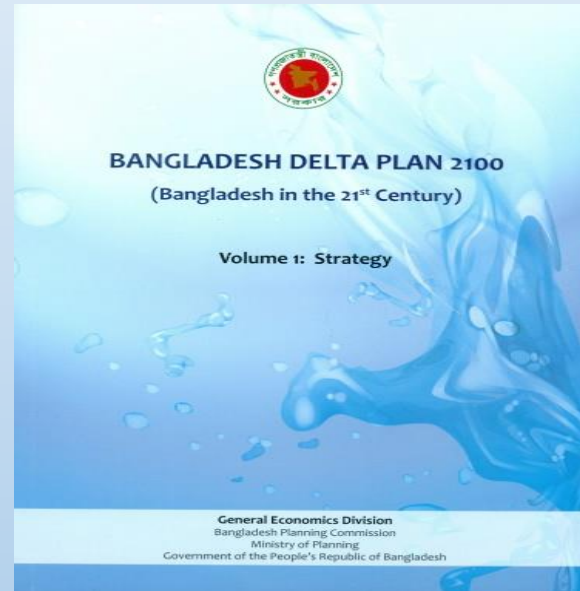


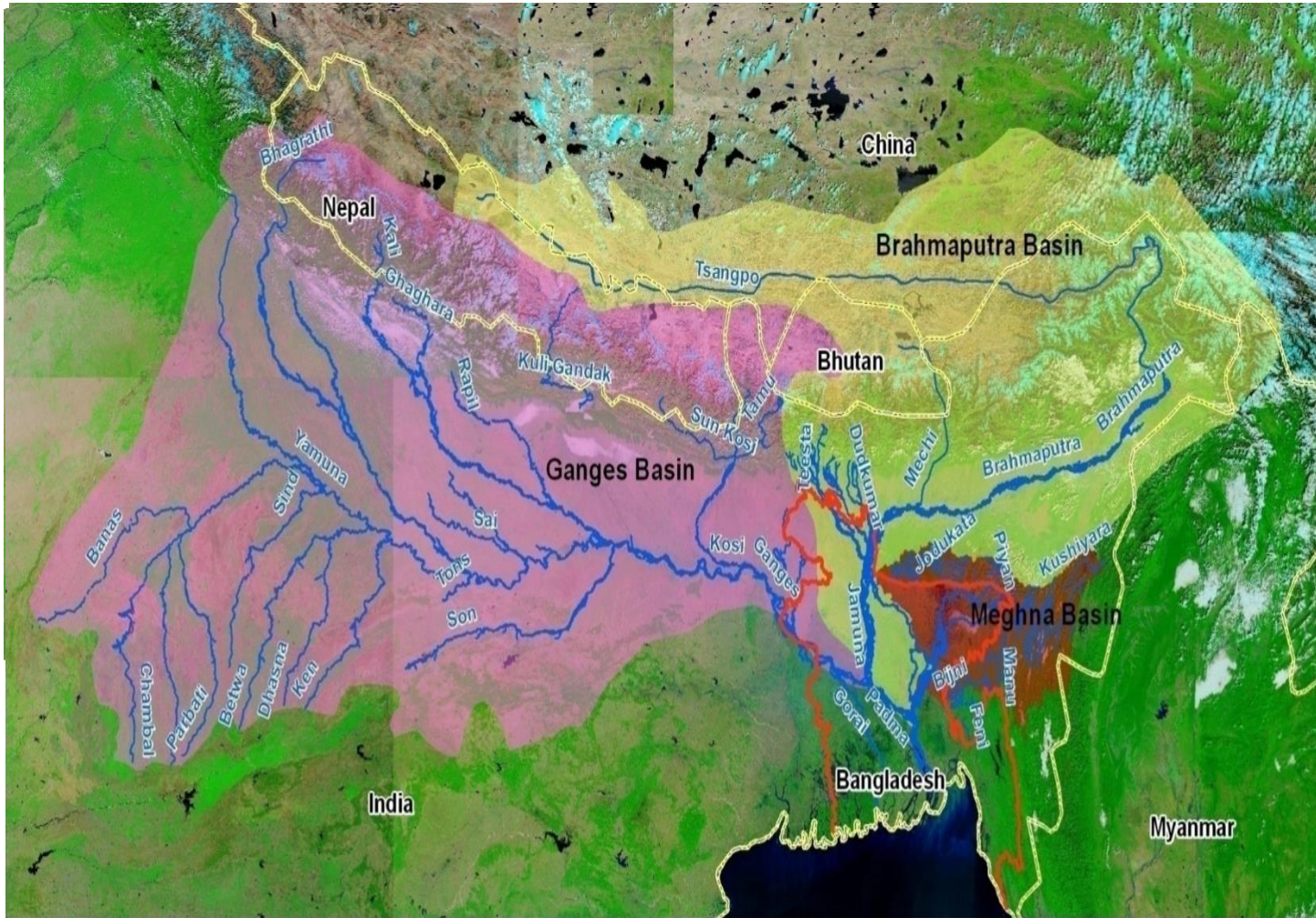


# **Bangladesh Delta Plan (BDP) 2100** **(Bangladesh in the 21<sup>st</sup> Century)**



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# Bangladesh Delta Features

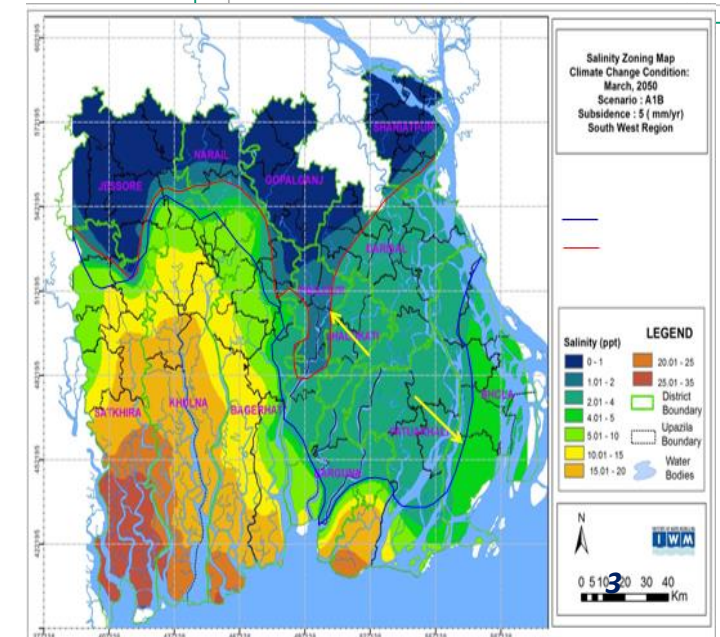
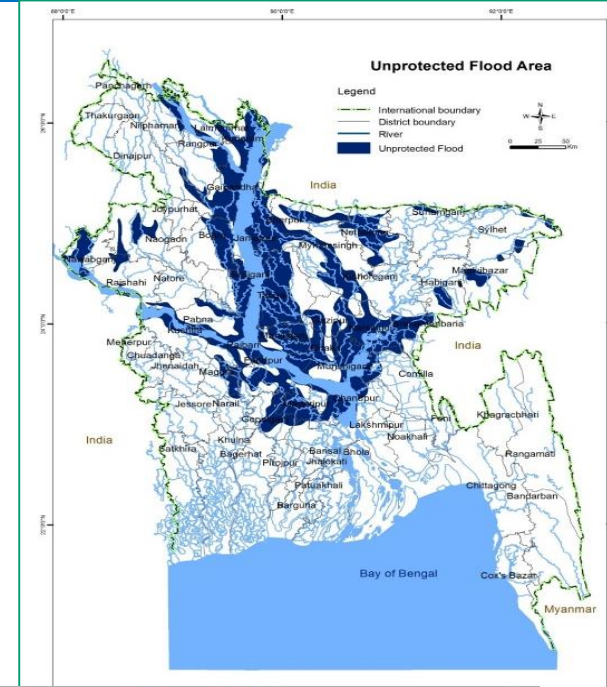


- Built on the confluence of 3 mighty Rivers- the Ganges, the Brahmaputra and the Meghna;
- Largest dynamic delta of the world;
- Around 700 Rivers: 57 Trans-boundary (54 with India and 3 with Myanmar);
- 93% catchment area lies outside Bangladesh with annual sediment load of 1.0 to 1.4 billion tonnes;
- Abundance of water in wet season but scarcity of water in dry season.

