

Bangladesh

UN-Water Country Brief

| | | year |
|---|---|------|
| Total population (UN Population Division) | 152.41 million inhabitants | 2012 |
| Total area | 144 000 km ² | |
| Population density | 1 058 inhabitants/km ² | 2012 |
| Human Development Index (UNDP) (between 0 and 1; 1 is highest) | 0.515 | |
| Country rank (total 186 countries; 1 is highest) | 146 | 2012 |
| Gender Inequality Index (0 is equality between women and men; 1 is least equality) | 0.518 | |
| Water, sanitation and hygiene-related deaths % of total deaths (WHO) | 8.5 % | 2004 |
| Long-term average annual precipitation (CRU CL 2.0) | 2 666 mm/year | |
| Long-term average actual renewable water resources (FAO AQUASTAT) | 1 227 million m ³ /year | |
| Actual annual renewable water resources per capita (FAO AQUASTAT) | 8 051 m ³ /inhabitant | 2012 |
| % of total actual renewable freshwater resources withdrawn (MDG Water Indicator) (FAO AQUASTAT) | 2.9 % | 2008 |
| Groundwater withdrawal as % of total freshwater withdrawal (FAO AQUASTAT) | 79 % | |
| Total area equipped for irrigation (FAO AQUASTAT) | 5 050 000 ha | 2008 |
| % of the cultivated area equipped for irrigation (FAO FAOSTAT and FAO AQUASTAT) | 60 % | 2008 |
| % of irrigation potential equipped for irrigation (FAO AQUASTAT) | 73 % | 2008 |
| Ramsar sites (Ramsar) | 2 sites – number 611 200 hectares – total area | 2013 |

Water withdrawals by sector
(total 35 870 million m³ in 2009)



The Money Stream

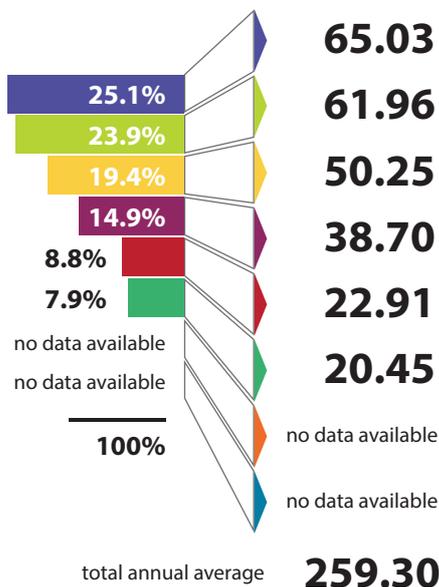
During 2007 to 2011, the government invested US\$ 259.30 million (in constant 2010 US\$) on average per year on water-related infrastructure and programmes. During the same period, official development assistance (ODA) gross disbursements amounted to US\$ 177.69 million on average per year.

Throughout this period, the government's total water-related investments accounted for an estimated 5.1 percent of the government's total expenditures. Over half of government expenditure was channeled into water resources protection (25.1 percent) and disaster prevention and preparedness and flood prevention and control (23.9 percent). The disasters category received over half (52.3 percent) of the ODA disbursements during this period.

