

Sixty Years of Water Resources Management & Development in Bangladesh

Bangladesh Water Development Board (BWDB)



“A true and sustainable development is not possible without the sustainable management of water resources”

Father of the nation Bangabandhu Sheikh Mujibur Rahman, 1970.



**Head Office of (BWDB)
'Pani Bhaban'**



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Introduction

Water resource is a vital and important sector among all the sectors in Bangladesh which holds the key in shaping the life, livelihood and future sustainable development. The Ministry of Water Resources (MoWR) is the apex body of the Government of the People's Republic of Bangladesh for development and management of the whole water resources of the country. Bangladesh Water Development Board (BWDB), a statutory body under Ministry of Water Resources to act as the major stakeholder in water sector for overall development and management of water resources of the country. The activities of the organization is pro-poor in the form of increasing food production, food security, creation of enabling environment for agricultural related rural economic activities for poor people especially for the destitute women, better communication, land accretion, protection against river erosion, defense against cyclone, flood and drought forecasting and warning, hydrological survey and investigation etc.

History

Bangladesh Water Development Board (BWDB) is an autonomous body established as a statutory body under the Bangladesh Water Development Board Act, 2000, governed by a board comprising of 13 members with the leadership of the Honorable Minister, Ministry of Water Resources. The organization started its journey through the formation of EPWAPDA (East Pakistan Water and Power Development Authority) in the wake of the devastating floods in the year 1954 and 1955 AD. But as the father of the nation, Bangabandhu Sheikh Mujibur Rahman envisaged that a true and sustainable development is not possible without the sustainable management of water resources; he established BWDB in 1972 as an autonomous body for development and management of water resources in the country, to eradicate poverty and hunger.

Vision

Develop a state of knowledge and capacity for sustainable water resources management with economic efficiency, gender equity, social justice and environmental awareness through broad public participation.

Mission

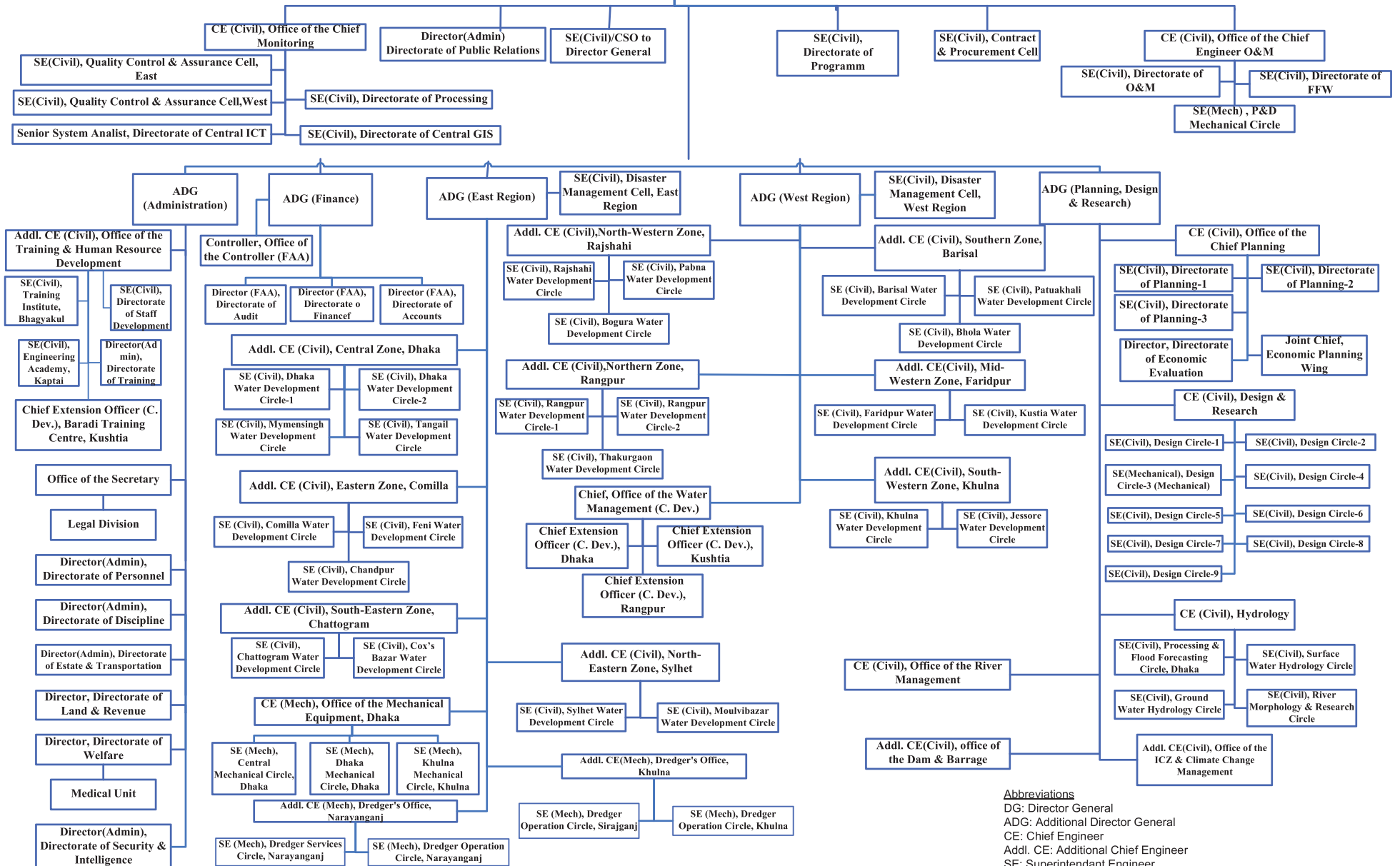
Integrated and sustainable development and management of water resources by applying integrated water resources management principles, promoting participatory process and good governance for ensuring food security, enriching socio-economic conditions, saving lives and properties by managing water related disasters, tackling climate change issues and establishing an organization of excellence in the water sector.