# Bangladesh Delta Challenges

## According to IPCC-AR 5 and other studies

- Rising Temperatures (1.4-1.9°C increase by 2050, if extreme then 2°C plus)
- Rainfall Variability (overall increase by 2030, but may decrease in Eastern and southern areas)
- Increased Flooding (about 70% area is within 1m from Sea Level)
- Droughts (mainly Agricultural Drought)
- River Erosion (50,000 households on avg. become homeless each year)
- Sea Level Rise (SLR) and consequent Salinity Intrusion (by 2050 SLR may be up to 0.2-1.0 m; salinity increase by 1ppt in 17.5% & by 5ppt in 24% area)
- Cyclones and Storm Surges (Frequency and category will increase along with higher storm surges)
- Water Logging
- Sedimentation
- Trans-boundary Challenges



# Bangladesh Delta Opportunities

## Highly fertile land

- Agricultural land: 65%
- Forest lands: 17%
- Urban areas: 8%
- Water and wetlands: 10%.

## Plentiful rivers (more than 700 nos.)

- Water bodies about 4.70 million ha

## Open access to sea is a huge advantage

- It could serve the needs of growing internal trade and commerce
- Could become a regional hub for international sea transportation

## Dynamic Inland Water Transport (around 6000 km)

- Almost all districts are connected with each other
- The Industrial/Growth centers nearby rivers

## The Sundarbans

- The largest natural mangrove forest
- Unique ecosystem covers an area of 577,000 ha of which 175,400 ha is under water

## Unique ecological settings

- There are 2 Ramsar sites, 14 (13+1) Ecological Critically Areas (ECAs), 17 National Parks, 28 Wildlife Sanctuaries, 8 Eco-parks and 2 Botanical Gardens.
- Important five ECAs are
  - ✓ Hakaluki Haor (18,382 ha)
  - ✓ Tanguar Haor (9727 ha)
  - ✓ Sonadia Island (4,916 ha)
  - ✓ St Martin's Island (590 ha)
  - ✓ Teknaf Peninsula (10,465 ha)
- Over **800** species of wildlife identified in ECAs.

# Need for an Integrated Plan (BDP 2100) in WR Management

- Bangladesh government is firmly committed to the implementation of national-level strategic plans such as the Five Year Plans and Perspective Plan and also highly committed to meet the targets under SDGs. Integration of these sectoral, national and global targets and plans into long term coherent strategies taking climate change and future demands into account is the main challenge.
- A plan needs to contribute directly to the realization of the country's long term vision, the “Perspective Plan 2041”
- Due to the large uncertainties with respect to climate change and socio-economic development, planning is being enriched with adaptive strategy making (ADM) in several deltas in the world. Rather than providing linear recipes, robust and flexible strategies and measures have been taken, with strong institutions and a good knowledge base that allows policy makers and stakeholders to anticipate and decide on the most appropriate investments.

# Need for an Integrated Plan (BDP 2100) in WR Management (Cont'd)

- The national challenge to maintain food sufficiency in the face of increasing population and decreasing agricultural land as well as the threats posed by climate change requires coordinated policy actions involving Ministry of Agriculture (MoA), Ministry of Food (MoF), Ministry of Environment, Forests & Climate Change (MoEFCC), Ministry of Disaster Management & Relief (MoDMR), Ministry of Land (MoL), Ministry of Fisheries and Livestock (MoFL), Ministry of Water Resources (MoWR), Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C), Ministry of Finance (MoF) and Ministry of Planning (MoP).
- So instead of only focusing on short term 'trial and error' actions and projects, the idea is to keep the long term vision in mind while prioritizing short term 'no regret' actions has been considered utmost important. A balanced combination of investments, policies and institutions.
- All the previous mid to long term plans were strategic in nature. But to make the development pursuit secured and sustainable, the country needs long term investment plan along with the strategies.

# Hotspots: Planning and Implementation Units of BDP 2100

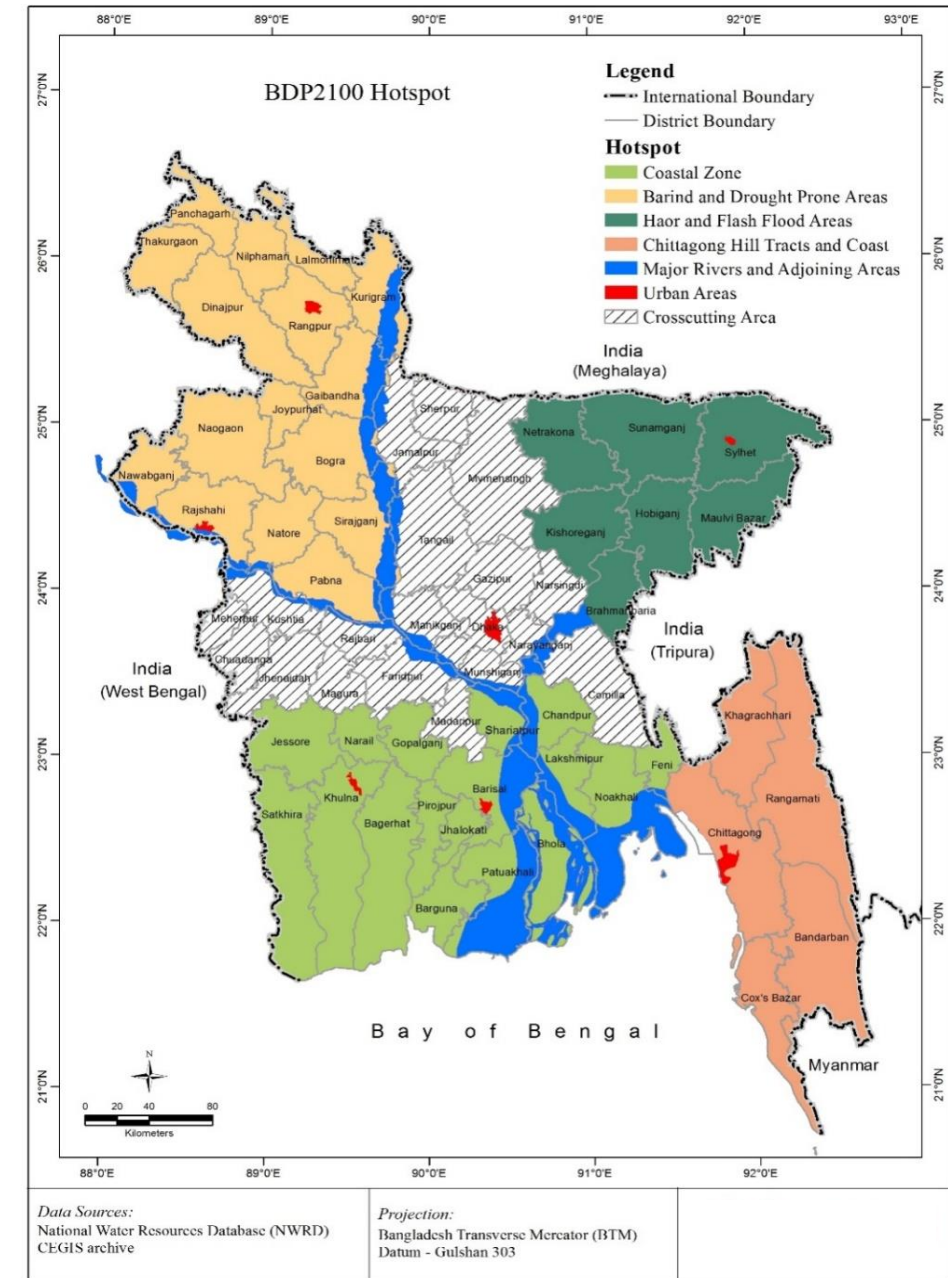
Hotspot is defined as “a place of significant activity or danger”. Hotspots are prototypical areas where similar hydrological and climate change vulnerability characteristics and problems converge also influenced by natural hazards.