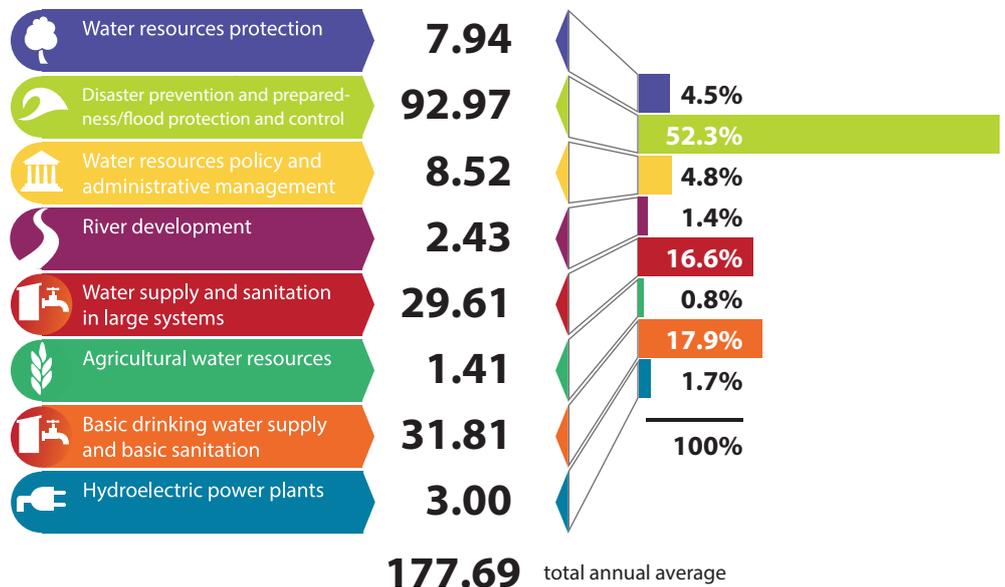
Estimated % of water-related investment to total government expenditure 2007-2011



Annual average government expenditure during the period 2007 - 2011 (million constant 2010 US\$)



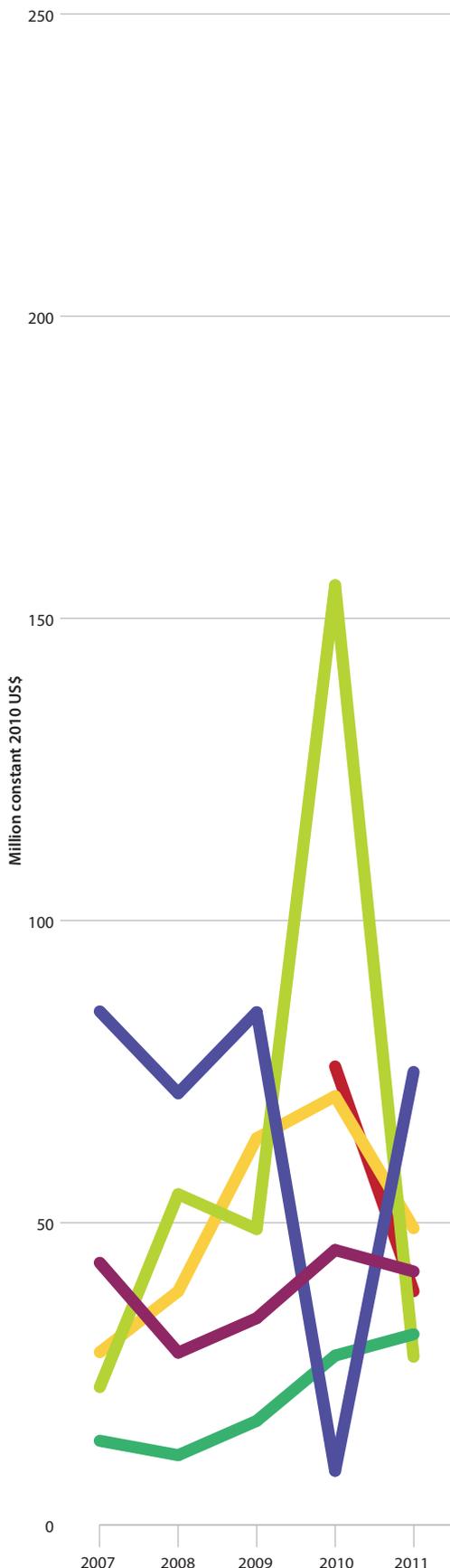
Annual average official development assistance gross disbursements during the period 2007 - 2011 (million constant 2010 US\$)



