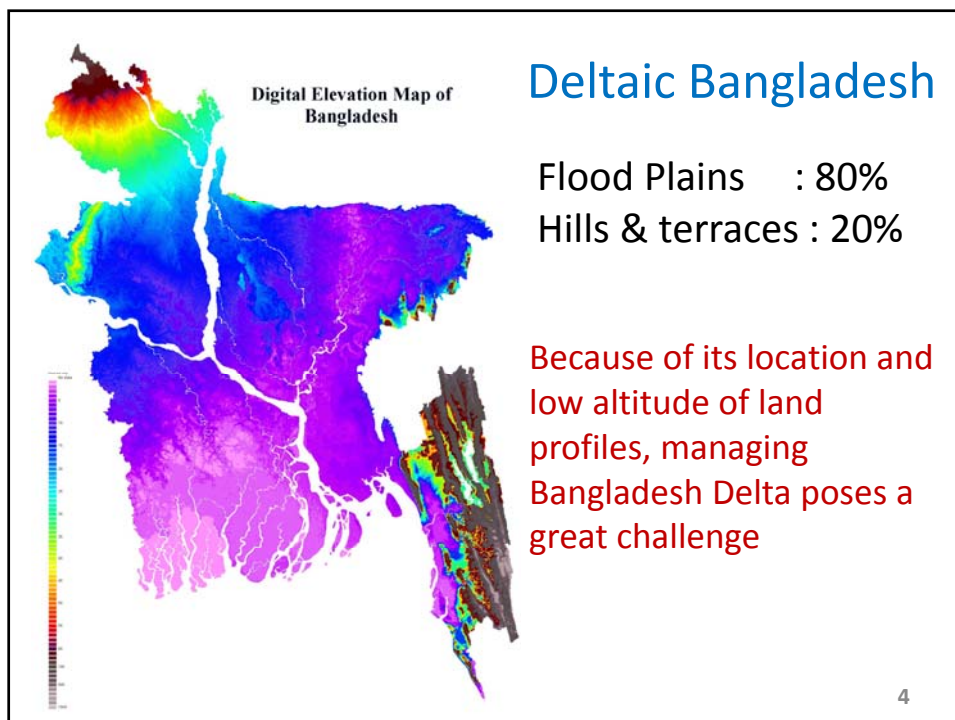
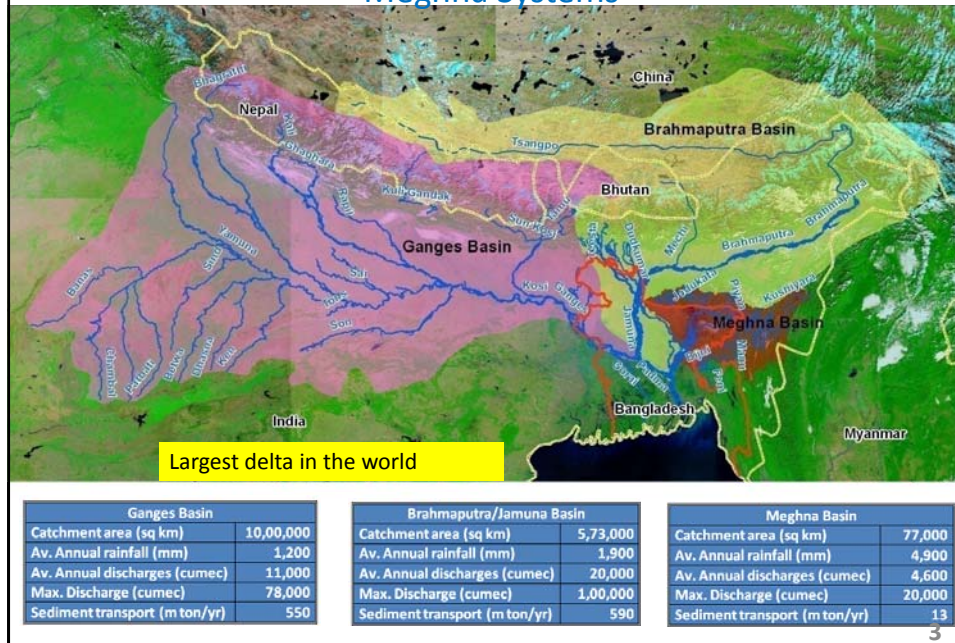