In BDP 2100, Hotspot is a broad grouping of districts and areas facing similar risks evolved by Hydrology, climate change and natural hazards .

Six (6) Hotspot areas have been identified :

1. Coastal Zone (27,738 sq km);
2. Barind and Drought Prone Areas (22,848 sq km);
3. Haor and Flash Flood Areas (16,574 sq km);
4. Chattogram Hill Tracts (13,295 sq km);
5. River Systems and Estuaries (35,204 Sq km); and
6. Urban Areas (19,823 sq km).

The remaining area is identified as “Cross-cutting” areas characterized by a combination of issues and challenges e.g. floods, drought, river bank erosion, sedimentation, groundwater depletion, water pollution and water supply and sanitation.



# Hotspot Issues and Challenges

## Coastal Zone

- Cyclonic storms and tidal surges
- Floods
- Salinity
- Waterlogging
- River bank and coastal erosion
- Fresh water scarcity
- Groundwater level decline

## Barind and Drought Prone Areas

- Fresh water scarcity
- Flooding and waterlogging/drainage congestion
- Groundwater level decline
- Inadequate sanitation services

## Haor and Flash Flood Areas

- Fresh water scarcity
- Flash floods/monsoon floods
- Waterlogging/drainage congestion
- Lack of water and sanitation services

## Chattogram Hill Tracts

- Fresh water scarcity
- Drinking water supply
- Inadequate sanitation services
- Biodiversity decline

## River Systems and Estuaries

- Floods
- Water quality
- Sedimentation and Navigation
- River bed changes, erosion and accretion  
Jamuna: 1770 ha, Ganges: 698 ha, Padma: 1298 ha,  
Lower Meghna: 2900 ha. Accretion: 57875 ha (1973-2018)

## Urban Areas

- Waterlogging/drainage congestion
- Fresh water scarcity
- Waste and effluent management
- Urban governance

*\* In all hotspots, Degradation of Environment is a common problem*



# BDP 2100 Vision & Goals

***Vision: Achieving Safe, Climate Resilient and Prosperous Delta***

## ***Mission***

***Ensure long term water and food security, economic growth and environmental sustainability while effectively reducing vulnerability to natural disasters and building resilience to climate change and other delta challenges through robust, adaptive and integrated strategies, and equitable water governance.***

## ***Higher Level Goals***

**Goal 1: Eliminate extreme poverty by 2030**

**Goal 2: Achieve Upper Middle Income Country (UMIC) status by 2030**

**Goal 3: Being a prosperous country beyond 2041**

## ***Delta (BDP 2100) Goals***

**Goal 1: Ensure safety from floods and climate change related disasters**

**Goal 2: Ensure water security and efficiency of water usages**

**Goal 3: Ensure sustainable and integrated river systems and estuaries management**

**Goal 4: Conserve and preserve wetlands and ecosystems and promote their wise use**

**Goal 5: Develop effective institutions and equitable governance for in country and trans-boundary WR management**

**Goal 6: Achieve optimal use of land and water resources**

# Policy Options in BDP 2100

In order to illustrate the role of BDP 2100 and its contribution to the long term development of Bangladesh, two policy options are considered.

- The First Option refers to the **Business As Usual (BAU) policy Option**. This is essentially a representation of the government's Vision 2021, Perspective Plan and the Seventh Five Year Plan. In BAU, when the adverse impacts of the climate change and natural hazards increases the GDP growth rate starts falling over, efficiency of capital falls resulting in lower agricultural production, unemployment, migration and pressure on urbanization.
- Alternative of BAU is the **Delta Plan (DP) Policy Option**, which is the combination of the BAU with the adoption of the BDP 2100. This option incorporates the adoption of strong climate change and other delta related adaptation measures to achieve higher and sustainable growth trajectories in the face of the various weather-related natural hazards and risks.

# Bangladesh Delta Plan 2100: Process and Methods

## 1. Baseline Analysis: Challenges and Opportunities (26 Baseline Studies)

The studies are related to Climate Change, Natural Resources, Environment and Ecology, Investment and Finance, Governance, Knowledge and Data Management, etc.

## 2. Setting the Vision, Mission and Goals

## 3. Scenario Development

Various scenario (plausible future) developed based on environmental, socio-economic and policy factors. Based on scenario strategies are developed

## 4. Strategy Development based on ADM Principle

- At National Level
- Hotspot wise
- Cross-cutting (Sectoral)

## 5. Investment Plan

- Based on ADM
- Hotspot wise and Cross cutting
- Prioritization of Project (MCA)
- Financing Arrangements and Mechanisms

## 6. Implementation Framework

- PPSC, Delta Wing (GED) and Delta Fund
- RBM&E Framework
- Knowledge Generation & Management.

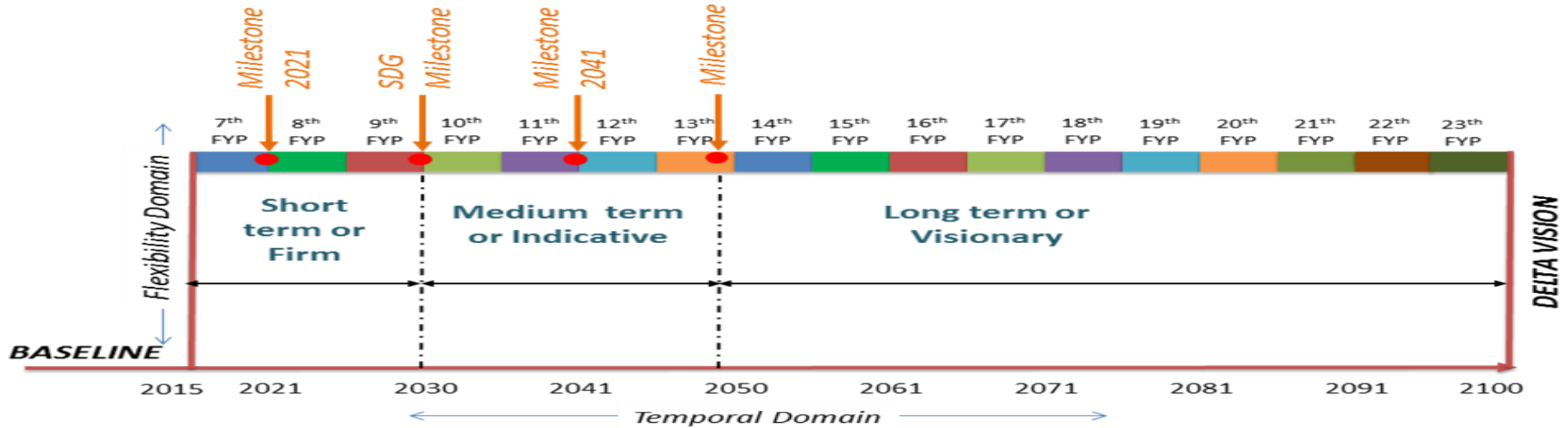
# Framework for Strategy Development

## Strategies developed at 3 Levels:

- National Level
  - Flood Risk Management
  - Fresh Water
- For 6 Hotspots

## Strategies developed for cross-cutting issues

- Sustainable Land Use and Spatial Planning
- Agriculture, Food Security and Livelihood
- Trans-boundary Water Resources Management
- Dynamic Inland Water Transport
- Blue Economy
- Renewable Energy
- Earthquakes