Organogram of BWDB

Board of Directors

Director General (DG)



Abbreviations

DG: Director General
 ADG: Additional Director General
 CE: Chief Engineer
 Addl. CE: Additional Chief Engineer
 SE: Superintendant Engineer

Head: Director General (Government-appointed, Grade-1 designation)

Setup: Approved Setup - 12638 people (Officers - 2383, Employees - 10255) Gazetted Setup - 10182 (Officers - 2361, Employees - 7821) currently employed - 7331 (Officer 1915, Employee - 5416).
Water Management Sectoral Approach as per mandate of BWDB Act 2000

Structural

- Flood management, Drainage and Irrigation projects
- Construction of dams, barrages, reservoirs, embankments (coastal, submergible, flood control), regulators, embankment
- Dredging/de-siltation to increase conveyance
- Riverbank Protection
- Accelerated Land Reclamation
- Salinity protection
- Surface water retention (including rain water)

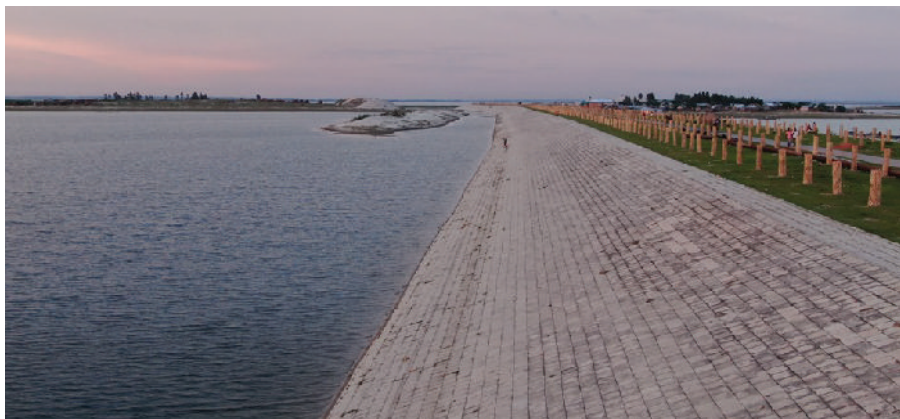
Non-Structural

- Flood and drought forecasting and warning
- Erosion Prediction (planned)
- Hydrological data collection and survey
- Capacity development