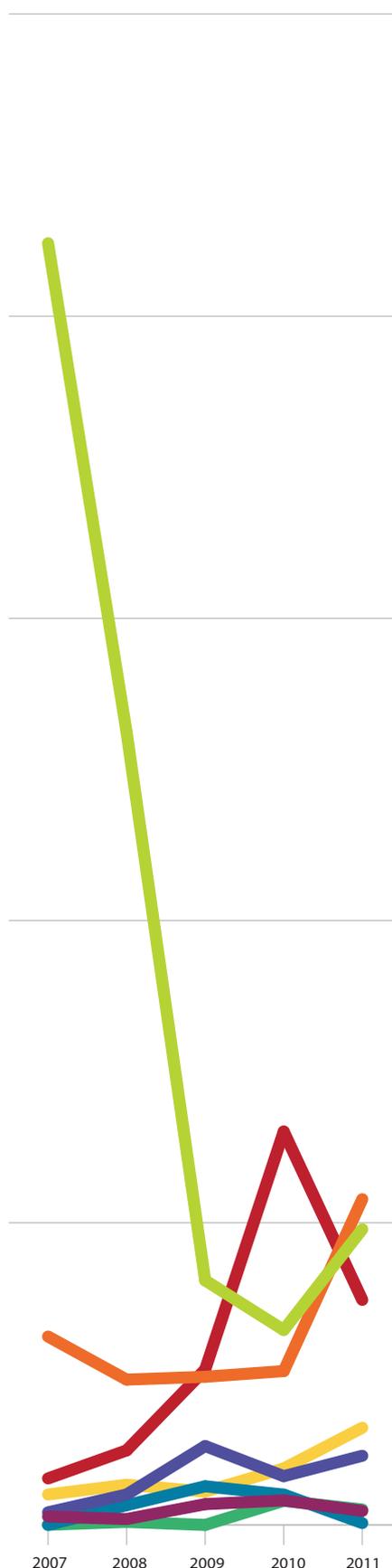
- Water resources protection
- Disaster prevention and preparedness/flood protection and control
- Water resources policy and administrative management
- River development
- Water supply and sanitation in large systems
- Agricultural water resources
- Basic drinking water supply and basic sanitation
- Hydroelectric power plants

Status and Trends

Government expenditure during the period 2007 – 2011
(million constant 2010 US\$)



Official development assistance gross disbursements during the period 2007 - 2011
(million constant 2010 US\$)



Water-related government expenditures during the period 2007 to 2011:

- Water-related policy matters are addressed through the Country Investment Plan (CIP), June 2011. The Ministry of Water Resources, Bangladesh Water Development Board, Department of Public Health Engineering, Bangladesh Agriculture Development Corporation, and Burind Multi-purpose Development Authority are the main recipients of these investments.
- Disaster prevention and preparedness and flood prevention/control experienced an important peak in expenditure in 2010, following a string of devastating water-related disasters.
- Investment data not available for the categories: basic drinking water supply and basic sanitation and hydroelectric power plants.

Water-related official development assistance during the period 2007 to 2011:

- In 2007, some 80 percent of that year's ODA was channeled into flood prevention/control.
- In 2011, basic drinking water supply and basic sanitation received the highest percentage of ODA disbursements.

Actual expenditure refers to the amount spent by the government during a given year. The OECD Creditor Reporting System categories were chosen for the collection of these water-related investments and the data was obtained by the WCB project through in-country research in cooperation with the government (during 2012), while ODA data stems from the OECD Creditor Reporting System (collected February 2013).



Water supply and sanitation in large systems: Water desalination plants; intakes, storage, treatment, pumping stations, conveyance and distribution systems; sewerage; domestic and industrial wastewater treatment plants.

Basic drinking water supply and basic sanitation: Water supply and sanitation through low-cost technologies such as hand-pumps, spring catchment, gravity-fed systems, rainwater collection, storage tanks, small distribution systems; latrines, small-bore sewers, on-site disposal (septic tanks). No data available on government expenditure in basic drinking water supply and basic sanitation.

