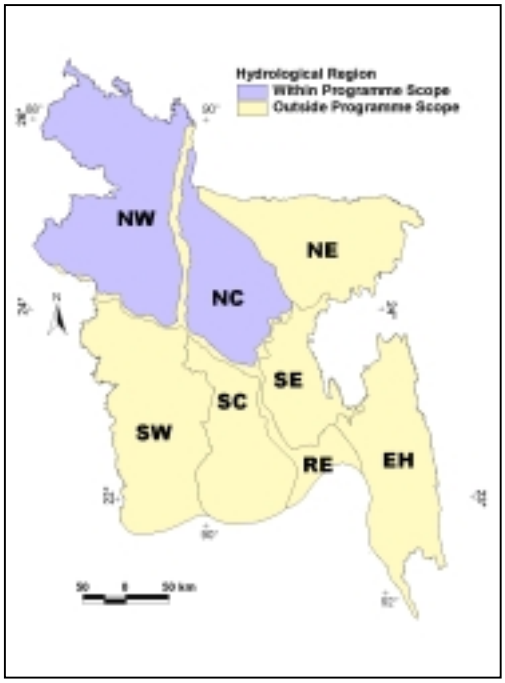
North Central and North West Regional Surface Water Distribution Networks

Ref: **MR 009**

Basic Data

NWMP Sub-sector **Main River Development**

Region(s) **NW and NC 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

A Brahmaputra Barrage might be constructed some time in the future, if tubewell irrigation in the NW and NC Regions had to be cut back because of an arsenic risk to human health from tubewell-irrigated crops or if a major increase in conjunctive use in the presently tubewell irrigated areas were required on policy grounds. The existing river network is insufficient to enable the increased supplies to reach more than a limited proportion of the overall potential benefit area in the two regions. Justification of a Brahmaputra Barrage would therefore depend on a parallel development of a regional water distribution network to link existing rivers and channels and thereby substantially increase the benefit area. Low lift pump (LLP) irrigation would be the main beneficiary, but there would also be positive impacts on the environment, navigation and water supplies.

A large proportion of the benefit area already has shallow tubewell (STW) irrigation. However, by increasing dry season surface water availability the Programme would bring about an expansion of the irrigated area through LLPs (these are all farmer-owned and operated) and an increase in conjunctive use, with some substitution of STW pumping by the cheaper and less environmentally damaging LLP pumping. Present evidence indicates that the use of arsenic – contaminated STW irrigation water for crops is not a health risk. If, however, this were subsequently to prove not to be the case, STW irrigation would need to be reduced.

Purpose of Programme

Development of the surface water resources of the Brahmaputra River may be considered as an important element of future plans. This will be looked into in the Long-term Risk Management Study under Programme MR 001.

The purpose of this Programme would be to distribute water from a barrage, if this is selected as a preferred option under Programme MR 001 above. The feasibility of the barrage would be studied further in Programme MR 005, which also makes provision for the investment costs of a

barrage and diversion works. This feasibility study would also confirm the scope of the distribution network required under this programme MR 009. The barrage may be built on the Brahmaputra. Flow could be diverted directly to the NW, NC and NE regions.

Programme Outline

Outline studies of the Brahmaputra Barrage have been conducted, most recently in the 1980's by ESG. However, until MR 001 study is complete, the scope of works to be included in this programme cannot be defined. Nevertheless, provision has been made for the capital investment in both regional and local river system development, on a pro-rata basis taking account of the works identified for the GDA (see Programme MR 007).

Financing Arrangements

Financing of these works would be by GoB, and could be suitable for donor support. Cost recovery for the regional systems is not thought to be practicable in view of the multi-purpose use of the water provided over such a large and diverse area. Funding of local networks maintenance would be considered under programmes EE 013 and AW 005.

Objectives and Indicators

Objective	Suffix	Indicators/Means of Verification	Due
• Regional river link channels	I1	• Physical progress of capital works	2025
• Local link channels	I2	• Physical progress of capital works	2025
• Increased dry season water availability in the Regions	K	• Dry season discharges	2025
• 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	2025

Institutional Arrangements

BWDB would be responsible for the regional river systems and Local Government for the local systems. Community groups and individual pump operators would be involved in the final delivery of water. NGOs would assist in the limited land acquisition and resettlement required.

Existing Documentation

ESG Studies, NWMP DSR Section 6.8, the NWRD (National Water Resources Database) and NMIDP and SSWRDSP reports with regard to local water distribution.

Linkages

The Programme is directly linked with MR 005: There is also linkage with MR 006: Regional River Management and Improvement, AW 006, which involves khal re-excavation, and AW 005. The experience gained with the implementation of MR 007: Ganges Dependent Area Regional Surface Water Distribution Networks, would be directly relevant. Programme ID 010: BWDB Capacity Building, will enhance the Board's ability to plan and implement large-scale development such as this.