Teesta Barrage & Canal Head Regulator

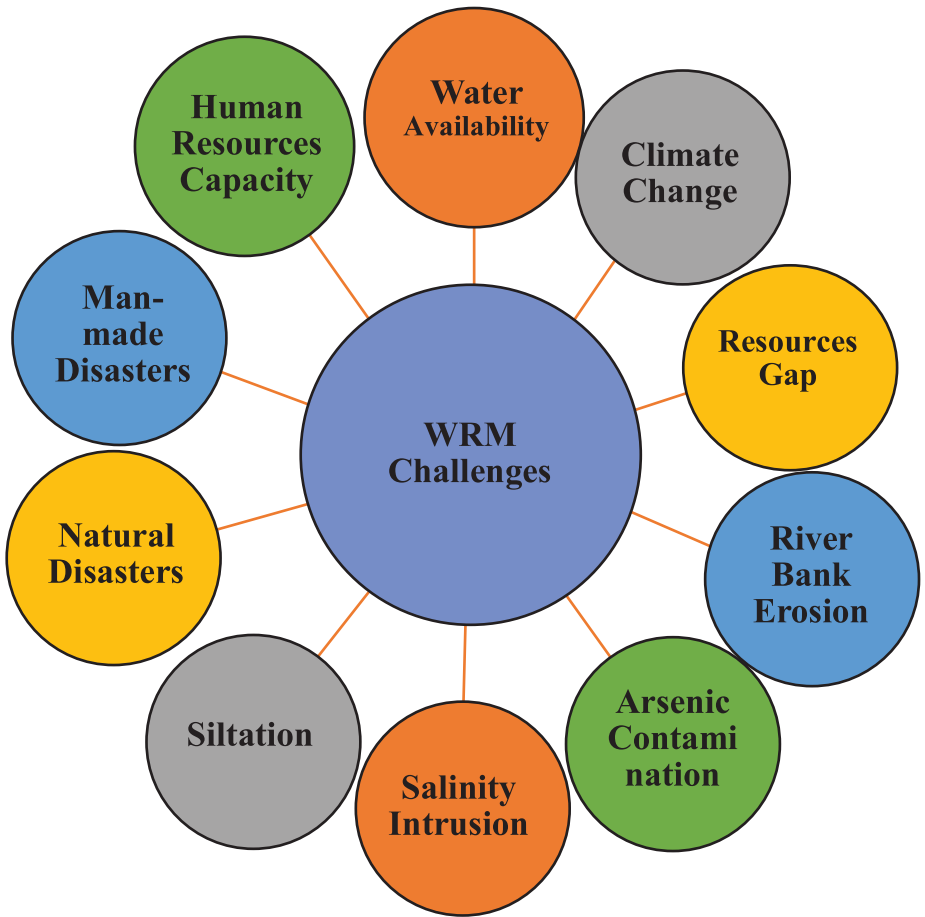


Doha, Nawabgonj



Bera, Pabna

Water Resources Management Challenges



Water Resources Management Strategy

Protection and
Restoration of
Rivers and
Wetlands

Managing Dry
Season Water
Scarcity

Basin-wide Water
Resources
Development

Adaptation to
Climate Change

Land
Reclamation from
Rivers, Estuaries
and Sea

Participatory
Water
Management

O&M of
Completed
Projects

Command Area
Development for
Food Production

Coastal Zone
Management

Managing Water
Related Disasters
(floods, droughts,
riverbank erosion
etc.)

Improving
Irrigation Water
Use Efficiency

Sediment
Management in
Tidal Rivers

Institution and
Knowledge
Development

Integrated Water
Resources
Management

National Water
Resources
Database
(NWRD)