Water resources policy and administrative management: Water sector policy, planning and programmes; water legislation and management; institution capacity building and advice; water supply assessments and studies; groundwater, water quality and watershed studies; hydrogeology. Excluding agricultural water resources.

Disaster prevention and preparedness/Flood protection and control: Disaster risk reduction activities such as developing knowledge, natural risks cartography, legal norms for construction; early warning systems; emergency contingency stocks and contingency planning including preparations for forced displacement. Floods from rivers or the sea; including sea water intrusion control and sea level rise related activities.

Agricultural water resources: Irrigation, reservoirs, hydraulic structures, groundwater exploitation for agricultural use.

Hydroelectric power plants: Including power-generating river barrages. No data available on government expenditure in hydroelectric power plants.

Water resources protection: Inland surface waters (rivers, lakes, etc.); conservation and rehabilitation of groundwater; prevention of water contamination from agrochemicals, industrial effluents.

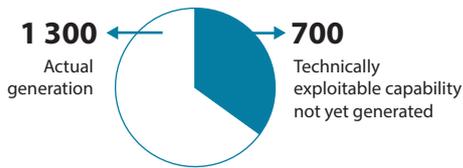
River development: Integrated river basin projects; river flow control; dams and reservoirs. Excluding dams primarily for irrigation and hydropower and activities related to river transport.

Energy for Water, Water for Energy

Impact for development

With an installed capacity of 230 MW, Bangladesh generated 1300 GWh in 2008, which represents 65 percent of the nation's hydropower technically exploitable capability. The plant, which generates all of Bangladesh's hydro electricity, has the potential of extending its capacity by about 43 percent, by utilizing spill water.

Hydropower capacity and generation, 2008, in GWh/year (World Energy Council)



Environment and Ecosystem Health

Impact for development

Due to industrial effluents in rivers, the ecosystem, especially aquatic resources, is under severe threat. Land zoning, protected industrial areas and ecosystem monitoring mechanisms need to be updated and implemented for preserving the ecosystem and water quality at standard level. Sedimentation and river erosion is also a main concern in Bangladesh, as it creates drainage congestion, which in turn severely affects livelihoods such as, drinking water.

Water quality index 2010 (UNEP-GEMS/Water)



A score of 100 indicates that water quality targets are met for all five parameters (DO, pH, conductivity, total nitrogen, and total phosphorus).

The water supply and sanitation gaps are significant. In addition, surface water bacteriological contamination and arsenic in groundwater in many areas pose significant human health issues. Use of an improved drinking water source in urban areas has dropped by 2 percent since 1996, and 15 percent of the urban population still lacks an improved drinking water source. In contrast, there has been some progress in rural areas with 80 percent of the population using an improved drinking water source in 2010, but 20 percent of the population lack service. For improved sanitation facilities, the trends have been similar: urban areas experienced a 1 percent decline with 57 percent who had improved sanitation facilities in 2010, while rural areas with improved sanitation facilities grew from 34 percent to 55 percent from 1990 to 2010.

Drinking Water Supply and Sanitation

Impact for development

In Bangladesh, WHO estimated 66 400 deaths of children under five were caused by diarrhoeal disease in the year 2004. Three select sanitation and water projects in Bangladesh have demonstrated a 12-30 percent economic rate of return, according to Sanitation and Water for All. According to the Water and Sanitation Program, the estimated total economic impacts of inadequate sanitation in Bangladesh amount to a loss of BDT 295.5 billion (US\$4.2 billion*) each year. This was equivalent to 6.3 percent of gross national product in 2007. * US\$1 = BDT 70.

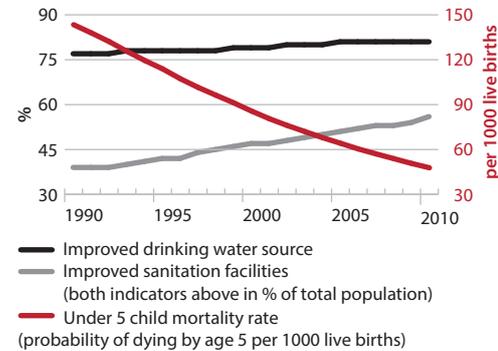
Accession of the International Covenant on Economic, Social and Cultural Rights (ICESCR):

5 October 1998

(The right to water is implicit within the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of health outlined in the ICESCR.)