Time Frame of BDP Strategy

# A. National Strategy under BDP 2100

## National Level Strategies are based on 3 principles

- Strategies conducive for economic development without hampering Environmental sustainability
- Developing Climate change resilient Bangladesh through optimal use of natural resources; and
- Climate change resilient development through participatory process

## 1. Flood Risk Management

**Main Strategy:** Equipping the flood management, drainage and irrigation (FMDI) schemes for the future and thereby Protecting economic strongholds and critical infrastructure as well as Safeguarding livelihoods of vulnerable communities

### Measures

- Provision of immediate discharge of excess water during monsoon and flood in all the river and embankment management activities
- Emphasis on the ‘submerged Char’ management in all the flood management and water discharge control activities
- Increase the height and strength of important embankments, barriers and water control structures along with the improvement in drainage system
- Construction of adaptive and flood-storm-surge proof building
- River excavation and dredging preceded by proper feasibility studies (permanent river area and flow at 480 thousand ha)
- Preservation of water reservoirs and maintaining connectivity with the FMDI schemes (reservoir area 90 thousand ha)
- River management and improved FMD operation and maintenance

## 2. Fresh Water

**Main Strategy:** Ensure water availability by balancing supply and demand for sustainable and inclusive growth and maintaining water quality for health, livelihoods and ecosystems

### Measures

- Ensuring proper water resources management by constructing embankments following basin wide approach
- New irrigation projects for the main rivers
- Retention of water at local level by re-excavation and preservation of water bodies (ponds, canals, oxbow lakes) and rain water harvesting
- Initiatives for the increase of water flows in the local rivers
- Restoration of rivers and water bodies and preservation of bio-diversity
- Restrictions on the use of ground water and preservation of ground water
- Action research for the improved ecosystem services

# B. Strategies for Hotspots under BDP 2100

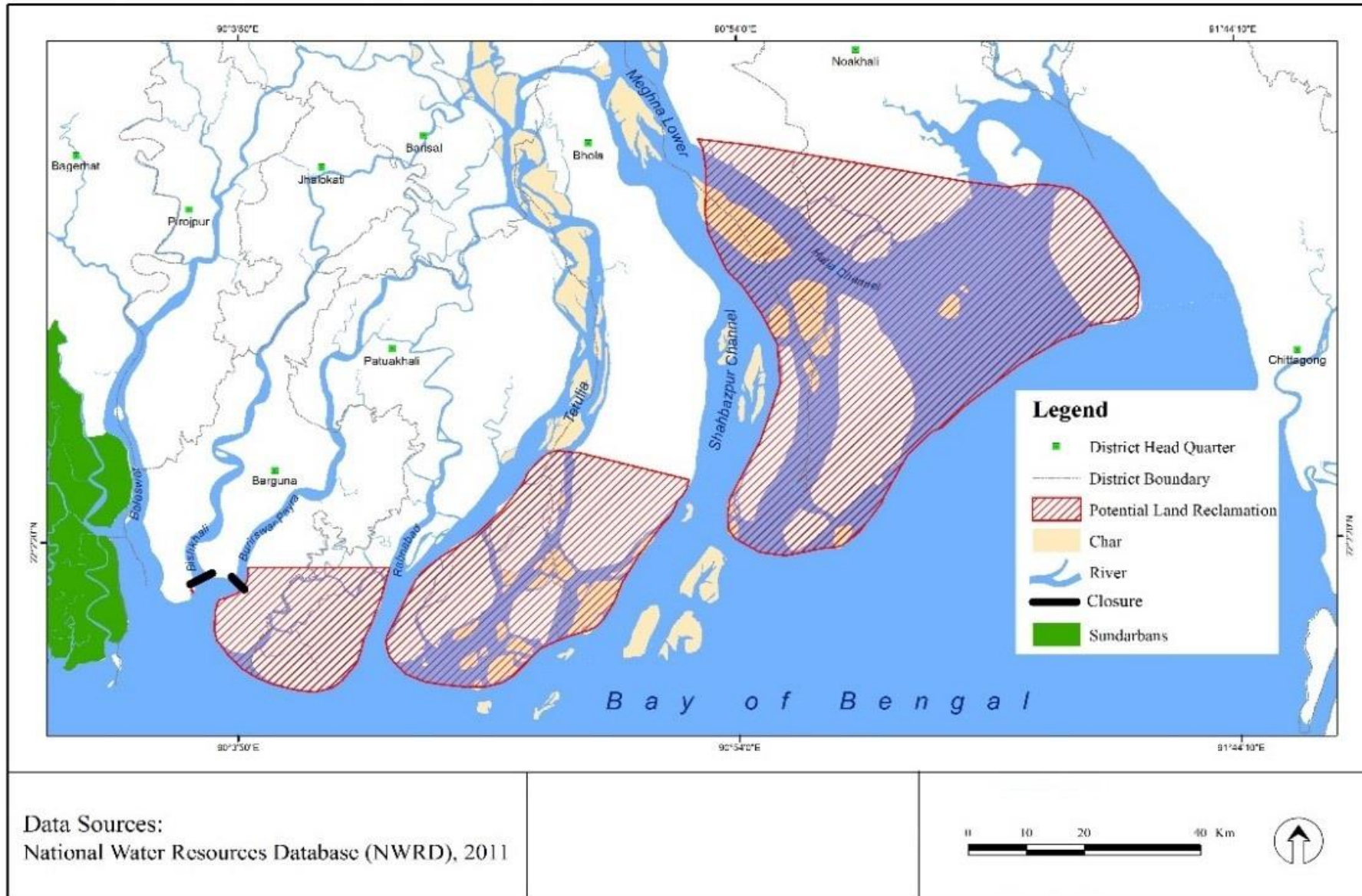
## 1. Coastal Zone (27, 738 sq. km)

**Main Strategy:** Combating storm surge and salinity intrusion through effective management of existing polders, reclaiming new land in the coastal zone and conservation of the Sundarbans (6.017 sq. km)

### Measures

- Revival of the regional rivers and channels and improvement of drainage in local rivers and canals
- Continuation of TRM activities in the coastal polders and introduction of TRM in other polders preceded by appropriate feasibility study
- Construction of Naoakhali-Urir Char cross dam for reclaiming new lands from the sea
- Accelerating the land accretion process in the Meghna estuary
- Preservation, development and land zoning for the newly accreted land
- Regular dredging of Ghasiakhali and other channels in the Sundarbans
- Improvement of the Sundarbans, afforestation of mangrove species, creation of green belt and improvements of the islands
- Accelerating the afforestation in the newly accreted lands by mangrove

