

Monitoring & Assessment of Climate Change Impact on Geomorphology in the Coastal Areas of Bangladesh

Deliverable 2.1: Minutes of the focus group meetings



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Prepared for CTCN
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Satellite image of the Sundarbans

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1 Introduction

This document contains the minutes of the two focus group meetings conducted with stakeholders in Bangladesh in October 2019, as part of the capacity assessment Output 2 of the response plan.

2 Minutes of meeting with Bangladesh Water Development Board (BWDB)

This section contains the finalized and elaborated minutes of the focus group meeting conducted with the BWDB at the premises of the Flood Forecasting and Warning Centre (FFWC) in Dhaka on October 21st, 2019.

Participants: DHI GRAS: Mads Christensen (MC)
BWDB : AKM Tahmidul Islam (TI), Mohammad Arifuzzaman Bhuyan (MA), Abul Basher (AB)

Minutes

Item	Topic
1	<p>Introduction</p> <p>MC – gave a brief introduction on the objectives of the overall CTCN technical assistance and the scope and objectives of the capacity assessment. He also provided a brief introduction to relevant satellite based applications for climate related monitoring in coastal zones and delta areas, including earth observation approaches to assess coastal dynamics and detect river bank erosion.</p> <p>TI – introduced the participants from the BWDB and provided an overview of the current GIS and ICT infrastructure in BWDB. He explained that the BWDB currently does not have a dedicated GIS team, however administrative approval has been provided to set up a dedicated GIS lab at the facilitates of the BWDB main office on Green road. The GIS lab will be fully serviced and have a dedicated director of GIS within the BWDB department. The purpose of the GIS lab is to maintain all databases, provide GIS services and analysis and satellite based analysis for assessing morphological change in coastal zones and river deltas as well as salinity changes within polder systems. Currently they have been looking at the relationship between land surface temperature (LST) measurements and salinity in agricultural parcels.</p> <p>MC – asked when the GIS lab is envisioned to be set up and operational, and how the existing GIS and IT infrastructure set up looks like.</p> <p>TI – said that the GIS lab is expected to be set up in the beginning of 2020 (February/March). He explained that the BWDB have a good understanding of GIS databases and technology, however they work closely with the Institute of Water Modelling (IWM) and the Center for Environmental and Geographic Information Services (CEGIS) on specific GIS tasks. IWM and CEGIS have profound capacities in the use of geospatial data and to some extent, satellite-based analysis. BWDB also use satellite images (Google Earth) for validation and tracking the effects of project implementation. BWDB currently has two data centers, 1 at the FFWC and another in the BWDB main facilities on green road. Existing IT infrastructure at FFWC will be moved to the main office along with the establishment of the GIS lab. Currently BWDB has 5 programmers and a group of civil engineers with a good understanding of IT infrastructure and database management systems who are very capable of developing and hosting an ICT centre.</p>
2	<p>GIS data and ICT infrastructure</p> <p>MC – asked how the BWDB are currently monitoring, and collecting data on coastline dynamics and river bank erosion processes</p> <p>TI – Explained that the BWDB has very capable engineers with experience in coastal zone management. IWM however has a specialized coastal engineering division and when BWDB needs specialized knowledge, particularly on modeling coastal processes, they borrow competencies from IWM or GIS data or capacities from CEGIS. He further explained that whenever a project is planned and implemented by the IWM, BWDB engineers commonly participate in order to strengthen existing modelling, database management and GIS capacities</p>

