sunflower & maize) – much more productive than the low input crop grass pea which is broadcast prior to aman harvest
6. Boro rice can be transplanted in first week of November (meaning that it will be harvested in time for an aus crop prior to the aman crop, & reducing irrigation water requirement/cost of pumping - G2 & PN10)
7. Few farmers have pumps for irrigating from canals (G2 survey will inform)
8. Potential for gravity irrigation right to farmers' fields (G4)

Polder 30

1. Rivers become too saline for use for irrigation in Feb/March
2. High yielding short duration aman rice varieties with good management perform well here – roughly double yield of local variety (G2)
3. Findings 1-2 mean huge potential for double cropping with aman-boro (PN10, G2) & aman-rabi
4. Suitable productive rabi crops include maize, sunflower (BRAC) – much more productive than the low input sesame which is broadcast in Feb/March
5. Boro rice can be transplanted in first week of November (meaning that it will be harvested in time for an aus crop prior to the aman crop, & reducing irrigation water requirement/cost of pumping - G2 & PN10)
6. Desilting of canals will greatly increase ability to store fresh water in the canals for use once the rivers become too saline, and thus the ability to grow boro rice
7. A few farmers have pumps for irrigating from canals (G2 survey), a few farmers have access to ground water
8. Potential for increasing supply of fresh water to the polder by intake from the top of the polder (where rivers may be fresher for longer?) for distribution down the polder
9. Impact of groundwater pumping on the fresh aquifer (drawdown & recovery, salinity intrusion)

Polder 3 & other areas with brackish water aquaculture

Year-round aquaculture

1. Huge potential to increase productivity (mostly extensive zero input systems) (G2 lit. review)
2. Feasibility (need to demonstrate, expect it to be feasible, need good water mgt at end of shrimp phase so that rains can be used to leach salt) & desirability of converting back to aman-aquaculture systems – need for community synchronisation

Aman-shrimp systems

1. Water management at end of shrimp season has big influence on salinity in gher during the rice phase
2. Improved salt & water stagnant tolerant rice varieties can yield around 4 t/ha at 4-6 dS/m

After sharing G2 result by G2 project leader, a discussion session was held on drainage issue, difficulties of managing canals etc.

After sharing the result of G2, Zahirul Hauque Khan, project leader, G4 shared their result and participated in discussion session.

Result sharing by G4

- Salinity level remain between 0.1 to 0.2ppt from June to March in the low salinity zone (P43, P42, P41,P39,P44) Huge potential for fresh water irrigation to increase the cropping intensity and revisiting and redesigning the khal and gate system
- In polder 30 irrigation can be provided up to mid February and Boro rice can be grown to some part, sub polder can be developed for improved water management separately for growing 2 rice where no rice at present
- Polder 3, T-Aman crop can be grown because of low salinity from July-to the end of Nov (1ppt 1.5ppt), there are huge number of informal structure that can be formalized with less number of planned structure for flushing and drainage for shrimp and rice as well as safety of the embankment, which is the ground reality
- Drainage congestion has been prevailing in some of the polders in SWR. And solution is feasible to remove crop damage and early plantation of crop. Inadequate water management infrastructure in P-30 and P43/2f, significant siltation of khals and inadequate capacity for holding water for irrigation
- There are drivers of change that would have impact on water resources; which has already been experienced
- Needs further monitoring and to assess the future conditions
- Strong partnership has been developed between national and international institutions to work together and sharing knowledge and experience
- We are not sure what are the likely /quantitative impacts of drivers or combination of drivers on water

There was a discussion was held on G4 result sharing. The issue on working together (G3 & G4) came out from the discussion.

Aditi Mukherji, G3 project leader shared their result and participated the discussion session.

On communities and governance

- **“Deferred maintenance”** is the key hurdle to long term sustainability of projects
 - Donors, governments and communities all face **perverse incentives** vis-à-vis maintenance
- **Communities are diverse** with different power dynamics
- **Informal structures and systems** are just as important as formal structures and systems
- Just **training communities is not enough.**
- **Water plus** community organizations work better than just water focused organizations
- Need to re-align incentives of **donors, government agencies and communities** for dealing with deferred maintenance issues

After sharing G3 result a discussion was held on that. There was a question about conflict resolution plan, how conflicts are resolved. In G3 survey there are points on what conflicts are, how are being resolved, what the suggestion to manage and mitigate conflicts. Mainly institutions and UP plays main role in conflict resolving. There was a question asked by G1 consultant, Ganges vision is three crops a year. Is there any way how we are going to prepare them? How do you see that in future? The way we design questionnaire, can we make it forward looking? In response G3 project leader said, there were questions like if things remain as usual what do you see in your polder in next 10 years? If things improve then what and what is important to you? There was a discussion of huge potentiality of polder 43/2/F. As this polder is with high potentiality is there any possibility to add question, if you grow Boro and Aman how do you improve to manage to cope with that? G3 project leader assured they didn't do the fieldwork so they will include these questions. There is another issue regarding women's participation discussed.

End of G3's result sharing, T P Tuong, principal scientist, IRRI shared the result of G1 and discussed on it.