# Land Reclamation



Potential Land Reclamation Areas in the Coast



# B. Strategies for Hotspots under BDP 2100

## 2. Barind and Drought Prone Areas (22,848 sq. km)

**Main Strategy:** Balancing supply and demand for sustainable and inclusive growth, minimising losses due to floods and drainage congestion and ensuring water supply and sanitation

### Measures

- Extension of irrigation using the surface water from the Padma and other regional rivers
- Appropriate regulations for ground water uses and regulating the ground water extraction
- Development of detailed basin management plan for Barind and Atrai basin
- Water retention for the dry season usage in the natural and artificial reservoirs (pond excavation, through rubber dams, rain water harvesting, etc.)
- Restoration and preservation of the natural flow in Chalan Beel (Excavation of Baral River)
- Reclaiming encroached river banks, khas canals and ponds and ensuring the preservation of drinking water
- Improvement, expansion and modification of the existing water resources infrastructures to manage flood
- Set up a flood and drought management center and build further capacity in relevant agencies (BMDA, DAE, BADC, etc.)
- Establishment of sewage treatment plants in all district headquarters, including industrial effluent treatment and waste management and supply of piped drinking water

# Strategies for Hotspots (Cont'd)

## 3. Haor and Flash Flood Areas (16,574 sq. km)

**Main Strategy:** Protect agriculture and vulnerable communities from floods, integrated water/land resource management and management of sustainable ecosystem and biodiversity.

### Measures

- Extension of irrigation using the surface water from the Padma and other regional rivers
- Rationalize construction of submersible embankments and their maintenance
- Construct and elevate village platforms in the Haor areas using dredged soils/ sludge
- Encourage on-farm mechanization and extension of climate smart Agro-forestry and other sustainable agriculture practices
- Expansion of minor irrigation using surface water and develop irrigation facilities using water control structures
- Improvement of design and capacities of the FMDI structures
- Strictly abide by the natural wetland preservation regulations
- Strictly conserve nearly extinct species and formulate appropriate action plans for the development of fish resources
- Encouraging fisheries and other agri crops in place of exclusive rice cultivation

# Strategies for Hotspots (Cont'd)

## 4. Chattogram Hill Tracts (13,295 sq. km)

**Main Strategy:** Ensure water security and sustainable sanitation, maintain ecological balance, biodiversity and values (assets) and development of multi-purpose resources management system for sustainable growth

### Measures

- Construction of multifunctional dykes, diversion of flow in erosion prone areas using groynes, dykes or diversion or chute.
- Protection of floodplains and towns from flash floods of Chengi, Karnafuli, Sangu, Matamhuri, Bakkhali rivers and hilly streams using new embankments / water control infrastructure
- Supply of piped water from reservoirs and ensuring appropriate sewage and waste treatment management
- Sustainable practices of indigenous agriculture and reforestation with indigenous species
- Preservation of hill 'Charas' (water falls, canals) and biodiversity conservation
- Removal of silt from Kaptai lake and survey of its fish resources
- Protecting natural forest resources from deforestation and increase the afforestation

# Strategies for Hotspots (Cont'd)

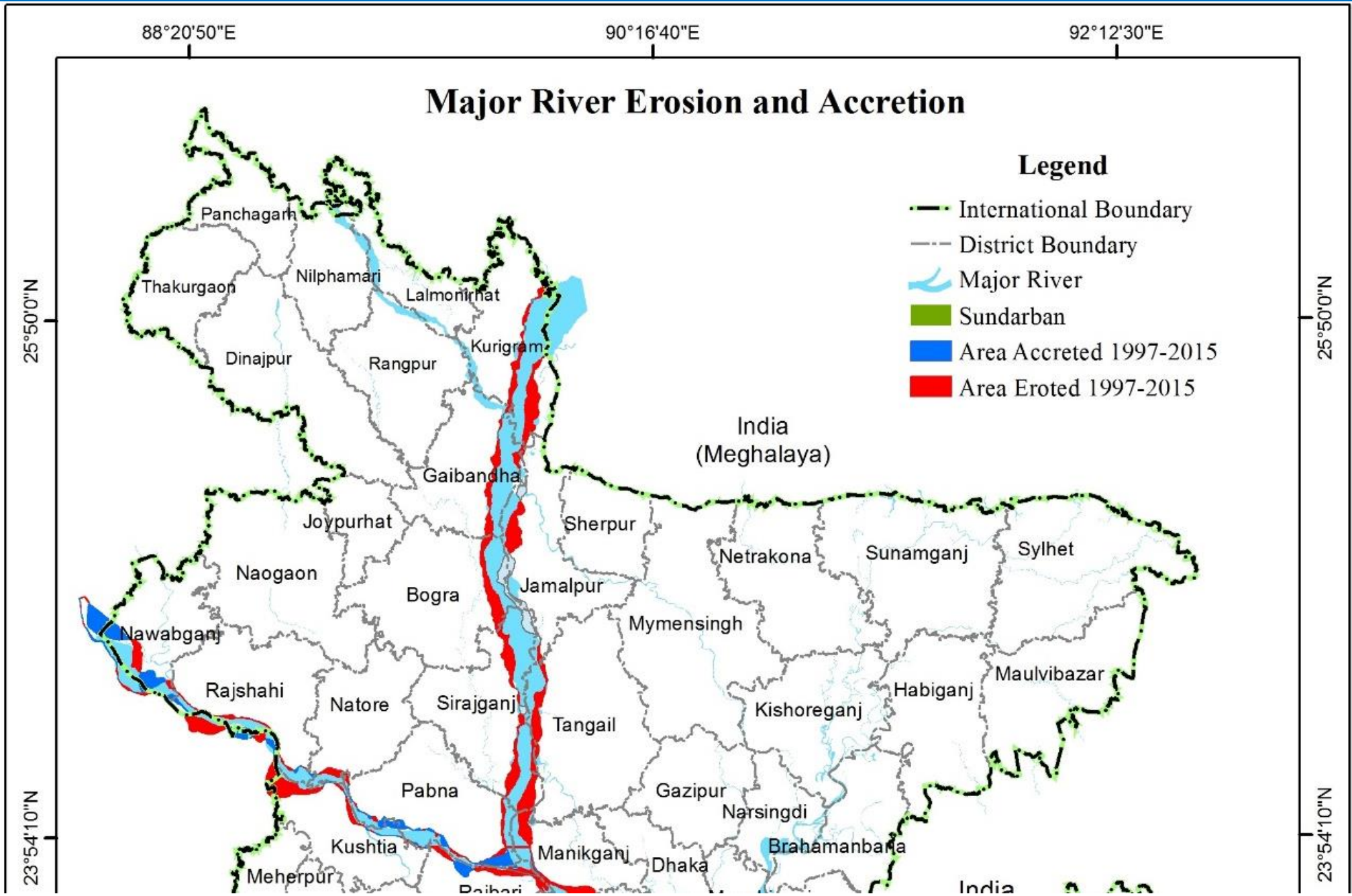
## 5. River Systems and Estuaries (35,204 sq. km)

**Main Strategy:** Provide adequate room for the rivers and infrastructure to reduce flood risk, appropriate sediment management and effective river and estuaries management in the newly accredited char areas

