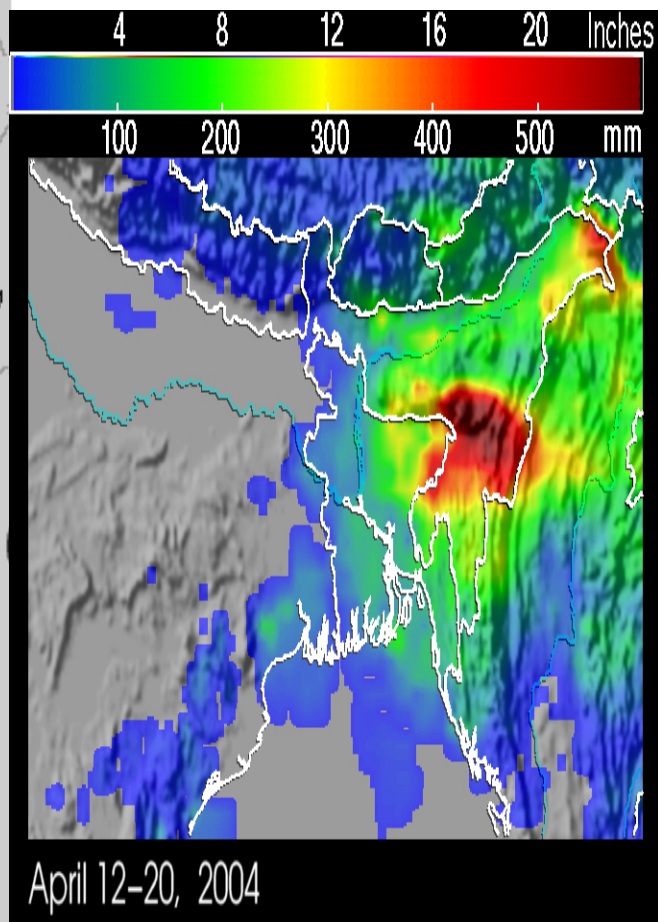


Bangladesh Water Partnership

Country Status Paper on Climate Resilience and Water Security



1. INTRODUCTION

Bangladesh is located in the north-east of the South Asian region and covers a total area of 147,570 sq.km. It has a common border in the west, north and east with India, a short border with Myanmar in the south-east and is bordered by the Bay of Bengal in the south. The landmass of Bangladesh is flat, with some upland in the north-east and the south-east. The great plain lies almost at sea level along the southern part of the country and rises gradually towards north. Land elevation in the plain varies from 1 to 90 meters above sea level. The geo-morphology of the country comprises of a large portion of flood plains (79.1%), some terraces (8.3%) and hilly areas (12%). The total cultivable area is estimated at 9.03 million hectares (ha) which is about 61% of the total land area. Of this amount, 7.56 million ha is suitable for irrigation. The country is the lowest riparian of the three major river systems of the Himalayan range-the Ganges, the Brahmaputra and the Meghna which drain a huge volume of water generated in the catchment areas of these rivers. About 92% of the run –off Bangladesh has to deal with, enters the country from upstream annually outside of the country. It is one of the most densely populated countries of the world with a population 155 million with density of population of more than 1000 per sq.km. More than 700 km. of coast line in the south has a population of over 40 million who are most vulnerable to cyclones, tidal surges and salinity ingress. Between 22 to 30% of the country gets flooded almost annually while about 2/3rds of the country gets inundated during severe floods which are increasing in frequency. On the other hand, the country faces water scarcities during dry seasons (November – May). The progressive reduction of dry season flows through the Trans-boundary rivers is exacerbating the situation further. The groundwater available in most parts of the country is now contaminated with arsenic whose continuous use in the drinking and domestic sector has already given rise to several serious health problems occasionally leading to deaths of people due to prolonged continued ingestion of arsenic contaminated water.

