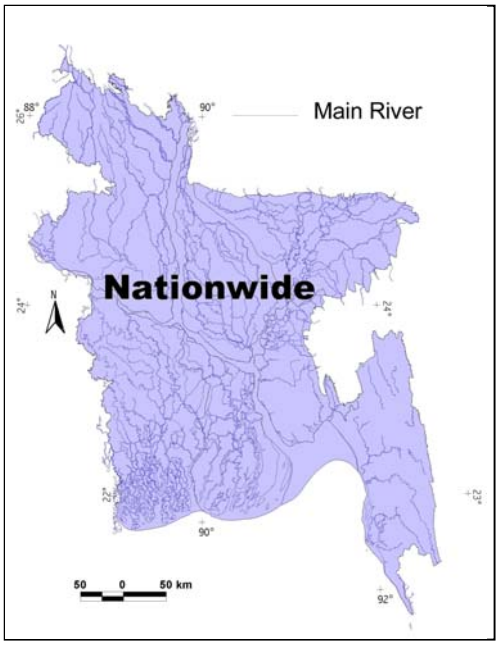
Main Rivers Erosion Control at Selected Locations Ref: **MR 010**

Basic Data

NWMP Sub-sector **Main River Development**

Region(s) **North West, North Central and South East**



Relevance to NWPo

Article 4.02(q) of the NWPo requires the Government via its responsible agencies to undertake surveys and investigations of the problem of river bank erosion and to develop and implement master plans for river training, erosion control works for the preservation of scarce land and the prevention of landlessness and pauperisation.

Purpose of Programme

Land loss due to river bank erosion is a major problem in Bangladesh. Over the period 1982-92, 106,300 ha were lost to erosion in the major river, with only 19,300 ha accreted– a net land loss of almost 10,000 ha per year. This process has significant economic and social implications, because the loss of land, crops and properties leads to landlessness and impoverishment for thousands of households.

A Brahmaputra River Training Study was undertaken as part of the Flood Action Plan (FAP) study programme. Its Master Plan (1994) proposed the construction of 27 hardpoints on the Brahmaputra Right Bank between its confluence with the Teesta and with the Atrai, at a total capital cost of Tk19,445M (1992 prices). Four of these hardpoints have been since constructed at Sirajganj, Sariakandi, Kalitola and Mathurapara. The works at Sirajgonj and Kalitola were damaged during 1998 and 1999 floods, necessitating substantial repairs. Experience has also been gained with construction of guide bunds for the Banghabandu Bridge across the Brahmaputra, which is also protected by two of the hard points against out-flanking. Pilot testing of lower cost training works has also been conducted under FAP21/22 since 1994.

A Chinese team (CBJET) also looked into training of the Brahmaputra, and their 1991 report suggests an alternative solution of canalising the river with works on both banks. Although very much more expensive, it secures a much greater land area against erosion (but not flooding).

Works of this nature are inherently risky and expensive, particularly on a river as powerful and aggressive as the Brahmaputra. They carry a high maintenance requirement, with potentially catastrophic results if the maintenance is not kept up. Evidence to date indicates that the works are costing more to build and more to maintain than was envisaged in the 1964 Master Plan, and a review is required to come up with a cost-effective and affordable strategy for managing erosion on all the rivers. This will be conducted under Programme MR 001, and will look into non-structural and structural approaches, including the results of pilot testing under FAP21/22.

This programme makes financial provision for future works erosion management measures on the major rivers, depending upon the confirmed strategy arising from the review conducted under programme MR 001.

Programme Outline

Details of the programme cannot be specified until the review above is completed. Costs are provisionally based on completion of a further 23 hardpoints on the Brahmaputra with allowance for other works on the other major rivers. Such a programme is expected to take at least 25 years to complete.

Financing Arrangements

Capital and recurrent funding of this Programme would be from GoB, possibly with donor assistance for the capital works and support for establishment of the major O&M infrastructure that would need to be established if the training works proceed.

Objectives and Indicators

Objective	Suffix	Indicators/Means of Verification	Due
• Impacts of river erosion mitigated in the main rivers	I1	• Project reports • Visual evidence	2025
• Socio-economic impacts of erosion minimised	K	• Independent surveys	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

Implementation of a structural training works programme would be by BWDB. Non-structural components would be undertaken principally through Local Government. NGOs may have a useful role to play in the promotion of community sensitisation and participation. Erosion forecasting and warning systems would be developed in BWDB under Programme ID 010, to complement the existing Flood Forecasting and Warning System (itself also being upgraded under ID 010).

Existing Documentation

Relevant documents and data include NWMP DSR Section 6.9 the National Water Resources Database (NWRD). Other pertinent reports are: Master Plan for Brahmaputra River Bank Protection Works, Halcrow *et el* (1994); Study Report on Flood Control and River Training Projects on the Brahmaputra River in Bangladesh, CBJET, March 1991; Reports on River Bank Protection Project (Short-term Stage 1A Implementation Programme under the above Master Plan (Implementation period: 1996 – 1999)); and the River Bank Protection Pilot Projects (FAP 21/22).