Result sharing by G1

- At the start of the GBDC we postulated that cropping intensity & diversification in polders 3, 30, 43/2/F can be greatly enhanced. Our work in the last year strengthen our belief: there is huge potential
- We are making good progress on the “soft side” of the community-based water management, but “software” alone cannot work if the “hard ware” is out of date – and it is completely out of date. Rehabilitation is not adequate, they need “redesigned” according to their “new roles”.
- Roles of the polder have to be revised to serve the new cropping systems, which varies accordingly the polders – some cases opposite to their original functions e.g. intake saline water instead of “salinity control”
- Need more “action research” on “community based water management”....
- The “real possibility” of increasing cropping intensity and diversification rest on having adequate development funds to revamp the water management of the polders. Great to see many ongoing/being planned work by LEGD, BWDB on the polders – question: how we can join hand with these GO in their development work???? – Role of G5?
- Incentives, incentives
- “zonation” (at regional level and within polders) is fundamental in solving conflicts between agriculture and brackish water aquaculture as well as between “high land” and lowland. “zonation”/land use maps to be developed by GBDC will be useful for the GOB coastal zone planning and development.
- How do we incorporate “community-based” management in to the zoning/land use mapping?
- Preliminary results from homestead survey reveal the importance of homestead economy (homestead area \simeq 20% of total land area) we may have to focus more on homestead, especially on livelihood of the tenants??
- Help farmers to Prepare for “climate change adaptation”. Questions on Coping with weather variability??
- Drinking water??

After reflection sharing of G1, discussion was held with the issues of SHUSHILAN checklist on polder changing in ten years. There are issues on climate change, dams, water harassment etc in the checklist. G3 assured that they will share the checklist and discuss with the missing issues. There was a point came out, whether groundwater would be included! Discussion on arsenic contamination, people are drinking pond water etc. After end of the discussion Boru Douthwaite shared his opinion. He said that, what you suggested is what G2 got started; to put ideas into practice. But to do it as a proper integrated approach.... That would be the vision for 1.3. That is what AAS has to offer. 1.3 is about anything. It is about action research.

After the result sharing by G1-G4, Dr. Nowsher Ali Sarder, Basin Leader did G5 presentation.

What change?

- Livelihoods of Farm Families in Ganges coastal area?
- Change in policy?
- Illegal cuts in embankment
- Water distribution policy – G3
- Land tenure policy (sharecropping/leased in) – G3

Domain Map

- Aus rice area increased? Why?
- More tidal water? Sea water rise? Monsoon wind?
- Variety trial of Aus rice is more important
- Yield of Aus - ~3 t/ha
- Shifting to boro rice for 5 t/ha?
- Is easy/free water restricting the popularity of boro rice?

Climate change

- Prediction of sea water level (rise?)
- More precipitation is predicted, which may induce more upstream flow
- How about salinity intrusion then?
- Prediction is needed for:
 - Ice to water to vapor notice to water only

G5 Activities/Progresses

Internal

- Integration of Ganges projects
 - Bi-monthly coordination meeting
 - Six monthly progress report
 - Annual report
 - BDC Annual report
 - Reflection workshop

Peer assist

External

- Up/out scaling of research products
- Partnership with BRAC
- Two stakeholder workshops
- Training of trainers
- Established coordination with CSISA
- Launching workshop
- Inception workshop
- Policy-Common Advisory Committee

Programmatic

- Adaptive management (M & E)
- Communication
- Gender

After G5 presentation by Dr Nowsher Sarder, Basin Leader, GBDC as discussion was held.

Salma Sultana, Communication Coordinator, G-5, CPWF, WorldFish Center

After BL's presentation Salma Sultana, Communication Coordinator did presentation of Ganges Information & Communication strategy discussed about the audiences, messages, interventions and implementation plan. She talked about capacity building: Contract consultants. Develop own communication timeline for start to end i.e. from project launch to when would results be ready. It is a documented process.

Afrina Choudhury, Gender Specialist, WorldFish Centre

Afrina Choudhury, Gender specialist, WorldFish did the presentation on Gender mainstreaming in Ganges BDC. She explained how to mainstream gender in the projects? Training BNPS batches. Two days 30 participants.

Emdad Hossain, M&E Specialist, G-5 project, CPWF, WorldFish Centre

Emdad Hossain, M&E Specialist, G5 did presentation on Monitoring and evaluation strategy. All the Gs are in outcome phase. So it is essential to see we are in track or not. That answer would be coming from M&E to ensure right time right direction. We need to think about the budget. Which activity or milestone we need to revise. Budget line is one of the most important indicators now to monitor project.

After G5 team presentation, an interactive session was held on G5 presentation. The discussion includes, G3 policies, lack of understanding among G's, stakeholder include in the I&C strategy, using modern technology as an intervention to reach the TA, capacity building, communication document more shorter and more focus to the downstream, process documentation, use of Ganges wiki, Ganges newsletter etc. after discussion on OLM, Boru Douthwaite gave clarification on that. He said, It is basically, we took original OLM. They were too big to communicate. We stripped them to simple ones. Emdad has taken those stripped and combined them such that it makes sense, hence you to tell us if it makes sense. The outcome targets of 2014 are not very impressive. Idea is if it would be useful for Ganges BDC to have it like his. What you might like to achieve in 2018 and what might be the key assumptions and risks.

After all presentations and discussions, Kevin Kamp gave the closing speech to the participants. In his speech he said, thanks so much for attending. We are trying to find ways to move along at best as we can. It has been a very successful workshop. I want to thank everyone. You have spent lots of time for being here. We cannot do this program without the government units as partners.

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