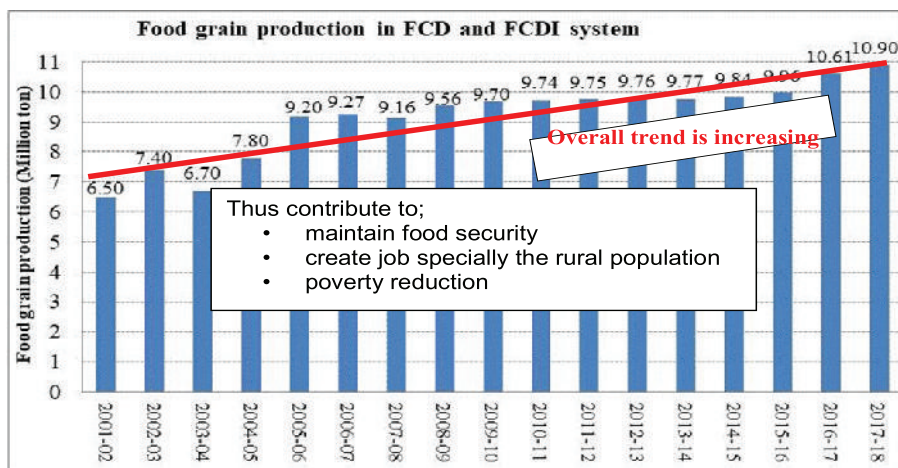
Public Private
Partnership



Achievement since 1959 up to June 2019

Project Implemented	-	865
Reservior Constructed	-	2 Nos. (Kaptai Lake: Capacity: 647.70 crore cubic metre water)
Barrage Constructed	-	4 Nos. (Teesta, Monu, Buri Teesta and Tangon)
Rubber Dam Constructed	-	5 Nos. (Pekua, Mohamaya, Palakata, Kohua and Baggujara)
River Bank Protection	-	1229 km.
Spur Constructed	-	221 Nos.
Flood Wall Constructed	-	10 km.
Embankment Constructed	-	16261 km [Coastal Embankment (139 Nos. Polders)- 5757 km, Submersible Embankment (99 Nos. Haor/Haor Sub Project)- 2594 km., Other Flood Control Embankment: 7910 km)
Irrigation Canal Dyke Constructed	-	3612 km.
Irrigation Canal Excavated	-	5355 km.
Drainage Canal Excavated	-	4500 Km.
Water Control Structure	-	15355 Nos.
Pump House Built	-	23 Nos.
Closure Constructed	-	1401 Nos.
Bridge/Culvert	-	5705 Nos.

Achievement of Food grain production from Flood Control, Drainage and Irrigation (FCDI) system of the BWDB



Technologies of BWDB's Infrastructural Development

River Bank Protection	People living along the bank of river are being benefitted from the implementation of riverbank protective works. Government, private and historic structures, including crop lands are being protected from river erosion creating safe and sustainable environment for life, livelihood and investment.
River Dredging/Re-excavation	Successful implementation revives rivers and wetlands, increases dry season water availability, protect river based ecosystem, improve socio-economic condition, reclaim land from the rivers, ensure year-round navigation, reduce water related disasters, conserve water.
Embankment Construction	Due to the construction of the embankment, a large area along the river with croplands has been made flood free. The country has achieved self-sufficiency in food because of its ability to prevent the damage of crops due to floods.
Hydraulic Structure Construction	The hydraulic structures are playing an important role in irrigation and drainage system.
Irrigation Canal Excavation	Extension of irrigation facilities is playing a contributory part in making the country self-sufficient in food.
Drainage Canal Re-excavation	Playing a significant role in preventing waterlogging and flood water drainage.
Pump House Construction	To control floods, drainage and irrigation facilities, it is playing a role in eliminating waterlogging and achieving self-sufficiency in the country's food. Due to expansion of areas covered by irrigation, flood control and drainage facilities, most of the crop area has been converted from 1 crop land into 3 crop land.
Rubber Construction	Dam Irrigation has been expanded as a result of conserving water through rubber dams for irrigation.

