

**Brahmaputra Barrage and Ancillary Works**Ref: **MR 005****Basic Data**NWMP Sub-sector      **Main River Development**Region(s)              **NW, NC, NE and RE  
Regions****Relevance to NWPo**

NWPo Articles 4.2 (j) and (k) provide for development of the main rivers for multi-purpose use and Article 4.7 requires the promotion of conjunctive use of groundwater and surface water and encourages the continued expansion of minor irrigation. Article 4.9 stresses the need for water for fisheries and wildlife.

**Purpose of Programme**

In addition to Ganges and Meghna barrages (Programmes MR 003 and MR 004), a barrage would be built on the Brahmaputra. Possibilities could be considered in detail following the studies and research in Programme MR 001.

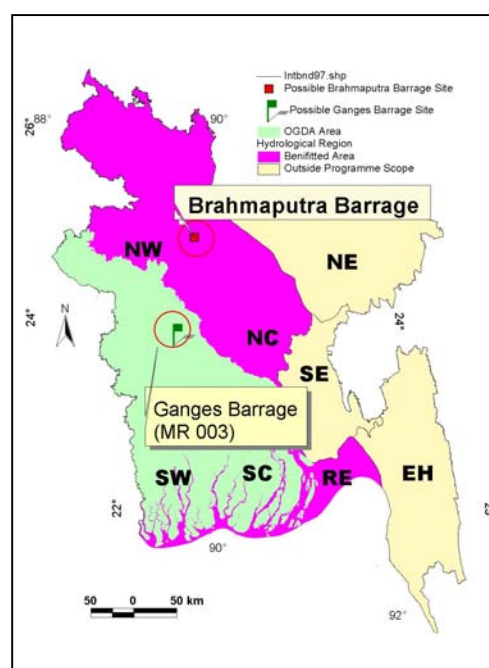
On the assumption that this leads to a decision to build a barrage to harness the Brahmaputra waters to meet long term national needs, this programme makes provision for a feasibility study and detailed engineering on the identified option(s) for the necessary investment in a barrage, headworks and ancillary works. The programme would be complemented by other programmes to develop the distribution systems and strengthen the capacity to implement and manage a project of this magnitude.

**Programme Outline**

The scope of the programme would be defined by the earlier research and planning studies. Provision is made for a five-year feasibility study and detailed engineering leading to contract documentation and subsequent construction of a barrage, headworks and ancillary works. It is assumed the latter would take 7 years to construct.

**Financing Arrangements**

Financing would be by GoB, possibly with donor assistance. Cost recovery would probably be negligible, because of the practical difficulty of clearly identifying the beneficiaries in this type of large-scale intervention in which water is distributed to large number of people through khals and other existing natural channels.



## Objectives and Indicators

Objective	Suffix	Indicators/Mean of Verification	Due
• Barrage and offtake in place	I1	• Physical progress of capital works	2027
• Increased dry season water availability in the NW, NC and NE regions	K	• Dry season discharges	2027
• Bangladesh's main and regional rivers comprehensively developed for sustainable multi-purpose use	D	• Returns per unit of water • River maintenance costs • Quality and Quantity of in-stream flows	2027

## Institutional Arrangements

BWDB would be responsible for the barrage programme as well as the link channels and regional water distribution systems. NGOs would assist in the land acquisition and resettlement required.

## Existing Documentation

Documentation can be found on the Brahmaputra barrage in the IECO Master Plan, ESG reports of the mid-1980s and NWMP DSR 6.8. FAP2 and FAP3 Regional Studies provide information on the NW and NC regions and FAP4 and FAP6 on the SW/SC and NE regions. The NWRD (National Water Resources Database) has much useful information.

## Linkages

As stated above, this programme follows on from the studies to be made under Programme MR 001. Other aspects of this development are covered by MR 006: Regional River Management Improvement (which includes works on the coastal polders), MR 009: NW and NC Regional Surface Water Distribution Networks, AW 005: Improved Water Management at Local Government level, AW 006: Improved Water Management at Community level and ID 001 and ID 004 dealing with Local government and BWDB management.

## Risks and Assumptions

The programme assumes that a fully viable integrated development solution will be developed out of the MR 001 studies. Construction of barrages is well understood and the main risk lies in avoiding the siltation problems. Extensive modelling tests and proper operational practices should minimise this risk. In contrast to a dam, a barrage will displace relatively few people, but there will be concerns over impacts on char dwellers, who are numerous in the Brahmaputra. Environmental concerns will centre on interruption of fish migration and impacts of substantial construction works and land acquisition. These would have to be looked into carefully during the study phase. Since there will be no cost recovery, the sustainability of the structure will be dependent upon long-term commitment to maintenance funding from the Government.