Access to drinking water and sanitation & under-5 child mortality

(UN Inter-agency Group for Child Mortality Estimation (IGME) and WHO/UNICEF Joint Monitoring Programme)

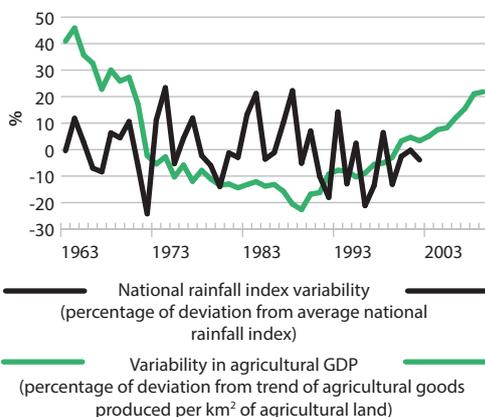


Irrigated Agriculture

Impact for development

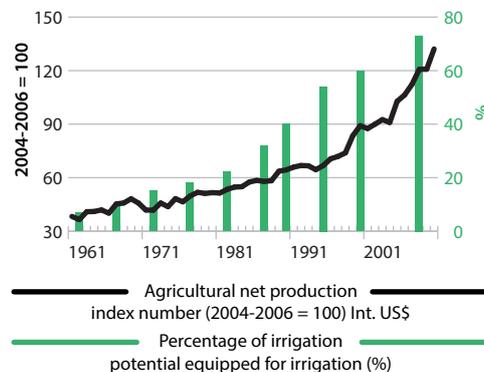
Agriculture is a key sector of the Bangladesh economy, contributing some 19 percent to gross domestic product and employing around 48 percent of the labour force. In 2012, women accounted for 52 percent of the economically active population in agriculture. During the period 2007 to 2011, agricultural water resources received the lowest investment priority both in government expenditure and in ODA disbursements.

Rainfall variability and agricultural GDP (FAO AQUASTAT, World Bank)



Agriculture net production index and irrigation potential equipped for irrigation

(FAO AQUASTAT and World Bank)



Though there has been a significant increase in irrigated agriculture over the last decade that would have contributed to the positive increase in the agriculture net production index, most minor and major irrigation

systems have shown poor field performances owing to a lack of technical know-how, as well as poor on-farm water management practices. The government has recognized the importance of introducing appropriate water management techniques and technologies at farm level as key to ensuring food security, employment generation and eliminating poverty through intensification and diversification of agricultural production. With this view, the Ministry of Agriculture has undertaken some development projects for improving the efficiency and overall performance of irrigation systems with better on-farm water management practices.

The economic viability of new irrigation schemes is highly dependent on the ability to achieve agronomic practice productivity gains in addition to gains directly related to a move from dryland cropping to irrigated cropping. However, due to insufficient data it, has not been possible to compute a cost-benefit analysis on irrigated agriculture for Bangladesh.

Water - related Disasters*

Impact for development

Bangladesh is highly vulnerable to water-related disasters but over the years has been successful in reducing the impact of disasters. On average, from 1985 to 2012, annual economic damage was equivalent to 4.9 percent of current GDP of the country. For each water-related disaster event this translates into an average of 1 707 deaths, 1.14 million people affected and 1.11 billion US dollar worth of damage to the economy.