The country has been able to post an annual average GDP growth rate of over 6% since 2008. Head count poverty ratio has declined sharply from close to 60% in the early 1990s to 40% in 2005 and 31.5% in 2012. Agriculture including crop cultivation, livestock and poultry rearing and fishery, despite its relative decline in terms of contribution to GDP, remains the mainstay of the economy of Bangladesh. It provides employment to just under one half of the local labor force, supplies raw materials to some of the major agro-processing industries and earns foreign exchange from its exports. Agriculture however, is at the cross roads as dry season water scarcity, land degradation, salinity ingress and the climate change impacts are threatening its sustainability. A formidable challenge before the country relates to housing, food security, access to clean water and energy and other services for its huge population. Unplanned land use in setting up development projects. Industries etc, grabbing of wetlands and other common resources by unscrupulous persons and unplanned rapid urbanization is a major problem. Bangladesh is losing its agricultural lands rapidly and more would be lost in future due to increased salinity ingress and there is a serious concern relating to food security in future as the total population is expected to hit 300 million by the year 2050.

2. ECONOMIC DEVELOPMENT STRATEGY

In recognition of many development challenges, the Government has embarked on a Perspective Plan covering 2010 to 2021. To implement the aims and objectives under this Plan, the Government is now implementing the Sixth Five Year Plan (SFYP) (FY11 – FY15). The targets of the SFYP are many and the salient ones can be briefly described as follows:

- Attaining average real GDP growth rate of 7.3% per year
- Reduction in the head-count poverty ratio by about 10% points
- Achieving 100% net enrollment rate for primary education
- Under 5 mortality rate to be reduced to 50 per 1000 live birth.
- Reducing of total fertility rate to 2.2
- Safe drinking water to be made available to 100% of urban and 96.5% of rural population.
- Proportion of population with access to sanitary latrines to be raised to 100% in urban and 90% in rural areas.
- Generation of electricity to be increased to 15,457 MW by FY 2015 and coverage increased to 68%

- Improve railways and water ways as energy efficient multi-modal transport system to reduce carbon emission
- Improving Gender equality and Empowerment
- Increase productive forest coverage by 2 percentage points and promote zero discharge of industrial effluents.
- Land Zoning for sustainable land/water use completed
- Environmental, Climate change and Disaster risk reduction considerations are integrated into project design, budgetary allocations and implementation process.
- Increase public spending on R & D to 1% of GDP by FY15 and etc.
- Improving governance.

3. CLIMATE CHANGE SCENARIO OF COUNTRY

The exact magnitude of the changes in the global climate is still uncertain and subject of worldwide scientific studies. Studies on climate change in Bangladesh report that the surface average temperature has been rising, though there is no agreement in these studies on the rate of change. Available literature suggests that a general warming is expected in future, where the rate of warming will be higher for the winter mostly (December – February) than the monsoon months (June, July, August). There is a great deal of local – level perception – based evidence that the rainfall pattern has become erratic in recent years, if not in recent decades. A bi-modal shift in rainfall behavior has already been reported and rainfall may contribute to recent shifts in hydrological peaks in various rivers of Bangladesh. Local level experience and anecdotal evidence clearly show that in both Gaibandha and Jamelpur districts people now observe two to three flood peaks instead of one, as the latter had been regularly observed decades ago. There are a number of estimates made by different quarters which predicts that by the end of this century the temperature in Bangladesh would increase by 2°C or more and the Sea level would rise by 1 meter.

4. CLIMATE RESILIENT PROJECTS PLANNED OR UNDER IMPLEMENTATION

The Government has already invested US\$10 billion over the last decades to make the country climate resilient and less vulnerable to disasters. Recently the government has created a US\$300 million Bangladesh Climate Change Trust Fund (BCCTF) with its own resources and is going ahead with adaptation activities by GOs and NGOs. Another Fund, namely Bangladesh Climate Change Resilience Fund (BCCRF) has been established by the government with contribution from development partners. So far US\$125 million has been received in BCCRF and another US\$113 million has been pledged. Projects have started to be implemented with allocation from this fund. However both funds are too little to address the massive cost of adaptation infrastructures needed for protection against sea level rise, floods and storm surges. As part of low cost carbon development, both the private sector and the government are investing substantially providing solar home systems, biogas stoves, and are now undertaking solar mini-grids and wind energy as pilot projects. Large number of cyclone shelters (cum schools) are being built all along the coastal belt so that people can take refuge in these during emergencies. Besides, on top of the existing 686 cyclone shelters the Government is building another 2770 new multipurpose cyclone shelters in the next 10 years.

