Bangladesh Delta Plan 2100 Formulation Project

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Bangladesh, encompassing the GBM river systems, is one of the most dynamic deltas of the world.
Deltaic Bangladesh

Land Classification

• Area : 147 570 km²
• Hills : 12%
• Terraces : 8%
• Floodplains : 80%
• Habitat of about 156 million people
• Just above the sea level

Context of Bangladesh Delta Plan 2100

• Bangladesh is confronting the complex problems of water safety, food security and natural calamities like floods, cyclones, river bank erosion and drought.

• Population growth, economic development and climate change have posed additional challenges.

• There is a high need within the Bangladesh delta to improve the living conditions through better water management and governance.

• Bangladesh Delta Plan Formulation Project has been undertaken with assistance from Government of the Netherlands to optimize short term interventions and investment and to prepare for future change.
Objective of the Project

“The main objective of the project is to formulate a commonly agreed upon comprehensive, integrated, holistic, long term plan for Bangladesh Delta with vision and strategy to reach optimum level of water safety and food security as well as sustained economic growth and a framework for its implementation with elaborated investment plan phased out in short, medium and long term interventions”.

Overall expected Process
Developing Strategies for Adaptive Delta Management in the Face of Climate Change

www.bandudeltas.org

Dr. Jaap de Heer, Team Leader

GoB General Economic Division (GED)
Planning Commission
and
GoN Embassy of Kingdom of The Netherlands (EKN)

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III. Interactive Strategic Planning
**Importance of Bangladesh Delta Plan 2100**

Bangladesh:
- Average economic growth rate of 6%
- Middle-income country by 2021

Threatened by:
- Current water safety situation and climate change: floods, droughts, sea level rise, salinity intrusion, access to fresh water

Challenges:
- Long term holistic approach to water safety, food security and economic growth in relation to future water and land management
- Institutional and governance setting making long term holistic Delta Plan 2100 approach possible and implementable

**BD Delta with Climate Change Challenges**

BDP 2100 takes a different point of view: long term and holistic

Considering uncertainties risks and impacts

Adressing strategic questions and choices:
- Vision & Scenarios
- Pathways & Tipping Points
- Institutional Framework
II. Preparing the Ground

Interactive Strategic Planning process
Governance, Content, and Stakeholders will come together, via learning cycles

Concepts:
- Planning as Learning
- Adapative Management
- Strategy Process sense-making - sensegiving
Clustering of Themes and Baseline Studies

**Water Resources**
I. Morphological dynamics of Bangladesh Delta  
II. Water resources  
III. Coastal Polder issues

**Water Supply and Sanitation**
I. Public health, water supply and sanitation

**Disaster Risk Reduction**
I. Climate change issues  
II. Disaster management

**Spatial Planning**
I. Land resources  
II. Urbanization and settlement

**Food Security**
I. Agriculture and food security  
II. Fisheries and livestock

**Environmental Management**
I. Ecological Settings  
II. Forests and biodiversity  
III. Environmental pollution

**Economics and Finance**
I. Growth of Population and Management in the context of resources setting  
II. Socio-economic and demographic condition  
III. Sustainable Transportation Infrastructures

**Governance**
I. Information and creation of knowledge management Institution  
II. Institutional framework/arrangement  
III. Regional cooperation

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Eight Clusters with 19 themes to be studied

The Baseline Studies include:  
- Study Plans  
- Study of Baseline Conditions, current approaches and issues  
- Possible solutions  
- use of Delta Ateliers & Touch Table for broad consultation

Integrated Analysis  
- Hot Spots  
- Delta Vision

II. Preparing the Ground
Major Hotspots of Delta Plan

- Mighty rivers
- Coastal areas
- Dhaka and other major cities
- Haor-areas in the North-East
- Drought prone areas in the North-West

III. Interactive Strategic Planning
Developing Delta Vision (Perspective)

*Delta Vision: “Set of vision elements (principles, values, aspirations) of desirable delta development and goals related to its realization.”*

- Vision e.g.: climate proof delta, competing delta, sustainable delta
- For a complex adaptive system as a delta, such strategic vision is more a direction than an end-picture.

Scenarios and strategies with interventions

- Realization of the Delta Vision may take place under different future circumstances
- Scenarios will be used as descriptions (narratives) of ‘imaginable’ futures
- Related to that a strategy with actionable interventions will be proposed together with an Investment Plan & Roadmap
- Flexibility is on the long term important: using policy pathways and tipping points for adaptation when needed
**Input to 7th Five Year Plan**

- 7th Five Year Plan: a government wide harmonization, and budget allocation

- June 2015: GoB will finalize its 7th Five Year Plan

- February 2015: contribute to the 7th Five Year Plan, by:
  - Tentative Delta Vision and Assessment Framework
  - Interventions / implementation proposals
  - Investment analysis and funding estimates and opportunities (in relation with donors and IFI’s)

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**Delta Framework for adequate governance**

- Socio-political interaction and support to BDP 2100: GoB officials; cooperation of partners/IFI’s; ngo’s; private sector

- Embedding Delta Plan 2100 within core governance and institutional setting of Bangladesh, using 5 Delta D’s

- Capacity building plays an important role in understanding and using the concepts, in consultation and cooperation