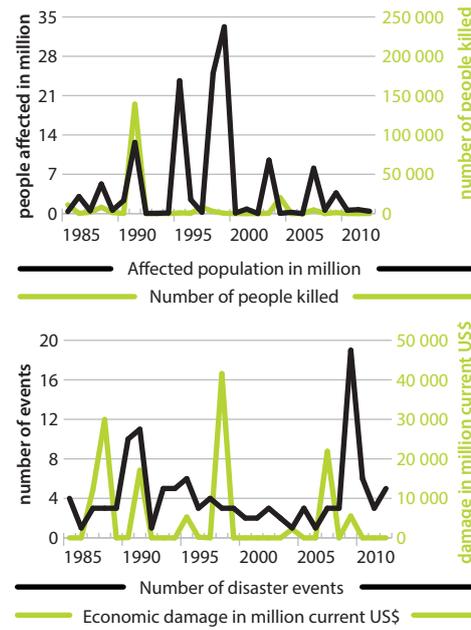
Although floods dominate the number of disaster occurrences and damage (accounting for 98 percent of water-related disasters), a few individual cyclones have caused maximum damage in the disaster history of the country.

With more than 1 000 inhabitants/km², Bangladesh is amongst the countries with the highest population density in the world. Moreover, as a result of the low-lying topography, about 26 500 km² or 18 percent of the country is inundated during the monsoon season each year. During severe floods, the affected area may exceed 53 000 km² or 37 percent of the country and in extreme events, such as in the 1998 flood, about 66 percent of the country is inundated.

Bangladesh is now widely recognized as one of the countries that is most vulnerable to climate change. Increased variability of temperatures and rainfall and

Water-related disasters impacts

(DMIN Portal)



increased occurrence of natural hazards are expected to affect the availability of both surface water and groundwater.

*'Water-related disasters' within the scope of this WCB study do not include droughts.

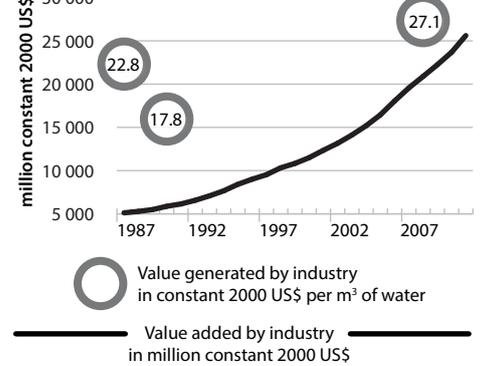
Water Intensity in Industry

Impact for development

During 1987 to 1990, the value generated by industry per m³ of water decreased by 8 percent annually, and during 1990 to 2008 this value increased by 2 percent annually.

Value generated by industry per m³ of water

(FAO AQUASTAT, World Bank)



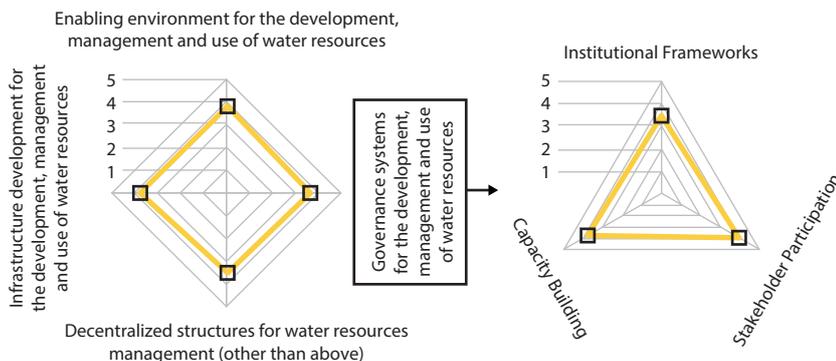
Some industries in Bangladesh, such as the food and processing industry, utilize large volumes of water and often also discharge considerable quantities of wastewater, which is a critical water management issue for the country. The government has established some of the following policies and regulations to promote a cleaner production: zoning regulations for location of new industries in consideration of fresh and safe water availability and effluent discharge possibilities; effluent disposal monitoring by government agencies; standards of effluent disposal into common water courses, and; by law, industrial polluters will pay for the cleanup of the water body polluted.