Govt of Bangladesh and UNDP joint study of 2009-10 on Investment and Financial Flow (IFF) required for adaptation in the agriculture sector (Crops, Fisheries, Livestock and Forestry) has estimated that the country will need over and above the Annual Development Program (ADP) allocation for the sector a total of US\$69.7 billion upto 2030 with 2011 values as the base line. Of this amount 30% will be for infrastructure 17% for market development 15% for irrigation and water management and the rest for other purposes and all these are related to adaptation. On Climate Change Bangladesh of late has prepared Bangladesh Climate Change Strategy and Action Plan which is now reflected broadly in the country's Sixth Five Year Plan (SFYP).

A total of 64 projects are being implemented by different Ministries with funding from Climate Change Trust Fund (BCCTF). These projects which would have a total cost of TK.68.5 billion include amongst others, Innovation and Extension of rice based technology to reduce the adverse impact of climate change; Water supply and social security for the affected women and children; Risk reduction in the context of climate change impact on health sector in Bangladesh; Up gradation of early warning and agro-meteorological forecasting system; Reconstruction of coastal

embankment; Land reclamation in coastal and estuarine areas by construction of cross dams. Recxcavation/dredging of rivers and khals to improve flood drainage; Innovation of sustainable crop system for drought prone and coastal/saline areas to face climate change impact; Capacity building in Mathematical modeling and Remote Sensing activities; Community Based Adaptation in the Ecologically Critical Areas through Bio diversity Conservation and Social Protection etc.

The Project implementation in Bangladesh follow the “Annual Development Program” which is a yearly instrument and the Five year plan (Currently the Sixth Five Year Plan 2011-2015) within the framework of the Governments Long term Vision called “Vision-21”. As stated earlier all the developmental efforts of the Govt. in terms of infrastructures, research and Development are in line with the BCCSAP. Table -1 and Table -2 provide glimpses of the Sixth Plan Sectoral Public Investment Allocation.

Table 1: Sixth Plan Sectoral Public Investment Allocation
(Crore Taka; FY2011 price)

Broad Sectors	FY11	FY12	FY13	FY14	FY15	Total SFYP	% of Total
Agriculture, Water and Rural Development	3623	4121	4535	5184	5756	23220	8.7
Manufacturing and Trade	702	755	776	857	919	4009	1.5
Energy	6075	7983	8932	10539	12127	45656	17.3
Transport	5370	7153	8147	9670	11172	41512	15.7
Urban	8578	9381	9950	10972	11776	50656	19.1
Knowledge Economy	434	483	517	575	621	2631	1.0
Education, Training, Sports, Culture and Religion	5544	6659	7578	8918	10240	38940	14.7
Population, Health and Nutrition	3473	4185	4698	5570	6439	24364	9.2
Social Inclusion and Social Protection	444	462	500	564	615	2586	1.0
Environment, Climate Change and Disaster Management	1667	2013	2070	2322	2516	10588	4.0
Public Administration and Others	3704	3913	4129	4487	4779	21012	7.9
Grand Total:	39615	47108	51832	59659	66960	265174	100

Source: Sixth Five Year Plan Projections

Table 2: Sixth Plan Sectoral Public Investment Allocation
(Crore Taka; Current Price)

Broad Sectors	FY11	FY12	FY13	FY14	FY15	Total SFYP	% of Total
Agriculture	3623	4431	5217	6351	7474	27095	8.7
Manufacturing	702	812	893	1049	1193	4650	1.5
Energy	6075	8582	10274	12910	15747	53588	17.3
Transport	5370	7689	9371	11846	14506	48783	15.7
Urban	8578	10084	11445	13441	15291	58839	19.0
Knowledge Economy	434	519	595	705	807	3060	1.0
Education	5544	7158	8717	10925	13297	45641	14.7
Health, Population and Nutrition	3473	4499	5404	6823	8361	28560	9.2
Poor and Vulnerable	444	497	576	691	798	3006	1.0
Environment and Disaster Management	1667	2164	2381	2844	3267	12324	4.0
Public Administration and Others	3704	4206	4749	5497	6206	24363	7.9
Grand Total:	39615	50641	59620	73083	86948	309907	100

Source: SFYP Projections

5. MAJOR CLIMATE IMPACTED OR FUTURE IMPACTED HOT SPOTS

The following maps of Bangladesh given in Annexures-I and II show the Major hot spots (Map-I) that would be seriously impacted by climate change, while Map-2 shows the Agro-ecological Zones of Bangladesh.

6. LISTING OF KEY INSTITUTIONS INVOLVED WITH CLIMATE CHANGE, DROUGHT MANAGEMENT, CLIMATE RESILIENT PLANNING, IMPLEMENTATION AND HRD RELATED TO CLIMATE RESILIENCE.