Risks and Assumptions

The programme assumes that a fully viable integrated development solution will be developed out of the MR 001 studies and confirmed in MR 005 Feasibility Study. The main environmental risk is the interruption to fish migration that the regulating structures may cause. Whilst in some cases migration has already been interrupted by the diminution of dry season flows, this will nevertheless be a key issue to address properly in the design of the systems. Effective utilisation of water provided for consumptive use will depend upon both there being a demand for the water provided and that individuals and communities co-operate in rehabilitating and maintaining field channels and small khals. Whilst there is evidence to support that there will be demand, albeit with a modest growth rate, achieving sustainable maintenance has so far been illusive. Programme AW 006 is directed at resolving this.

North Central and North West Regional Surface Water Distribution Networks

Ref : **MR 009**

Cluster :	**Main Rivers**	Region(s) :	**NW, NC**
Focus/Foci :	**Surface Distribution Networks**	Location :	**NW & NC Regions**
Start Year[1] :	**2021** Duration[2] : **12 year(s)**	Agency(s) Responsible :	**BWDB** (Lead) LGED (Supporting)
Short Description :	Provision is made in this programme for the capital investment in both regional and local river system development, based on augmentation of the surface water from a barrage on the Brahmaputra, if this is selected as a preferred option under Programme MR 001 above. The feasibility of the barrage would be studied further in Programme MR 005, which would also determine the scope of the distribution network required.		

MIS Links

Cost Calculation :	MR Programme costing.xls	Map :	MR 009 Map.jpg
Disb't Schedule :	MR Programme costing.xls	Description :	MR 009 PgP.doc

Finance

	Costs		Private	Funding (%) GoB	Beneficiaries	Expected by Programme Year
Total Capital[3]	**12,862.00**	MTk	**0%**	**98%**	**2%**	**12**
Ultimate Recurring	**385.90**	MTk/yr	**n/a**	**75%**	**25%**	**13**

Date of Data : **31** (dd) **07** (mm) **01** (yy)

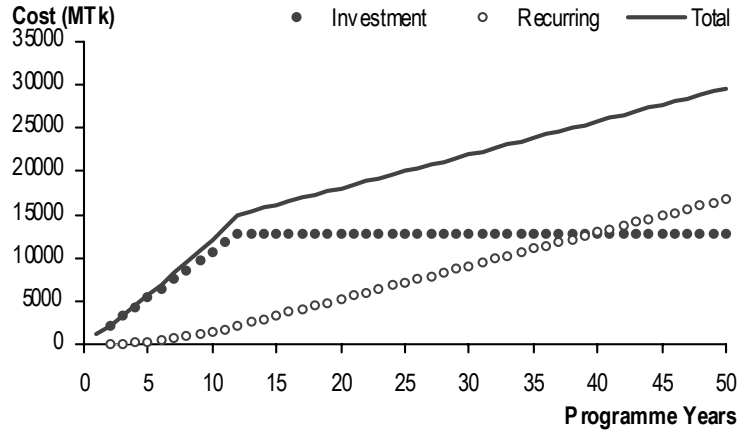
Status : **Identified**

Financial Base Year: **mid-2000**

Planned Expenditure (to date) : **0** MTk

Actual Expenditure[4] (to date) : **0** MTk

Stacked Cumulative Cash Flow Chart



Monitoring

Objective	Indicator	Present Status[5]
• Regional river link channels	• Physical progress of capital works	NYD
• Local link channels	• Physical progress of capital works	NYD
• Increased dry season water availability in the Regions	• 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	**MR 009**
Title	**North Central and North West Regional Surface Water Distribution Networks**

Assumptions:

Taka/US$ 51.000 TA duration 0.0 years All prices in mid-2000 values

Investment duration 12.0 years

Item	Unit	Quantity	Rate US$	Rate Tk'000	Amount TkM	O&M %	O&M/yr TkM
Technical Assistance							
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					-	*0.0%*	-
Total TA Costs					**-**		**-**
Other Programme Costs							
1. Provision for distribution systems					12,862.0	*3.0%*	385.9
2.					-	*0.0%*	-
3.					-	*0.0%*	-
4.					-	*0.0%*	-
5.					-	*0.0%*	-
6.					-	*0.0%*	-
7.					-	*0.0%*	-
8.					-	*0.0%*	-
9.					-	*0.0%*	-
10.					-	*0.0%*	-
Total Other Programme Costs					12,862.0		385.9
Overall Programme Costs					**12,862.0**		**385.9**

Regional Surface Water Distribution System Costs *excluding cost of barrage, headworks and field networks*

	NCA km2	SW Irrig km2	Investment Costs (TkM) Regional	Local	Total	Cost/ha Tk/ha	Less AW 005 costs	Net Invest TkM
GDA (AW 007)	14,087	7,349	7,696	2,590	10,286	13,996	(1,375)	8,911
NE & SE	n/a	9,353	9,795	3,296	13,091	13,996	(229)	12,862

Pro rata other barrage diversion for irrigation to Ganges diversion (see AW 005) less 250m3/s for salinty control in GDA

Note 520,000 ha developed under AW 005 nationally

Assume 13% of this is within NW/NC, remainder to be covered under this programme

Northwest Region 50.0%

Ref OGDA Studies, Draft Final Report, July 2001 and DSR Chap 6.8 *North Central Region 50.0%*