**Brahmaputra Barrage and Ancillary Works**

Ref :

**MR 005**

Cluster :	<b>Main Rivers</b>	Region(s) :	<b>NW, NC, NE, RE</b>
Focus/Foci :	<b>Major River Barrages</b>	Location :	<b>Barrage on Brahmaputra River</b>
Start Year <sup>1</sup> :	<b>2016</b>	Duration <sup>2</sup> :	<b>12 year(s)</b>
		Agency(s) Responsible :	<b>BWDB</b> (Lead) None (Supporting)
Short Description :	The outcome of the study in MR 001 will determine a course of action for further development of the main river systems of the country. On the assumption that this leads to a decision to build a barrage to harness the Brahmaputra waters to meet national needs, this programme makes provision for a feasibility study of the identified option(s), detailed engineering and for the necessary investment in a barrage, headworks and ancillary works. Other programmes to develop the distribution systems and management capacity would complement this programme.		

<b>MIS Links</b>	Cost Calculation :	MR Programme costing.xls	Map :	MR 005 Map.jpg
	Disb't Schedule :	MR Programme costing.xls	Description :	MR 005 PgP.doc

<b>Finance</b>					
	Costs	Private	Funding (%) GoB	Beneficiaries	Expected by ProgrammeYear
Total Capital <sup>3</sup>	<b>86,973.00</b> MTk	<b>0%</b>	<b>100%</b>	<b>0%</b>	<b>12</b>
Ultimate Recurring	<b>2,078.80</b> MTk/yr	<b>n/a</b>	<b>100%</b>	<b>0%</b>	<b>13</b>
Date of Data :	<b>31 07 01</b> (dd) (mm) (yy)	<b>Stacked Cumulative Cash Flow Chart</b>			
Status :	<b>Identified</b>				
Financial Base Year:	<b>mid-2000</b>				
Planned Expenditure (to date) :	<b>0</b> MTk				
Actual Expenditure <sup>4</sup> (to date) :	<b>0</b> MTk				

**Monitoring**

Objective	Indicator	Present Status <sup>5</sup>
• Barrage and offtake in place	• Physical progress of capital works	NYD
• Increased dry season water availability in the NW and NC regions (and potentially the NE and SW)	• Dry season discharges	NYD

Notes : 1. Indicative 2. Until commissioning 3. Inclusive of planning, design supervision 4. For future monitoring purposes and NWMP updates  
5. Present Status keys: NYD- Not yet due, IP- In progress, D- Done

# National Water Management Plan

## Programme Costing Sheet

Programme Ref	<b>MR 005</b>
Title	<b>Brahmaputra Barrage and Ancillary Works</b>
	(including feasibility studies)

### Assumptions:

Taka/US\$	51.000	TA duration	5.0	years	All prices in mid-2000 values
		Investment duration	7.0	years	

Item	Unit	Quantity	Rate		Amount	O&M	O&M/yr
			US\$	Tk'000	TkM	%	TkM
<b>Technical Assistance</b>							
Feasibility and planning studies at 5.0% of investment costs							
Expatriate consultants (all-in rate)	p-m	-	20,000		-		
Senior National consultants (all-in rate)	p-m	-		150	-	0.0%	-
Mid-level National consultants (all-in rate)	p-m	-		90	-	0.0%	-
Sub-totals					-		-
Other general TA programme costs		25%			-		-
Specific other TA programme costs		5.0%			4,140.0	0.0%	-
<b>Total TA Costs</b>					<b>4,140.0</b>		<b>-</b>
<b>Other Programme Costs</b>							
1. Barrage& training works					62,349.0	2.5%	1,558.7
2. Headworks Structure					18,888.0	2.5%	472.2
3. Ancillary works					1,596.0	3.0%	47.9
4.					-	0.0%	-
5.					-	0.0%	-
6.					-	0.0%	-
7.					-	0.0%	-
8.					-	0.0%	-
9.					-	0.0%	-
10.					-	0.0%	-
<b>Total Other Programme Costs</b>					<b>82,833.0</b>		<b>2,078.8</b>
<b>Overall Programme Costs</b>					<b>86,973.0</b>		<b>2,078.8</b>

Notes These are provisional amounts. The actual required investments to be determined under studies in Programme MR 001

	Ganges	Brahmaputra	Ratio	<b>Comparison of sites</b>			
	TkM	TkM			Ganges	Brahmaputra	Ratio
Barrage& training works	39,275	62,349	159%	Length	m	1,870	2,232
Headworks Structure	6,683	18,888	283%	Diversion	m3/s	800	1,700
Ancillary works	903	1,596	177%	Difficulty	%	100%	133%
	46,861	82,833					

Assumed 1,000 m3/s for instream uses together with 700 m3/s for arsenic replacement and other uses in the NW and NC regions, but both figures subject to study under MR 001