Government Organs

Bangladesh is Committed to building institution and capacities that would support environmental sustainability for which Ministry of Environment and Forest acts as the Focal Point. Major Institutions involved in the development of Plan and Policies in the Public sector in this context and their implementation overseeing are

1. Ministry of Planning
2. Economic Relations Division (ERD) under the Ministry of Finance
3. Ministry of Agriculture
4. Ministry of Fisheries and Livestock
5. Ministry of Water Resources
6. Ministry of Local Govt. and Rural Development
7. Ministry of Energy and Mineral Resources
8. Ministry of Health and Family Welfare
9. Ministry of Education
10. Ministry of Public Works
11. Ministry of Information and Communication Technology
12. Ministry of Science and Technology
13. Ministry of Labor and Manpower
14. Ministry of Women and child Affairs
15. Ministry of Industry
16. Ministry of Commerce
17. Ministry of Food and Disaster Management

A large number of Govt. agencies under these Ministries are playing important roles in this respect. Prominent amongst those are

1. Bangladesh Agricultural Research Council (BARC)
 2. Bangladesh Agricultural Research Institute (BARI)
 3. Bangladesh Rice Research Institute (BRRI)
 4. Directorate of Agricultural Extension (DAE)
 5. Bangladesh Agricultural Development Corporation (BADC)
 6. Bangladesh Water Development Board (BWDB)
 7. Water Resources Planning Organization (WARPO)
 8. Department of Environment (DOE)
 9. Department of Forests (DOF)
 10. Department of Fisheries and Livestocks
 11. Bangladesh Inland Water Transport Authority (BTWTA)
 12. Space Research and Remote Sensing Organization (SPARRSO)
 13. Department of Relief and Rehabilitation
 14. Bangladesh Meteorological Department (BMD)
- And many other agencies and Departments.

At the District level the District Environment Committee chaired by the Deputy Commissioner with representation from all other Government bodies is mandated to deal with environmental and sustainability issues. The Upazila and Union Porishad Planning at the grassroots is in place.

7. CLIMATE RESILIENT DEVELOPMENT

- Technological innovation on adaptation in Water Management, Cropping system and varietal improvement and development, modeling of climate change.
 - Improving Flood forecasting and Warning
 - Implementation of Drought Forecasting
 - Irrigation Management, flood management and salinity control.
 - Fertilizer Management
 - Appropriate Crop/Variety selection
 - Innovation of new variety of Crops which are salt tolerant, drought tolerant, flood tolerant.
 - Capacity Building of BWDB, WARPO, DAE, BARC, BRRI, BARI, DOE, DOF and etc.
- And many other related institutions would require major improvements.

8. DROUGHT MANAGEMENT

Bangladesh needs to greatly improve its drought management practices. These call for more R & D for starting Drought Forecasting; Improving Water Conservation practices for dry seasons; Protecting the quality of ground water from salinity and Arsenicosis; Innovating more drought tolerant crop varieties and etc.

9. ANY OTHER AREA COUNTRY CONSIDERS IMPORTANT

Bangladesh is the lowest riparian of a large number of trans-boundary rivers like the Ganges, Brahmaputra, Meghna, Teesta etc. Because of these rivers, Bangladesh has to bear the brunt of floods almost every year as well as face severe scarcity of water during dry seasons (Nov – May) consequent upon cross border upstream diversion of precious waters from the Transboundary rivers. The climate change would induce adversities which shall increase the magnitude, intensity, duration and frequency of water induced disasters to the detriment of the interests of millions of people. Since Bangladesh is at the receiving end of all these vagaries, Bangladesh alone can do virtually nothing to meaningfully tackle the climate change impacts. Under the circumstances Bangladesh desperately needs sincere cooperation and active support of its neighbouring countries which are the upper riparians of the trans boundary rivers passing through it to tackle the adversities of climate change. As such Regional Cooperation is of prime importance for Bangladesh for management of its water resources and water induced Disaster Risk Reductions to be compounded by Climate Change. The International Community can play a key role here to foster regional cooperation for unhindered real time exchange of all climate and hydrological data and information as well as to formulate. Joint Action Plans to face the adversities.

CLIMATE CHANGE IMPACT HOT SPOTS

(Generalised)

50 0 50 100 km