Technologies of BWDB's Infrastructural Development

- ❖ Around 1020 sq km land has been reclaimed from the river by constructing Cross-dam-1 in 1957, Cross-dam-2 in 1964 at the coastal confluence of greater Noakhali district and Closure-dam in 1985 in Feni district.
- ❖ In Sirajganj district, from 2011 to 2014, 16 sq km of land near the city of Sirajganj, has been reclaimed from the Jamuna River by constructing 4 cross-bars from the dredged material of capital dredging of Jamuna. Bangladesh Economic Zone Authority (BEZA) is going to set an industrial park.
- ❖ 1.21 km of char emerges because of the construction of the Musapur closure and regulator at the confluence of small Feni River in Noakhali district at the mouth of the small Feni River in 2015-16 which helped to increase the area of the country.
- ❖ To prevent saltwater intrusion at coastal zone, to remove the encroachment at the char and to reclaim the land, 4 phases of Char Development and Settlement Project (CDSP) has been implemented from 1994-2018 and around 1.87 lakh ha area is benefitted because of the protection from cyclone and flood, drainage improvement and extension of irrigation facilities. Under the project, a permanent settlement of 17,972 ha land has been given to 34,162 landless families. Due to the infra-structural development under the project, about 2,70,000 people living in the area are enjoying water and sanitary facilities along with institutional facilities.
- ❖ In the southern part of the country (Jessore, Satkhira, Khulna, Bagerhat, Pirojpur, Barguna, Barisal, Patuakhali, Bhola, Feni, Lakshpur, Noakhali, Chittagong and Cox's Bazar), 12.16 lakh ha land is protected along with prevention of saltwater intrusion by the construction of 139 coastal polders. About 1.5 lakh ha area is currently cultivated within the polder areas.
- ❖ By implementing 99 Haor/Haor Sub-projects at the haor areas of the six districts (Sunamganj, Sylhet, Habiganj, Moulvibazar, Netrokona and Kishoreganj) in north-eastern part of the country, crops in 5.77 hectares crop lands are being protected from the pre-monsoonal flash flood.

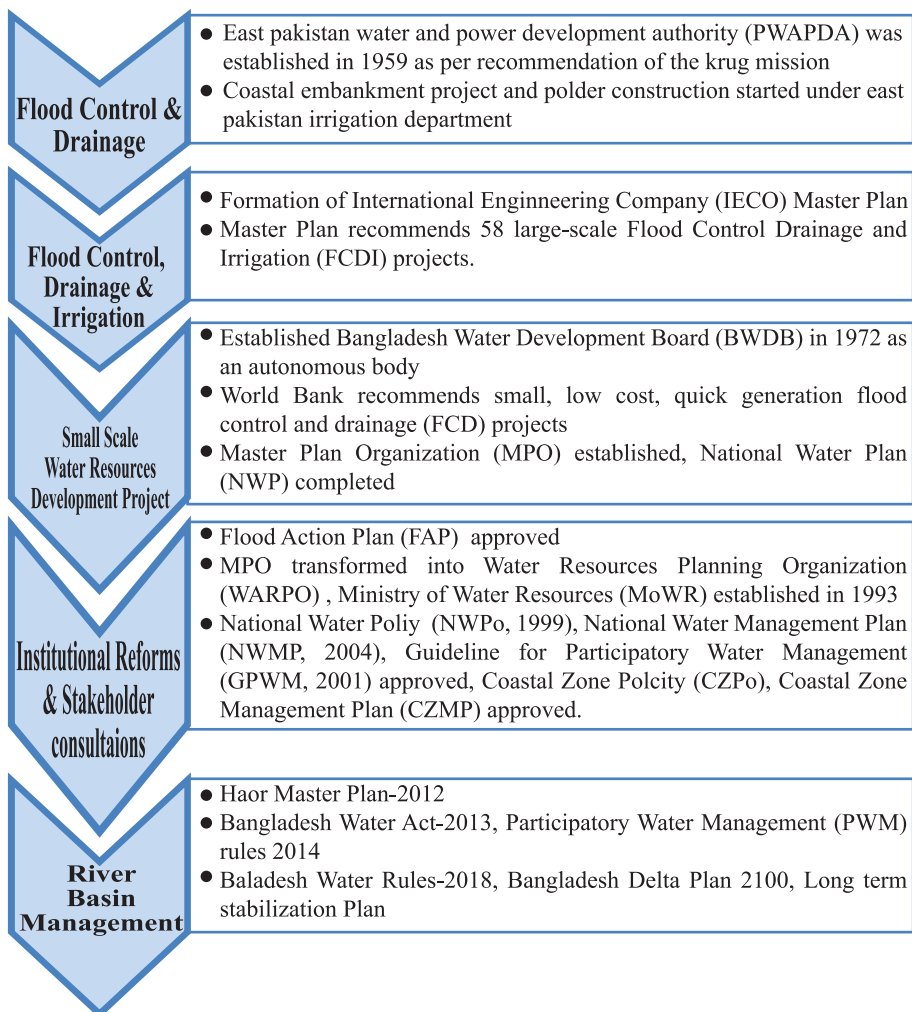
- ❖ In the southwestern part of the country (Kushtia, Chuadanga, Jhenaidah and Magura), since the implementation of the Gan-ga-Kopotakha (GK) irrigation project in 2 phases, irrigation aided environment has been created by making 1.97 lakh hectares area flood free. As a result, irrigation facilities expanded in 0.95 lakh hectares of area. BWDB currently provides irrigation for about 34% of its area. Irrigation works were carried out by lifting groundwater in the remaining 66% of the area, as a result of BWDB's infrastructural development activities by ensuring the satisfactory water level at the under-ground.
- ❖ In the context of drought and irrigation water shortage in wide-spread areas of North Bengal, by implementing 1st phase from 1979 to 1998, 2nd phase from 2006 to 2018 of Teesta Barrage project, irrigation aided environment is created in 1.34 lakh hectares areas of Rangpur, Dinajpur, Lalmonirhat and Nilphamari districts. As a result, the surface water irrigation facilities expanded in 0.99 lakh hectares area.
- ❖ In the greater south-western zone, due to the re-excavation of small river-khal network and infrastructural development at basins, flood control and irrigation improve in 1.20 lakh hectares areas of Jhikorgacha, Chou-gacha, Monirampur and Kes-habpur upazilas of Jashore district, Tala and Kolorowa upazilas of Satkhira district and Pikegacha upazila of Khulna district.
- ❖ Road built by other organizations on the BWDB embankment - 5506 km
- ❖ Road build by BWDB- 1082 km
- ❖ Afforestation has been done at 4337.85 km adjacent areas of embankment by BWDB and NGO/other agencies.
- ❖ 7307 hectares borrow pit adjacent to the embankments, and 3722 hectares of reservoir are being given for lease for fish culture.
- ❖ Town protection from river bank erosion- 31 Nos. (Faridpur, Bhola, Chandpur, Narshingdi, Rajbari, Naogaon, Sirajganj, Munshiganj, Manikganj, Mymensingh, Jamalpur, Brahman-baria, Kushtia, Gaibandha, Rajshahi, Sunamganj, Sylhet, Dhaka, Khagrachori, Rangamati, Patuakhali, Khulna,