Linkages

For the reasons given above, this programme cannot begin until the completion of the erosion management master plan scheduled under MR 001. There will also be links with ID 010: BWDB Capacity Building and ID 005: Local Government Capacity Building; MR 002: Main River Abstraction Programmes; MR 003 to 005 and MR 007 to 009, concerning main river barrages and their distribution networks, MR 006: Regional River Management and Improvement; MR 011: River Dredging for Navigation; and ID 008: Disaster Management Bureau Capacity Building.

Risks and Assumptions

This programme assumes that an agreed plan of action will emerge from Programme MR 001. Major works on rivers of the size of the Brahmaputra will be unavoidably subject to a high degree of risk, and the magnitude of such a task should not be under-estimated, for which inadequate GoB funding to undertake the necessary repairs and maintenance is also a major risk. Non-structural solutions also have significant risks of not bringing necessary relief to those who are most likely to affected by erosion, due mainly to local political factors.

Main Rivers Erosion Control at Selected Locations

Ref : **MR 010**

Cluster :	**Main Rivers**	Region(s) :	**NW, NC, SE**
Focus/Foci :	**Erosion Control**	Location :	**NW, NC and SE Regions**
Start Year[1] :	**2006** Duration[2] : **25 year(s)**	Agency(s) Responsible :	**BWDB** (Lead) NGOs (Supporting)

Short Description : River bank erosion is a major problem in all the main rivers. A review will conducted under MR 001 to assess the experience gained in implementing river training works over the last decade since preparation of a Master Plan under FAP1. This review will look at all possibilities of minimising the socio-economic impacts of erosion and will formulate an updated strategy for dealing with the problem. This programme MR 010 provides for the subsequent investments to be determined by that strategy.

MIS Links

Cost Calculation :	MR Programme costing.xls	Map :	MR 010 Map.jpg
Disb't Schedule :	MR Programme costing.xls	Description :	MR 010 PgP.doc

Finance

	Costs		Private	Funding (%) GoB	Beneficiaries	Expected by Programme Year
Total Capital[3]	**21,500.00**	MTk	**0%**	**100%**	**0%**	**25**
Ultimate Recurring	**1,075.00**	MTk/yr	**n/a**	**75%**	**25%**	**26**

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

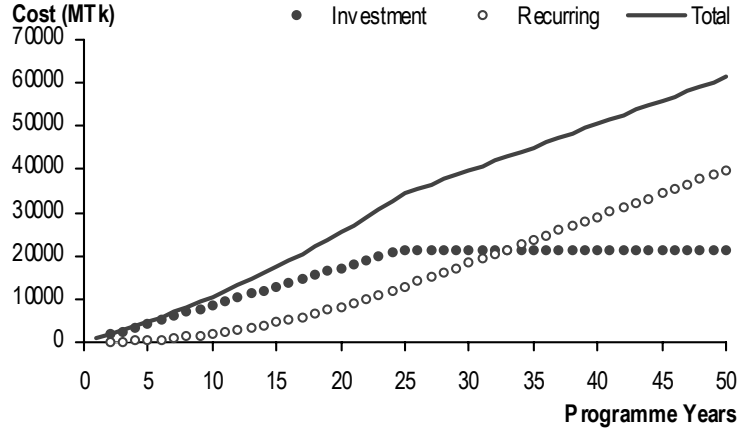
Status : **Identified**

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]
• Impacts of river erosion mitigated in the main rivers	• Project reports • Visual evidence	NYD
• Socio-economic impacts of erosion minimised	• Independent surveys	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 010**
Title	**Main Rivers Erosion Control at Selected Locations**

Assumptions:

Taka/US$ 51.000 | TA duration 0.0 years | Investment duration 25.0 years | All prices in mid-2000 values

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 Brahmaputra river training works (inclusive of engineering and overheads)					18,696.0	*5.0%*	934.8
2. Provision for river training on other major rivers, allow fo	15%	extra			2,804.0	*5.0%*	140.2
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					21,500.0		1,075.0
Overall Programme Costs					**21,500.0**		**1,075.0**

Notes:

Costs based on BRTS solution plus 25% addition for uncertainities and price escalation to mid-2000 values
This solution is for 200km of the right embankment only

Original plan for 27 hard points, Tk 19,445 million, at current values as above 24,306 Tk million
Allow for expenditure to date of Tk 5,610 million, inclusive of 10.0% price adjustment
Net remaining expediture Tk 18,696 million

Allow for higher O&M charges of 5% compared to original study allowance of 2%

Ref.: BrahmaputraRiver Training Study, FAP1 (1992)