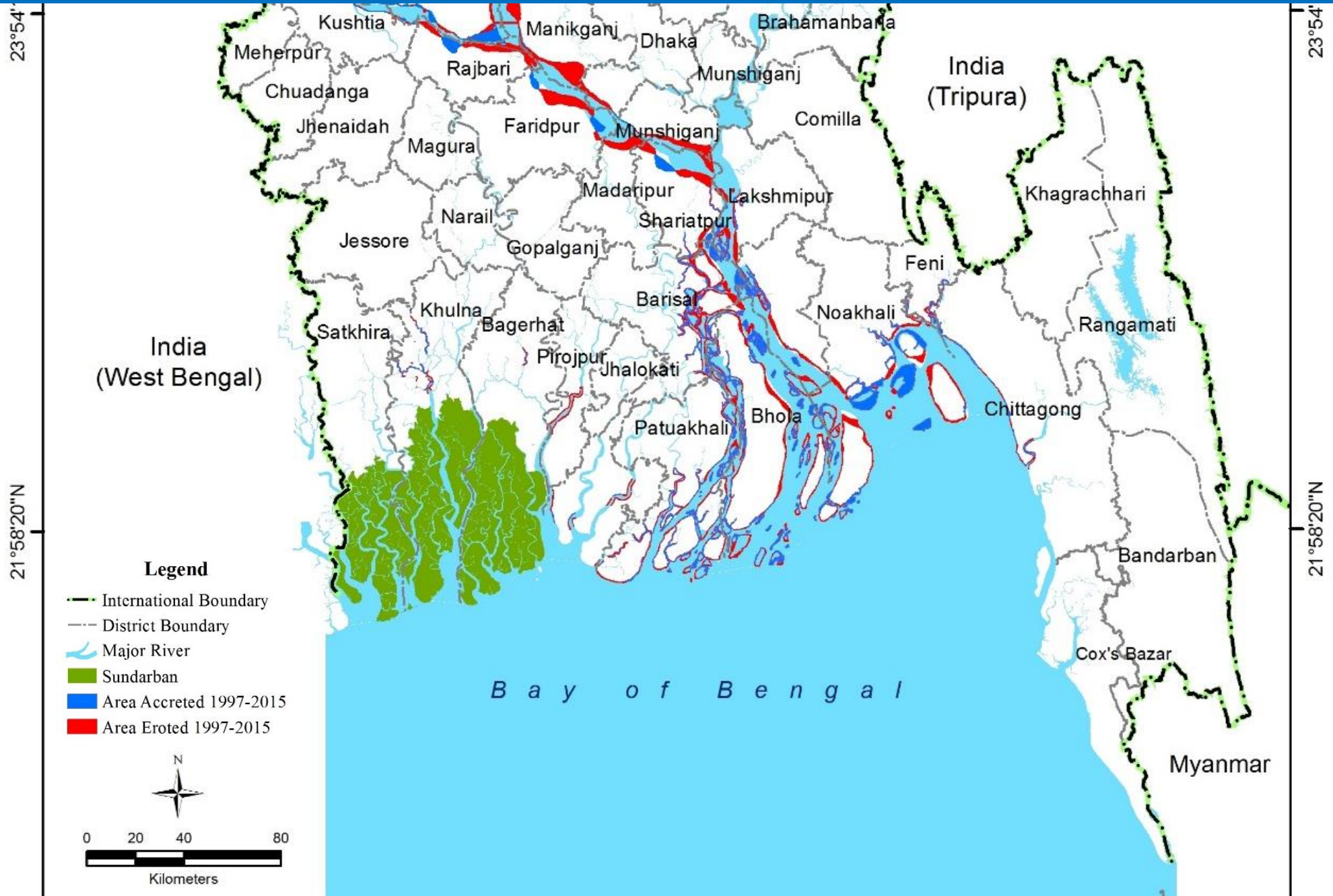
### Measures

- Appropriate capital and maintenance dredging for the Padma, Meghna, Jamuna, Brahmaputra, Dharla, Arial Khan, Gorai, Kushiara, Monu and other important rivers
- Effective measures for the management of excess salinity in the rivers of Southern region during the dry season
- River and flood management activities to be taken considering the erosion-accretion and changing of directions of rivers over time
- Combined river training and river bank protection works for river stabilization and channelization
- Maintenance of discharge and natural flow of rivers and estuaries by effective sediment management
- Increase the river flow by river training, strategic dredging and sediment management and formulate basin-wide sedimentation management policy
- Dredging and removal of silt is based on detailed morphological and sedimentological study
- Effective measures for the development of the naturally accreted lands and reclamation of land in Meghna and other estuaries
- Development of Integrated town and spatial planning and integrating river management and land reclamation issues in the urban development planning and initiatives

# River Erosion and Accretion



# River Erosion and Accretion



# Strategies for Hotspots (Cont'd)

## 6. Urban Areas (19,823 sq. km)

**Main Strategy:** Integrated and sustainable use of urban land and water resources, improved urban utility services including water supply, sanitation, waste management, conserve and preserve urban wetlands and ecosystems and promote their wise-use

### Measures

- Appropriate action plan for removing water logging in urban areas
- Categorization of wastes into e-waste, hospital wastes and others and separate effective waste management plans for each of them
- Improvement of the drainage and water reserve system using natural water bodies
- Recovery and protection of natural water reservoirs and canals
- Ensure water quality
- Strategic establishment of green (forestation) and blue (water bodies) spaces and networks in the urban areas
- Effective initiatives to increase local revenues in the city areas, ensure improved governance and increased financial sustainability in water supply sector and appropriate valuation and pricing of supplied water
- Encourage involvement of private sector in waste management

# C. Strategies for Cross-cutting Issues

## 1. Sustainable Land Use and Spatial Planning

### Measures

- Develop effective policy guidelines and rules for the Balu Mahal (sand quarry) and sediment management
- Management of newly accreted land in the Meghna Estuary
- Sustainable coastal land management for enhancing agriculture and non-agriculture land
- Development of digital land resource management system
- Reviewing and updating/enactment of Laws/Regulations relating to Alluvion and Diluvion to improve efficiency of land administration of accreting and reclaimed land
- Increase climate change adaptation capacity for land management
- Spatial land use planning for urbanization
- Formulation of spatial planning and land resource management act
- Enhance afforestation and plantation in the coastal zone for stabilizing land
- Restoration and protection of soil quality, erosion and land loss
- Integrated management of coastal water infrastructures to protect land



# Strategies for Cross-cutting Issues (Cont'd)

## 2. Agriculture, Food Security, Nutrition and Livelihoods

### Measures for Agriculture

- Diversification in agricultural output and livelihoods
- Lower emissions (GHGs) from agricultural land
- Encourage establishing commercial farms
- Introduction of Aquaponics farming system to culture fish and plants together
- Using Nanotechnology in agriculture for processing, distribution and packaging
- Introduce precision agriculture model
- Encouraging solar power in irrigation
- Improved farm practices and technologies for mediating negative impacts of Climate Change
- Preservation of ecosystems for plant, wild animals, fishes, birds, etc. and encourage fruit tree plantation

### Measures for Fisheries

- Improve wetland management in haor areas for development of fisheries
- Maintaining biodiversity to ensure long term fish availability
- Sustainable marine fisheries resources management

### Measures for Livestock

- Production of climate resilient Livestock
- Encourage animal fattening and commercial dairy farms

# Strategies for Cross-cutting Issues (Cont'd)

## 3. Trans-boundary Water Management

- Development of action plan keeping the water usage of upstream countries in consideration
- Selection of prospective sites for the construction of embankments considering the water flow from upstream and with understanding and cooperation from upstream countries
- Multi-track water diplomacy to prevent or peacefully resolve conflicts
- Continuing efforts for signing of Treaty regarding the sharing of water for the Teesta and all other transboundary rivers
- Demand based common river basin management schemes have to be initiated
- Third party involvement (multilateral or bilateral development partner or country) to resolve transboundary water related issues
- Improved basin-wide flood forecasting