Dinajpur, Habiganj, Kurigram, Chattogram, Netrokona, Thakurgaon, Panchagar, Madaripur and Jhalokathi)

- ❖ River bank protection in border area- 50 km
- ❖ Protection of the new Chitmahal of Bangladesh from the river erosion- 3 Nos (Former 119 No Banskata Chitmahal under Patgram upazila of Lalmonirhat district, Former Nazirganj and Doikhata Chitmahal under Boda upazila of Panchagarh district).
- ❖ Various important structures protected from river bank erosion: Alikadam cantonment in Bandarban district, BNS Titumir Naval Base in Khulna, Rajshahi Cadet College, Kuthibari of World Poet Rabindranath Tagore in Kushtia, Coastguard station at Anwara upzilla in Chatogram district, Louhojong upazilla complex in Munshiganj.
- ❖ From 2008-09 financial year to 2016-17 financial year, implementation of protective works type projects with 6,089 crore taka expenditures at 321 km river length, 2.70 lakh hectares of agricultural land, 1.04 lakh hectares of other land are protected from river bank erosion; where movable and immovable properties financial value is 35,584 crore taka.
- ❖ From 2013-14 financial year, with the modernization of flood forecasting and warning systems, it is possible to provide 5-day advance flood forecasts and in special cases 10 day advance flood forecasts at 54 important points of important rivers of the country. Due to advance forecasts and warnings, the amount of flood damage has been reduced in recent years due to the joint preparation. At present, river water level and flood forecasts related information can be known by dialing 1090 from any mobile operator from any part of the country.
- ❖ The area of Bangladesh is 147 lakh hectares. The remaining area of Bangladesh, excluding the area of forests and rivers, is about 118 lakh hectares. The city, hat-bazaars, villages, agricultural lands, etc. are spread out among these 118 lakh hectares. Since the inception, BWDB made approximately 64.61 lakh hectares area flood free and created irrigation aided environment there by implementing 865 projects in several flood prone areas. Surface water irrigation has been extended in

16.07 lakh hectares flood-free areas. As a result, every year about 110 lakh metric tons of additional food crop is being produced in the project. BWDB has been playing a major role in achieving self-sufficiency in Bangladesh food as this extra food crop is added to national production.