Tracking Water Governance

Impact for development

There are no policies or acts related to irrigation or water management in the country. In recent years, however, government policies such as the National Agriculture Policy (1999), National Water Policy (1999) and the National Water Management Plan (2001) have to some extent addressed the minor irrigation and water management issues. A wide range of government as well as non-governmental agencies are involved in water management issues in the country. Water resources policy development and administrative management has received some 19 percent of the government expenditures during the period 2007 to 2011.

UN-Water survey on integrated approaches in the development, management and use of water resources governance, 2012 (UN-Water)



1 Under development
2 Developed but implementation not yet started

3 Implementation started
4 Implementation advanced
5 Fully implemented

Is the right to sanitation/drinking-water explicitly recognized in policy or law?

| sanitation | | drinking water | |
|---|---|---|---|
| urban | rural | urban | rural |
| Progressing with some elements in place | Progressing with some elements in place | Already fully recognized in law or policy | Already fully recognized in law or policy |

Can people claim their human right to sanitation or drinking-water in a domestic court?

| sanitation | | drinking water | |
|------------|-------|---------------------|---------------------|
| urban | rural | urban | rural |
| No | No | Yes but little used | Yes but little used |

UN-Water GLAAS (WHO, 2012)

Institutional capacity building needs in Bangladesh include: water resources data collection and processing facilities, research and development for water resources management and water treatment technologies, raising public awareness for proper and wise use along with management of water, and to develop alternative methods for water management.

Rapid Assessment

Overall

Pressures on water

Although Bangladesh has implemented institutional structures for water administration and management, established policies and regulations to promote industries' clean production and improved drinking water and sanitation facilities, the country still faces challenges related to: (i) inadequate supply of water for irrigation and crop production, (ii) shortage of groundwater and surface water (particularly during the dry season), (iii) water-related natural vulnerabilities, (iv) access to improved drinking water and basic sanitation, (v) water supply for industrial development while protecting the ecosystems, (vi) transboundary issues (90 percent of total annual runoff originates from sources outside the country's territory), (vii) water quality and arsenic contamination, (viii) sedimentation and river erosion, (ix) efficiency and effectiveness in water administration and management, and (x) institutional issues.

Investments

While there is not a long historical trend available on water-related investments data in Bangladesh, during the period 2007 to 2011, government investments have been allocated mainly to water resource protection, disaster prevention and preparedness and flood prevention and control water resources policy and administrative management, and river development. Agricultural water resources received the lowest priority in government expenditures and ODA alike. Government budget and expenditure data is not available for certain water-related investment categories, namely basic drinking water supply and basic sanitation as well as hydroelectric power plants.

Assessments

- 
Irrigated agriculture ●●●○○○

The Ministry of Agriculture has undertaken some development projects for improving the efficiency and overall performance of irrigation systems with better on-farm water management practices. Few investment projects have been initiated by the government. Some projects have been financed by ODA.
- 
Drinking water supply and sanitation ●●○○○○

Significant access gap, with 19 percent of the population without improved drinking water source and 44 percent without improved sanitation facilities. In addition, water quality is of significant concern. Although protection of water quality and facilitation of potable water are some of the issues of critical concern in the Country Investment Plan (2011), investment data shows a lag in investments.
- 
Water intensity in industry ●●○○○○

Bangladesh has established a regulatory framework for untreated effluent discharge into water bodies. Despite these, most of the industries are not in conformity as they are not connected to an effluent treatment plant and discharge directly into the rivers.
- 
Water-related disasters ●●●○○○

Bangladesh is highly vulnerable to water-related disasters but has reduced their impact. In recent years, both government expenditures and ODA disbursements focused predominantly on disaster prevention and preparedness and flood prevention and control. Investment is required to ensure a continuous and sustainable access to water resources in view of climate change forecasts.
- 
Water for energy, energy for water ●●●○○○

Bangladesh has around 64 percent of untapped technically exploitable hydropower potential. However, due to the country's flat terrain characteristic, hydropower is not a suitable option and thus not a priority for the country.
- 
Environment and ecosystem health ●○○○○○

Effluent from industry and industrial waste management are representing a significant challenge for the conservation of the environment. Protection, restoration and enhancement of the water environment, wetland and biodiversity conservation, sustainable water treatment technology and desalinization technology represent key policy issues that are currently under discussion.
- 
Tracking governance ●●●○○○

Numerous agencies are involved in water management issues in the country and institutional capacity issues are prevalent. Water policy and administrative management has been prioritized in government expenditures to address this issue.