Regional Cooperation Options

## 4. Dynamizing Inland Water Transport Systems

**Main Strategy:** Regular capital and maintenance dredging activities for maintaining flow and transport in the rivers, develop reliable water system conditions for long term sustainable IWT, provide optimal levels of surface water for navigation and develop, maintain & operate inland river ports, landing ports and terminal facilities in ports

### Measures

- Development and modernization of 24 important inland river ports all over Bangladesh
- Maintenance navigability of 88 important river routes of IWT Network by capital and maintenance dredging
- Preparation of Dredging Master Plan (sediment management included) with priority list and phasing preceded by appropriate feasibility studies
- Modernizing Existing DGPS System and Replacement of Electronic Positioning System (EPS) of BIWTA
- Strengthening of river transports safety measures

## 5. Blue Economy

*considered as a new 'Development Space' for Bangladesh. Water transport, coastal shipping, sea ports, ship building & recycling, marine fisheries, coastal tourism, ocean energy, land reclamation, ocean survey & surveillance, etc. have been identified as key priority sectors.*

### Measures

- Quick completion of multidimensional survey of marine resources
- Increase the number of sea going vessels and modernization and capacity building of the sea ports
- Increase both shallow and deep sea fishing
- Introduction of eco-tourism and private sector initiatives in sea cruise
- Establishment of a new directorate at national level involving different aspects of blue economy such as survey of marine resources, security at deep sea, oceanography, research, resource such as oil, gas exploration
- Strengthening the safety and security at sea supporting the newly emerging prospect of 'Blue Economy'
- Explore the economic prospects of blue economy other than fish resources such as other marine animals, plants, oil, gas, etc.

## 6. Renewable Energy

**Main Strategy:** Develop long-term renewable energy policy as well as strategies and formulate a master plan for 50-100 years to harness the potential of renewable energy resources in the country involving public and private sector investments

### Measures

- Promote research on the development of conducive technology for renewable energy in universities and research institutions as well as build capacity for its application
- Enhance Green Growth through research and development of renewable technologies including clean development mechanism (CDM)
- At least 30% of the renewable energy should come from renewable sources by 2041 (in 7FYP, by 2020 about 10% of total energy)
- Install solar panels in land strips available in flood embankments, barrages and other hydraulic structures
- Encourage use of solar power for both surface water and ground water irrigation
- Explore the potential of hydro-power in the hilly rivers such as Sangu, Matamuhuri and other rivers and hilly streams
- Harness tidal current and tidal waves for generating electricity in the coastal and offshore islands

## 7. Earthquakes

*Bangladesh and the north eastern part of India states have long been one of the seismically active regions of the world, and have experienced numerous large earthquakes during the past 200 years*

### Measures

- Strengthen earthquake management and enhance the capacity to cope with earthquakes
- Design earthquake-proof structures including barrages, regulators, sluices, embankments, cross-dams, roads, bridges, buildings in conformity with the Bangladesh National Building codes or any other approved standards
- Formulate a proper land use plan for building construction in municipal areas
- Conduct a detailed study on identification of faults and epicenters

# Existing Policy and Institutional Framework for Water Resources Management

The legal and policy framework (Plan, Acts, Policies, Regulations) for Water Resources Management in Bangladesh is quite expansive and well structured. However, there are some issues and challenges in implementing those plans and policies in field.

- Many of the recommendations of NWP (1999) were/are not implemented, including participatory water management. NWMP was adopted in 2004 which primarily focused on water sector institutions and actions but economic implications and resource mobilization are neither identified nor explored.
- During the implementation of the Flood Action Plan (FAP) of 1990, insufficiencies including weak institutional capacity and coordination, lack of involvement of stakeholders, inadequate impact assessment with possible negative effects on fisheries and the natural environment, and inadequate attention to O&M arrangements including financing had been observed.

# Governance and Institutional Framework for BDP 2100

Establishing effective governance and institutions for ADM is obviously a huge challenge. At the same time, the implementation of this Mega plan inter-sectoral coordination and financing is a big challenge. As such-

- Government has vested the responsibility of overall facilitation, coordination, as well as the M&E of BDP 2100 implementation to General Economics Division (GED) of Bangladesh Planning Commission. To render those assignments in an integrated and holistic manner GED will need a well structured set up (Delta Wing) to be established. GED would coordinate, guide, facilitate, update, macro-level monitoring and evaluation of the implementation of BDP 2100.
- The ‘Delta Governance Council (DGC)’, a small but high level inter ministerial forum chaired by Hon’ble Prime Minister will be formed which is a supervising and guiding authority. DGC would function as a formal linkage for achieving political commitments regarding BDP 2100 implementation, provide directions and make decisions at national level. It will also provide strategic advice and policy guidelines. DGC will provide overall coordination to the functioning of GED.



# Governance and Institutional Framework for BDP 2100

- Given limited resources and the need for a coordinated and integrated approach to delta spending, a specialized fund aka 'Delta Fund' will be established. This fund will be operated by the guidance of DGC to support delta programme/investment plan implementation.
- A committee named as 'Project/Programme Selection Committee (PPSC)' chaired by Member, GED will be primarily responsible for selection of specific projects or programmes implementable under BDP 2100 Investment Plan. PPSC will be comprised of representatives from relevant ministries/divisions.

# Governance and Institutional Framework of BDP 2100

The Key functions of the **Delta Wing** in GED would be

- Overall support, guidance and coordination for the implementation of the BDP 2100
- Conceptualize, identify delta-related programmes and projects, plan and prepare the Delta Programmes (investment), set priorities as per the plan, facilitating programme /project preparation and implementation, support resource mobilization
- Undertake and approve related research studies, prepare policy/guidelines, facilitate feasibility studies and provide trainings for capacity development
- Inter-ministerial/agency coordination, development of knowledge hub and data bank management
- Update the BDP 2100 and overall/macro level monitoring and evaluation of the implementation of the BDP 2100
- Develop the terms of references of DGC and overall guidelines in respect of Delta fund operation and selection of projects under Delta Fund
- Bangladesh Planning Commission, BWDB, WARPO, IWM, CEGIS, DAE, LGED, BARC, BIDS, BUET, BAU, JRC, SPARSO, UDD, NILG, BBS, BARD, BMDA, RDA, RRI, SSRC, DHWDB and other Government, Research and Academic institutions will act as key knowledge and data support organizations.

# Funding Arrangements and Financial Mechanism: Bangladesh Delta Fund

- Bangladesh currently invests very little (0.6-0.8 percent of GDP) in water related projects
- Creation of Bangladesh Delta Fund with minimum financing of about 2.5% of GDP, of which 2.0% would be needed for new investments and 0.5% for O&M
- **80% of the overall spending (2.5% of GDP per annum) will be publicly funded and private sector involvement will be limited to 20%, equivalent to 0.5 percent of GDP**
- Sources of Delta Fund would be GOB, Development Partners, Environment and Climate Change related funds (GCF, GEF), PPP, etc.
- **Public-Private Partnership (PPP) is one of the potential options for funding BDP 2100 projects**
- Funding strategy combines tax with non-tax revenue, cost recovery for public services such as Beneficiary Pays Principle, Polluter Pays Principle and O&M funding

# Public and Private Sector Investment Requirements

Investment requirements for water resources management, climate change impact and environmental sustainability  
(% of GDP)