Evolution in the development of WRM Policy and Institutional

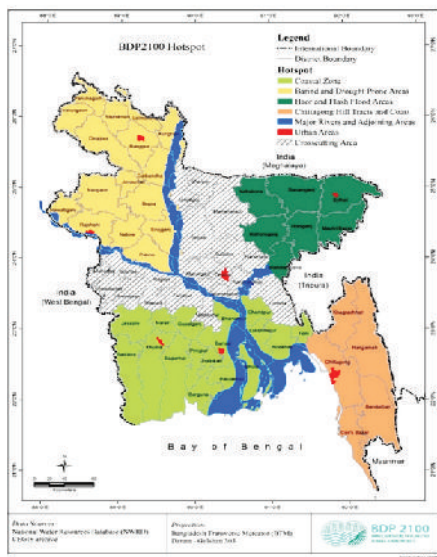


Outlook and Way Forward

- Restoration and management of Rivers
- Basin-wide Management of Water Resources
- Restoration of Ecosystem by
 - ✓ Flood Management
 - ✓ Adaptation to Climate Change
 - ✓ Sustainable Development
 - ✓ Restoration of Wetlands
 - ✓ Integrated Coastal Zone Management
 - ✓ Improving Water Use Efficiency
 - ✓ Participatory Approach
 - ✓ Integrated Water Resources Management
 - ✓ Building with Nature
 - ✓ Development of communication and navigation
 - ✓ Ground Water Recharge

In view of the long-term challenges presented by climate change and natural hazards, the Government has formulated a long-term Bangladesh Delta Plan 2100(BDP2100). BDP2100, moving Bangladesh in the 21st Century, a 100-year master plan to Improve Agriculture, Industrial, economy, fisheries, afforestation, public health, water management and environment (integrating SDGs) addressing the issues stated in the strategies and way forward.

Six (6) Hotspot areas have been identified as planning units where similar hydrological and climate-change vulnerability characteristics and problems converge. The investment plan prepared under BDP 2100 consists of a total of 80 projects of which 65 are physical and 15 are institutional and knowledge development projects. Its total investment outlay is BDT 2,978 billion (\$ 37 billion) to be implemented by 2030. This huge investment requires both public and private sector contribution.



1. Coastal Zone -23
2. Barind and Drought Prone Areas -9
3. Haor and Flash Flood Areas-6
4. Chattogram Hill Tracts-8
5. River Systems and Estuaries-7
6. Urban Areas-12
7. Institutional and knowledge development project-15

The remaining area is identified as Cross-cutting areas (15) 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 issues.

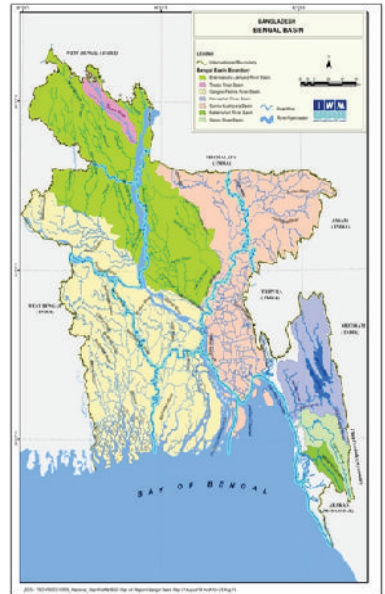
Out of the selected projects, almost 80% projects are related to water resources development and management. BWDB is preparing projects in line with BDP2100.

Currently two projects are being implemented which are the first under Delta Plan

- Re-excavation of small Rivers, Khals and water bodies in 64 districts (Phase 1)” Under this program, 5,308 number of khals has been identified.
- Dredging/Re-excavation of Bangali-Korotoa-Fuljor-Hurasagor River System & Bank Protection” is being implemented under which 35.0 km river bank protection work and 217.00 km river dredging will be done.