Data Quality

★★☆☆☆

Limited data is available.

★★☆☆☆

Limited data on drinking water quality is available. No data is available for investments in basic drinking water supply and basic sanitation.

★☆☆☆☆

Data is not readily available.

★★★★☆

Data is available.

★★☆☆☆

No data is available on government investments in hydroelectric power plants and the energy requirements of providing water and treating wastewater.

★★☆☆☆

Data is not readily available.

★★★☆☆

UN-Water questionnaire on Integrated Approaches in the Development, Management and Use of Water Resources is available. Data is not available for certain water-related investment categories.

Legend:

The rapid assessment of the situation above, based on available data, was established in conjunction with in-country experts and officials. It provides an overview of trends according to the following:

- trends are of significant concern
- trends are of concern
- trends are stable or, progressing on certain issues but not on others

- trends show some measure of improvement in all relevant indicators assessed
- trends show significant improvement and there is no concern
- insufficient data

Accurate assessments of progress require relevant, accurate and timely data. The above data quality assessment ranges from:

★☆☆☆☆
very poor



★★★★★
very good

Data Concerns

Data is a vital input to water management and investment in water related infrastructure and projects. The lack of quality and reliability of physical data in a country makes water-related investment decisions inherently more complex and investments more risky for investors.

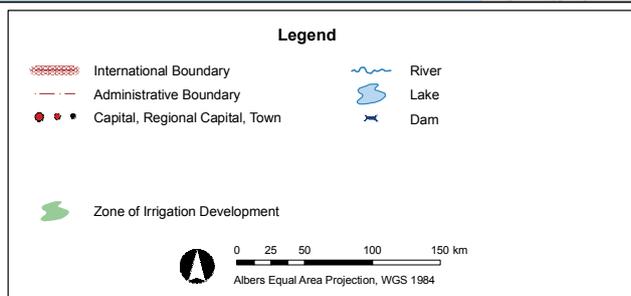
In addition to an assessment of priority data needs from the basis of national decision-makers and international investors (donors and loan capital) it is prudent for countries to establish a forward work programme of data management. Modest investments in coordinated data collection, collation, analysis and dissemination are vital to demonstrate the benefits of water-related investments to governments, donors and ultimately private capital investors.

It is to be noted that it is virtually impossible to find national-level gender-disaggregated data for almost all themes contained in the UN-Water Country Briefs.

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Additional information on the project, data and methodologies can be accessed at:

<http://www.unwater.org/WaterCountryBriefs.html>



Disclaimers

- The most recent and updated information can be found in the original databases cited throughout.
- The rapid assessment methodology presented here is an advocacy tool designed to generate debate and attention to the issues, and is developed in conjunction with national government focal points.
- Data presented herein stems either from existing databases or was collected from national reports, experts and institutions, and in some cases raw data underwent various manipulations to categorize the information for this presentation.
- Due to data limitations, the investment-related estimates may not include water-related investments that are counted under other categories of investments, and some investment categories (ie: disaster prevention and preparedness) may include some investments that are not directly water-related. Moreover, water being a crosscutting issue, investments in other parts of the government (not calculated here) may also benefit water management.
- The words investments / invested / funded for ODA refer to gross disbursements of ODA according to the OECD definitions. The words investments / invested / funded for government refer to government expenditure (2007-2011). In addition, investment data and analysis do not include any other forms of investment (such as, private sector investments).