Sources of Finance/Sector for Expenditure	FY2016	FY2020	FY2025	FY2031
<b>Total Delta Investment Required</b>	<b>0.8</b>	<b>1.8</b>	<b>2.5</b>	<b>2.5</b>
<b>Total Public Investment Required</b>	<b>0.8</b>	<b>1.3</b>	<b>1.5</b>	<b>1.5</b>
<b>Current Public Investment (Baseline)</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>
<b>Additional Public Investment</b>	<b>--</b>	<b>0.5</b>	<b>0.7</b>	<b>0.7</b>
<b>Maintenance Cost (Recurrent Budget)</b>	<b>0.0</b>	<b>0.3</b>	<b>0.5</b>	<b>0.5</b>
<b>Private Investment Required</b>	<b>0.0</b>	<b>0.2</b>	<b>0.5</b>	<b>0.5</b>

- Out of the required 2.5% of GDP, only **about 0.8% of GDP** is currently allocated in the budget
- Although the overall **budget size will increase by about 10% to reach 25% of GDP by FY2031** there will be pressures for increased resource allocation in social sectors like education, health and social protection

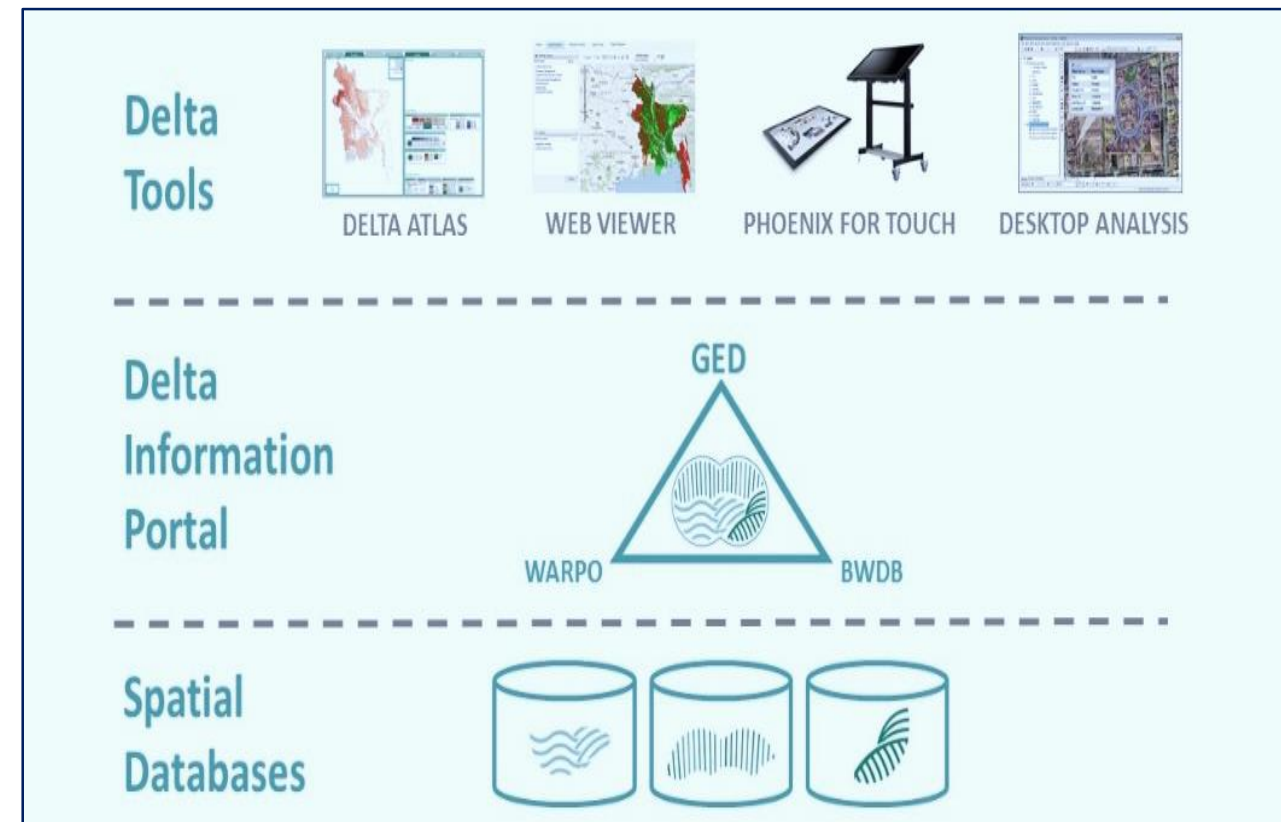
# M&E Framework in BDP 2100

- An appropriate Development Results Framework (DRF) will be established for continuous and effective monitoring and evaluation of the progress of BDP 2100 programme implementation.
- **Collection and analysis of the required data and information.**
- Setting quantitative indicators relevant to the Delta goals, objectives and targets which will be updated/adjusted with time especially due to climate change and future uncertainties (in 5 to 10 years interval).
- **Bring all indicators together to inform stakeholders about water management system and their relationships to climate change, ecosystems, social and economic systems.**
- Relevant Ministries/Agencies and IMED will continue their M&E at project level. The GED will do the macro-level monitoring and evaluation of the overall implementation of BDP 2100.

# Delta Knowledge Hub and Data Management

The comprehensive knowledge domains of delta issues as well as the adaptive nature of delta management puts knowledge management at a premium. Knowledge of global climate change and analysis, and regional experiences will play important roles in guiding Delta strategies and policies in future. The BDP 2100 knowledge and data management approach includes:

- **Knowledge Accumulation:** started with the compilation of the 26 Baseline Studies. New areas of research will be done based on knowledge gaps.
- **Knowledge Availability:** ensured through a web-based information portal, gathering geographical data layers, studies, policy documents and other technical reports.
- **Value Realization:** shall be done from delta knowledge once it is put to use in practice. E.g. , input to the 8<sup>th</sup> Five Year Plan.
- **Delta Knowledge Community:** comprises of academics, policy makers, international donors, NGOs and field workers in a community of participants.



BDP 2100 Knowledge & Information Structure

# Hotspot wise Estimated Cost for the Investment Plan (2017-30)

Hotspot	No of Projects	Billion Tk	Billion USD
Coastal Zones	23	884.361	11.143
Barind and Drought-Prone	9	163.145	2.056
Haor and Flash Flood	6	27.982	0.353
Chattogram Hill Tracts	8	59.865	0.754
River System & Estuaries	7	482.610	6.081
Urban Areas	12	671.524	8.461
Cross-Cutting	15	688.787	8.679
<b>Total</b>	<b>80</b>	<b>2,978.274</b>	<b>37.526</b>

*\* 65 infrastructure projects and 15 knowledge/institutional capacity building projects*

# Immediate Actions Needed for the Implementation of BDP 2100

- Approval of “Support to the Implementation of BDP 2100” Project taken for the capacity building of the relevant professionals and institutionalization of BDP 2100 principles essential for the effective and successful implementation of the plan;
- Establishment of ‘Delta Wing’ in GED for overall support, guidance and coordination for the implementation of the BDP 2100, establishment of ‘Delta Fund’ and relevant essential institutional arrangements;
- Establishment of ‘Delta Knowledge Hub’ for hosting, updating and sharing of data/information collected for and relevant to BDP 2100;
- Presenting BDP 2100 to the Development Partners and also negotiations with them in order to secure investments for the projects enlisted in the IP of BDP 2100;
- From now onwards all the local and foreign investments and technical assistance in the field of Water resources management, tackling climate change impacts, conservation of environment and ecosystem and agriculture should be in line with the principles of BDP 2100;
- Presenting BDP 2100 to the Private Sector entities and also negotiations with them in order to secure investments for the projects enlisted in the IP of BDP 2100



**Thank You All**