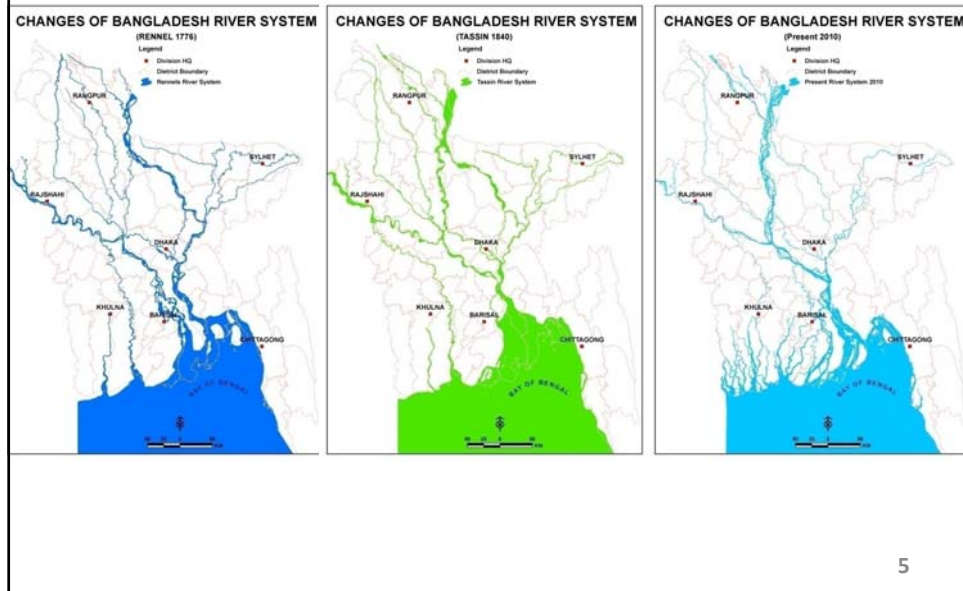
## Introduction

- Bangladesh is probably the biggest delta in the world formed by the three great river systems of Ganges, Brahmaputra and Meghna.
- About 80% of the country area of 1.45.000 sq-km is featured with 310 rivers and their floodplains, which support life, livelihoods, economy and ecology of the whole delta.