Basin-wide Management of Rivers “Leaving no one and no economic opportunity behind” in line with BDP2100

- Brahmaputra – Jamuna River basin
- Teesta River Basin
- Ganges-Padma River Basin
- Upper Meghna Basin (including Surma-Kushiyara river basin)
- Lower Meghna River Basin
- Karnafuli River Basin
- Sangu-Matamuhuri River Basin
- Plan/projects following common principle of least possible intervention in natural flow of water (canal/regulator etc)
- Research & study based Project/s–Morphology, Bathymetric, Social, Environment, Ecology, Biodiversity etc.



Coping with Water Resources Management and Development in BWDB

Protect and Restore Ecosystem, Rivers and Wetlands

Implementation of Bangladesh Delta Plan (BDP) 2100

Achievement of Sustainable Developments Goals (SDGs) by 2030

Mainstreaming Climate Change

Basin-wide Integrated Water Resources Management

Integrating Economy, Society and Environment in Project Planning

Increase application of Advanced Technologies and Tools in WRM

Application of Decision Support System (Tools and Techniques)

Opportunities for Land reclamation from Rivers, Estuaries and Sea



Sirajgonj Cross Bar #4

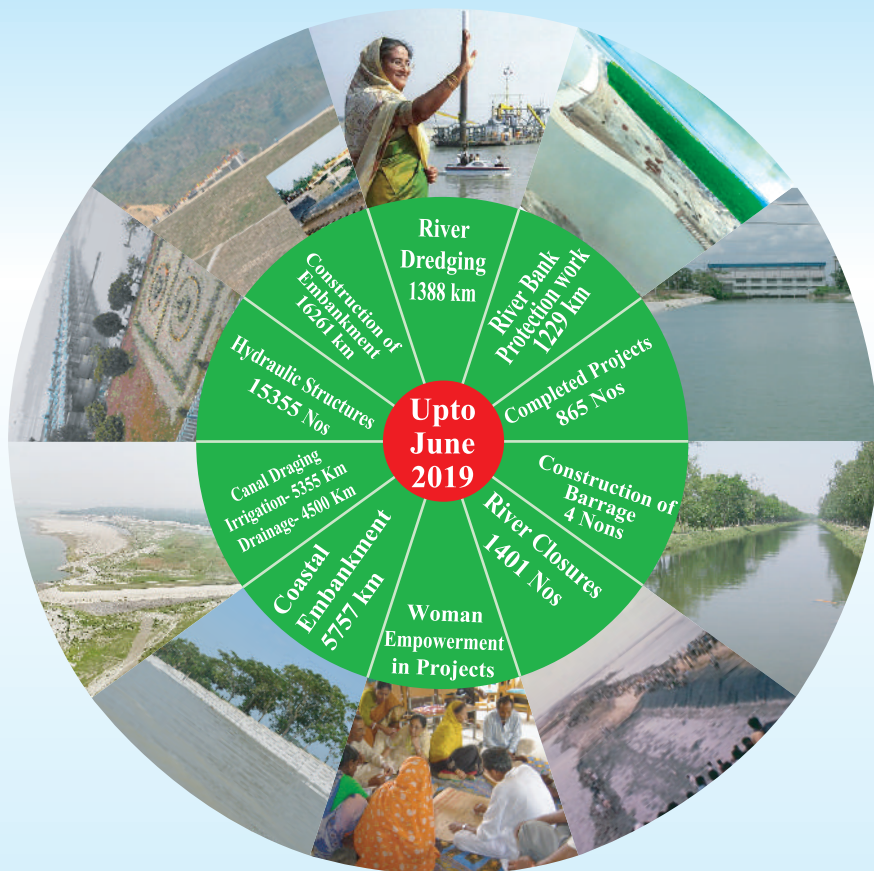


Meghna Ghat



Shialjani Khal, Netrokone

BWDB Achievement At a Glance



Committed to National Progress



বাংলাদেশ পানি উন্নয়ন বোর্ড

BANGLADESH WATER DEVELOPMENT BOARD

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