Item	Topic
	<p>MC – asked who collects field data and which type of data is collected</p> <p>TI and MA – explained that BWDB have existing field survey teams, however for massive field collection campaigns, IWM are currently conducting these. CEGIS conducts social assessments and household surveys. A few years back, BWDB setup 28 automatic gauge stations along major rivers in Bangladesh and data was managed in a hydrological campus. However, after the project ended BWDB did not have the capacity to continue to run these stations and this future planning aims to provide further support to continue operations of field measurement stations.</p> <p>MC- asked how the current GIS infrastructure looks like and what GIS and image processing software is being used.</p> <p>TI – explained that ENVI image processing software has been procured. Most staff are accustomed to ESRI ARCGIS and we have acquired licences for the Enterprise and advanced versions, including relevant extensions such as network analysis and hydrological extensions. However, in order to fully operationalize and make full use of the software components we are awaiting the physical setup of the GIS lab in the new year in the main BWDB office on Green Road.</p> <p>MC- asked about current data management systems</p> <p>TI – explained that hydrological data is currently stored in a server in the BWDB main office on Green road, with a backup server in the second floor of the WAPDA building (FFWC facility). However, the backup server will be moved to the main office along with the establishment of the GIS lab.</p> <p>MC – asked how the current data management infrastructure looks like and which types of database management systems are being used</p> <p>TI – explained that licences for AQUARIUS data management system was acquired a few years back to manage all data related to water resources, however capacity within the BWDB have not been developed to make use of the system yet. While knowing the advantages and benefits of the system, we are yet to exploit all the benefits from it as we cannot make full use of it. For most other database management tasks, including GIS databases, and project management applications, i.e. for project management, we use Oracle. Like AQUARIUS however, many experts in BWDB are not experts in using Oracle and thus a number of staff members are using PostgreSQL instead. Capacity building in data management is generally a key priority within the BWDB. A further priority includes capacity building initiatives in data visualization techniques, how can we present our data to people and policy makers to convince them about the impacts of climate change. We need to be able to develop tools with near realtime (20-30-40 days frequency) updates on coastal and river bank sedimentation, sea level rise and other relevant data in order to showcase the actual impacts of climate change.</p> <p>MC – Which existing data platforms are you using – do you have an existing operational data platform for water and coastal monitoring?</p> <p>TI – A national database on coastal data is held by the Water Resources Planning Organization (WARPO), however we are to plan how to best use this and present this in integrated applications showing the effect of climate change.</p> <p>MC - Please describe your existing hardware infrastructure? GPU and RAM, cloud resources, virtual resources, servers – good enough?</p> <p>TI - We are not accustomed in using cloud resources however we have our own servers for GIS management. We always prefer to use Linux/UNIX based services. We prefer to develop Oracle Linux services as we prefer to use Linux for its robustness and security. For web-based application</p>

Item	Topic
	<p>we prefer to use php and JavaScript as our applications should be cross browser and platform. This is setup as our standard in web development processes.</p> <p>MC – asked about the reliability and speed of internet connections in BWDB facilities.</p> <p>TI – explained that the internet is both quick and reliable, as this is a requirement for providing procurement service on all tendering processes</p> <p>MC – Could you recommend an appropriate test site (coastal and inland river delta area) on which to test the satellite-based approaches, should be areas with solid validation data.</p> <p>MA – we have a good network of some 100 stations collecting data on salinity within polder systems. We also conduct annual data collection campaigns on river morphology, however only for the major rivers. Currently we have no data on sediment deposition, data on erosion and accretion is key as river systems deposit enormous amounts of sediment and we do not have any knowledge about where this is deposited and where it comes from.</p>

3 Minutes of meeting with Institute of Water Modelling (IWM)

This section contains the minutes of a short meeting conducted with IWM at the premises of the Coastal Embankment Improvement Project (CEIP) office in Dhaka on October 22nd, 2019.

Participants: DHI GRAS: Mads Christensen (MC)
IWM: Mohammed Zahid Hasan Siddiquee (MZ)

Minutes

Item	Topic
1	<p>INTRODUCTION:</p> <p>MZ – IWM currently has around 20 plus staff working on GIS and remote sensing, with small subsections working together on dedicated tasks. For remote sensing image processing tasks, we generally use ERDAS software however around 3 years ago we also started to use Google Earth Engine to analyze morphological changes around coastal areas and detecting river bank line changes.</p> <p>MC – What kind of data are you currently using to monitor coastal dynamics and river bank erosion risk?</p> <p>MZ - We are using Sentinel and Landsat data. We look at historical morphological changes, changes in river course and monitor closed water bodies and river networks. We extract these water bodies and see how they change over time. However, we do not continuously monitor these changes, we do it on a project by project basis for selected clients, typically government agencies including BWDB. We also have ground truth in situ measurements from coastal regions, monitoring coastal dynamics in high risk areas, significant amounts of data.</p> <p>MC – How is your current GIS and ICT infrastructure</p> <p>MZ – For GIS work we primarily work with Arcgis and QGIS. For web development we commonly use Geoserver and Open Layers. Our current IT infrastructure is what you could call mid category. We have good machines to do allround remote sensing work, and we also have a few virtual machines</p>

Item	Topic
	<p>which we can use for various purposes.</p> <p>MC – Could you recommend some good test sites for the data processing for this project (coastal regions and river deltas)</p> <p>MZ - I will get back to you with interesting case studies.</p>