## Bangladesh Delta formed by the Ganges-Brahmaputra-Meghna Systems



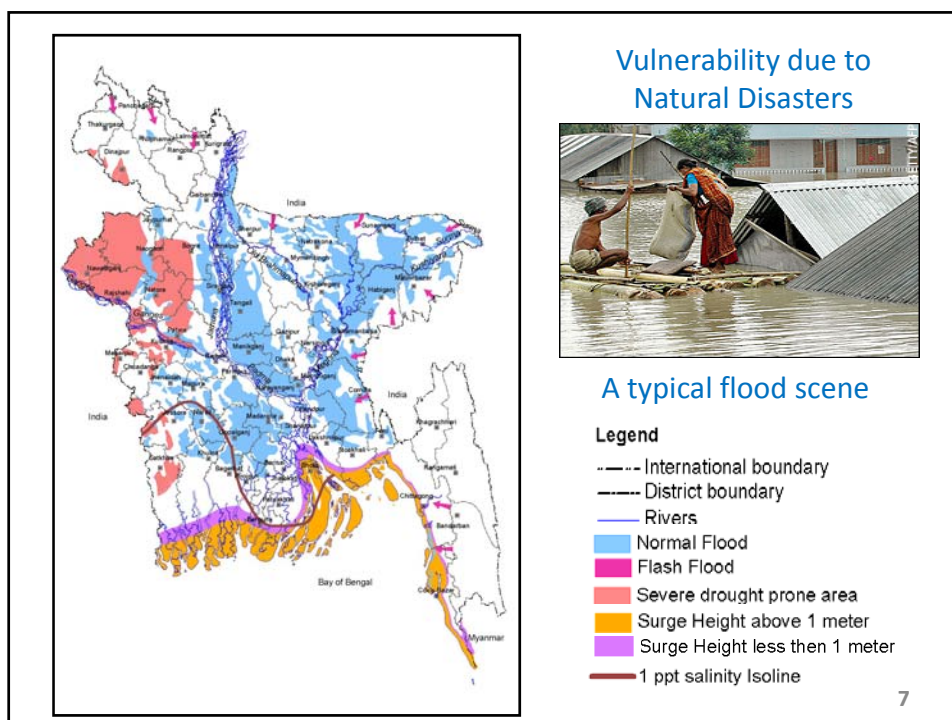
## Delta Building and River Shifting



## Three main issues

### A. Flood

- Comprehensive and integrated management of water resources by the riparian countries, especially Bangladesh, India and Nepal to reduce adverse impact of flood.
- Flood is very common in Bangladesh and depending on its intensity and duration may have severe adverse impact on lives and properties. Flood is considered as the most destructive natural disaster with its short and long term impact in every sphere of the economy including all types of infrastructure.



## Three main issues.....contd....

### B. River Bank Erosion

- River bank erosion is also a major water related disaster in Bangladesh.
- River erosion renders hundreds of thousands of people homeless with partial or total loss of their agricultural lands and livelihoods.
- It is also one of the major problem of intra country migration where large number of families are faced to migrate to urban centers including the capital city of Dhaka where they live in slums under extreme poverty and life of indignity.
- During the last few decades the net erosion was over 200,000 ha.
- There are examples of families relocating them upto six times in their life due to river bank erosion



## A Typical River Bank Erosion Site



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## Three main issues.....contd....

### C. Climate Change Impacts

- Climate change is expected to have severe impact on the water resources availability and its governance.
- The country is already experiencing erratic rainfall both spacial and temporal, impacting crop calendar and agricultural production systems and productivity.
- Reduced surface water availability is also resulting in saline water intrusion further into the inland.
- It is also adversely impacting ecological balance of the country especially in the coastal areas. The Sundarbans, one of the largest mangroves in the world, home of the Bengal tigers and a UNESCO designated World Heritage site is also being threatened by significant reduction in surface water flow in the rivers.

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Climate Change Impact	Immediate impact	Results
	Cyclones – increased frequency and severity	Higher storm surges Higher wind speed
	Heavier more erratic rainfall in Ganges, Brahmaputra & Meghna basins in the monsoon season	Higher river flows Drainage congestion Flooding in rural /urban areas
	Lower more erratic rainfall at other times	Droughts and scarcity of drinking water
	Melting of Himalayan glaciers	Higher river flows in short to medium term and then reduced flows and increased saline intrusion
	Sea level rise	Coastal embankments overtopped Saline intrusion into rivers and groundwater
	Warmer and more humid weather	Increased prevalence of disease and disease vectors

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### Climate Change Impact: A Typical Drought Site