- Working on implementation and the legacy of the project

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**The 5 Delta D’s:**

- Delta Act: statutory basis for a Delta Plan
- Delta Plan: sets out vision, scenarios, strategy, interventions and investments
- Delta Fund: financial provisions even for (future) Delta Programs
- Delta Decisions: strategic choices on Delta Plan and investments
- Delta Commissioner: the government Commissioner or Committee for the Delta Plan
Implementation and Investment Strategy

• ‘Fast Track of implementation’ of BDP 2100 outcomes:
  – input 7th Five Year Plan, link with existing projects (e.g. CDSP-4; Haor Master Plan; CEIP), innovations / pilot e.g. Tidal River Management (‘Polder 2.0’)

• Implementation Guideline

• Project Service Cell: facilitating decision making, use of Guideline

• Investment Plan and Roadmap; funding mechanisms / phasing
  – Short term: no-regret interventions; ‘low hanging fruit’

• Results Framework with Monitoring and Evaluation approach
Delta Challenges

Giasuddin Choudhury
Deputy Team Leader

Bangladesh Delta: A very dynamic

Land Classification

- Area: 147,570 km²
- Hills: 12%
- Terraces: 8%
- Floodplains: 80%
Delta Challenges
Bangladesh aspires to be middle income country by 2021

- Present growth: 6% (last 10 years)
- Forecasted growth: 6.7-7.5 (next five years)

However, we face many challenges

Socio-economic snap-shot

- HDI ranking (2013): 146th out of 186 countries
- GHI ranking (2012): 68th out of 79 countries

Demography

- Population: 156 million

Population Growth & Land Use Change

Source: NWMP
The total area of all three basins is 1.72 million sq km:
- Ganges: 1.09 million sq km
- Brahmaputra: 0.57 million sq km
- 7% of this area falls within Bangladesh
- 62% of this area falls within India
- 8% Nepal

Delta Challenges:
A very flood prone delta
- In normal years 1/5 flooded
- In extreme, events 3/5 flooded

Decreasing availability of trans-boundary flows
Delta Challenges:
Prone to agricultural drought

Delta Challenges:
Shifting and eroding rivers

- Annual Rate of River Bank Erosion: 6,000 ha
- Annual Displacement: 50,000 person
Delta Challenges: **Active Meghna Estuary**

Net accretion was 1700 km² during the last 60 years

Delta has prograded about 50 km towards the sea

Delta Challenges:

Vulnerable to cyclone and storm surge

- Cyclone 1991
- Sidr 2007
- Aila 2009
Hazard Class Map

Legend
- District headquarters
- District boundary

Hazard class
- Very High (5.00-above)
- High (4.00 - 4.99)
- Moderate (3.00 - 3.99)
- Low (1.00 - 2.99)
- Very Low (below 1.00)

Ranking of multi-hazard maps used for preparing the risk-index:
- Cyclone: High risk-5, risk-3, wind risk-1
- Flood: Severely flooded due to major river floods – 3, flash flood due to major river-2, other flood-1
- Riverbank erosion: Severe erosion-2, erosion-1
- Drought: Very severe drought prone areas – 2, severe drought-1

Immediate impact
1. Cyclones – increased frequency and severity
2. Heavier more erratic rainfall in GBM basins in the monsoon season

Results
- High strm surges
- Higher wid speed
- Higher river flows
- Drainage congestion
- Flooding in rural/urban areas

Interventions needed
- Early Warning systems
- Cyclone shelters and Killas
- Early warning systems
- Improved O&M of embankments
- Upgrading of flood protection embankments/drainage systems
- Raising some roads and railway tracks
- Flood proofing
- Improved crops and cropping systems
GLOBAL WARMING IMPACTS

Immediate impact Results Interventions needed

3. Lower more erratic rainfall at other times Droughts and scarcity of drinking water
- Improved irrigation and water management
- Provision of drinking water
- Improved crops and cropping systems

4. Melting of Himalayan glaciers Higher river flows in short to medium term and then reduced flows and increased saline intrusion
- Exacerbates impacts of 2 and 5

5. Sea level rise Coastal embankments overtopped Saline intrusion into rivers and groundwater
- Improved O&M and upgrading of coastal embankments and polders
- Improved crops and cropping systems
- Provision of potable drinking water
- Possible industrial relocation
- Health education/ awareness
- Immunization
- Other prevention programmes
- Drinking water and sanitation

6. Warmer and more humid weather Increased prevalence of disease and disease vectors
### Sea level rise induced Coastal Flooding

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**Social protection for the vulnerable/Community-based adaptation**

![Sea level rise induced Coastal Flooding map](image-url)
Vulnerability to Salinity Intrusion

Water Salinity

Soil Salinity

- Salinity intrusion is increasing
- Threatening water resources and affecting production in coastal areas

Climate Change Strategy

Bangladesh vision is to eradicate poverty and achieve economic and social well-being for her people

Bangladesh adapted a pro-poor, climate resilient and low carbon development strategy

Strategy based on four building blocks of Bali Action Plan:
- Adaptation to climate change
On the backdrop of these as well as other challenges, Bangladesh Delta Plan 2100 is being formulated.