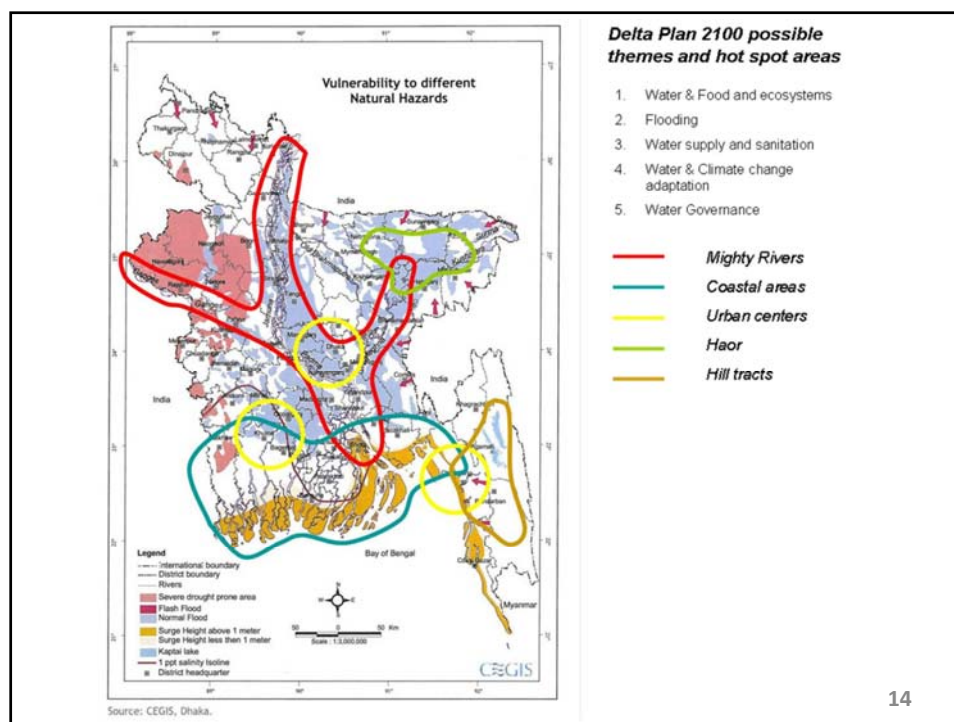


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## How did Bangladesh process for Delta Development

- Bangladesh has already developed a Delta Development Plan in 2012 with assistance from the government of Netherlands. MoU was signed between GON and GOB for the implementation of the 1<sup>st</sup> phase of the plan by 2021. BWP participated in the consultation process.
- A committee has been formed by GOB to operationalize the plan.
- The committee is responsible to the Ministry of Planning for strategic consultation and coordination with the other stakeholders including implementing agencies.
- The Plan preparation is expected to commence from the end of this year

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## Delta Vision, Strategy & Plan

- Vision: Developing the Bangladesh delta to achieve long term sustainable development through adaptive water governance, based on:
  - long-term analysis as well as integration of relevant sector policies and
  - creation of adequate institutional arrangement and capacity
- Strategy: Prepare the plan with involvement of all stakeholders, followed by implementation

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## Drivers/scenarios

- Population growth: 180 m (2025), 220 m (2050)
- Natural resources: water, land, forest, biodiversity
- Land management and spatial planning: change in agriculture and aquaculture systems
- Economic development: macro and micro economics, infrastructures, livelihood
- Social development: education, health, water supply and sanitation, human resources development
- Political development: international and regional cooperation, political consensus in national level

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## Drivers/Scenarios

- Water resources management :
  - Land reclamation
  - Sediment management
  - River management
  - Coast and estuary development
  - Haor development
  - Wetland management
  - Water governance
  - Conflict management
- Technological development:
  - agriculture, energy, communication, water management technology
- Climate change: a cross-cutting issue

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## Challenges and Benefits

### Challenges

- Inter-ministerial cooperation; national level planning; complex setting; uncertainty; need for new knowledge, involving local governments and grass root level stakeholders
- For Delta plan an emergent planning approach has been proposed, where a planning track runs parallel with an implementation track. A holistic approach of the Delta Plan only can succeed by joint and coordinated action by agencies under the whole policy network.
- The difficult part of the process for development of the plan is the issue of changing social, political and financial conditions which are relevant for implementation of the plan.
- Another difficult part is the implementation process with broad stakeholder involvement

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## Challenges and Benefits

### Benefits

- Will act as an umbrella that integrates all sector plans and policies with long term perspective
- Change from individual sector approach project planning & implementation to multi-lateral coordinated approach
- Development of long-term vision on natural resources

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## Challenges and Benefits

- Align institutional development, capacity building and development and realization of projects with the over all strategy of delta plan
- Utilize limited fund in more effectively through multiple objectives oriented development projects
- Delta Plan can be linked to Five Years Plans, Vision 21, NWMP, ICZMP, CIP, Agricultural Master Plan, Haor Master Plan

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## Challenges and Benefits

- Enabling policies & institutions for formulating & implementing climate change adaptation programs in a more consistent way
- Ensure efficient utilization of natural & economic resources
- Facilitate conservation of natural resources
- Ensuring water and food security
- Enabling and improving delta living

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## Conclusion

Successful implementation of the Delta Plan will require :

- A guiding strategic plan for whole nation
- Ownership of the government in the planning and implementation
- Support of GON as strategic partner
- Participation of academia, NGO, local governments and private sectors

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## Suggestions for a country that is just starting to think about their delta

- Each Delta has its own characteristics, so formulation of Delta plan can be initiated through understanding the process, issues and future challenges, ensuring meaningful and effective community and stakeholder's participation in the process of the preparation of the Delta Plan.
- Develop the "Delta Vision" to introduce "no regret" measure that is useful and regardless of the direction of the development.
- Integrate the Delta Plan in the national planning process.

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**Thank You**



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