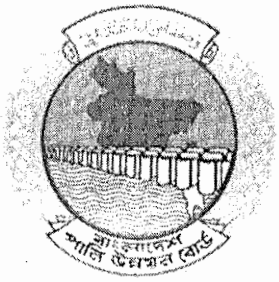
Government of the People's Republic of Bangladesh

Ministry of Water Resources



Bangladesh Water Development Board

PROJECT COMPLETION REPORT: IMED 04/2003

For

Feasibility Study for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin in Sylhet District.

January, 2024

Government of the People's Republic of Bangladesh
Ministry of Planning
Implementation Monitoring and Evaluation Division
PROJECT COMPLETION REPORT: IMED 04/2003 (Revised)

A. PROJECT DESCRIPTION:

01. Name of the Project	: Feasibility Study for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin in Sylhet District (Project Code: 224357300)
02. Administrative Ministry	: Ministry of Water Resources (MoWR)
03. Executing Agency	: Bangladesh Water Development Board (BWDB)
04. Location of the Project	: Sylhet
05. Objective of the Project	:

The overall objective of the project is to carry out a comprehensive study for integrated water resources management and development of the Surma-Kushiyara river basin (including tributaries and distributaries, Khals, canals, etc) investigating the flash flooding mechanism, dynamic erosion and analyzing the need for embankment rehabilitation/reconstruction and other protective measures for sustainable solutions. The study will be conducted in two components, hydrological and morphological model study as component-1 and environmental and social impact study as component-2.

The specific objectives (component-wise) of the project are:

Hydrological and Morphological Model Study (Component-1)

- To identify and analyze the causes of flash floods, sedimentation and erosion problems in the Surma-Kushiyara river basin and suggest sustainable measures;
- To assess the need of dredging, dredging alignment & dredging volume with design and prepare dredged material management plan;
- To assess the adequacy of the existing embankment, fix the alignment in case of a new embankment/flood wall and give sustainable solutions considering future aspects including city corporation area;
- To predict and assess drainage problems considering post-project conditions;
- To prepare a holistic, integrated and sustainable river management plan for the Surma-Kushiyara River basin considering trans-boundary river issues, Climate Change and Sea Level Rise;
- To predict morphological changes both in the long and short term;
- To develop different potential options for protection measures considering hydrological and morphological conditions and assess the requirements of new water control structures and pump houses;
- To estimate the detailed cost of the project including economic and financial analysis to acquire the extended project outcomes.

Environmental and Social Impact Study (Component-2)

The overall objective of the environmental and social impact study is to assess the impacts of the proposed interventions on the environmental and social components and suggest an environmental management plan for the sustainable development of the project. The ESIA would ensure to involvement of beneficiaries in project conceptualization, Planning and Implementation. The study will assess the biophysical and socio-environmental impact with recommendations for appropriate mitigation plans in the project area and prepare a report on ESIA to obtain necessary clearances from the Department of Environment (DoE). The specific objectives of the consultancy service are the following:

The specific objectives are:

- Provide a consistent and common basis for the application of ESIA to protect environment by ensuring that the project is environmentally sound.
- Identifying, quantifying and evaluating the potential environmental consequences so that the impacts before implementation of the project & impacts of the projects are highlighted. The negative impacts would be addressed conserving the society and environment.
- Ensure that all development with full consideration for economic and environmental optimization, and for long-term sustainability and equitability of environmental resource conservation.
- Assess the project with respect to Environmental Sustainability, Climate Resilience and Disaster Risk and find the ways to reduce/mitigating negative impacts;

The ESIA study should specifically include the following:

- Establish the environmental and social baseline conditions of the specified project considering the haor ecosystem;
- Obtain information on the proposed interventions;
- Select important environmental and social components presently being impacted and of course likely to be addressed by the proposed interventions;
- Identify the places, number and classification of tress for tree plantation program;
- Conservation of bio-diversity of the study area considering its importance regarding the hotspots of BDP-2100;
- Assess land acquisition proposal and prepare land acquisition and resettlement action plan;
- Assess environmental and social impacts of proposed project interventions;
- Prepare an Environmental Management Plan (EMP) which should include mitigation measures, enhancement measures, compensation measures and an environmental monitoring plan.

06. Estimated Cost:

(In lakh Taka)

	Original	Latest Revised
(a) Total	369.00	-
(b) Taka	369.00	-
(c) Foreign Currency	-	-
(d) Project Aid	-	-
(e) RPA	-	-

07.		PCP/PFS	PP
Date of Approval	:		
(a) Original	:	23.05.2022	-
(b) Latest Revised	:	-	-
(c) No cost Time extension	:	02.02.2023	-

08. Implementation Period :

	Date of Commencement	Date of Completion
(a) Original	May 2022	February 2023
(b) Latest Revised	-	-
(c) Actual	May 2022	June 2023

09. Financing Arrangement (Source-wise):

9.1 Status of Loan/Grant

a) Foreign Financing: Not Applicable

Source (s)	Currency as per Agreement	Amount in US $ (Million)	Nature (Loan/Grant/ supplier's/ credit)	Date of Agreement	Date of Effective ness	Date of Closing	
						Original	Revised
1	2	3	4	5	6	7	8
-	-	-	-	-	-	-	-

b) GOB:

(In lakh Taka)

Total amount	Loan	Grant	Cash Foreign Exchange
1	2	3	4
369.00	-	369.00	-

9.2 Utilization of Project Aid: (Source wise) ***Not Applicable***

(In million)

Source (s)	Total Amount		Actual Expenditure		Unutilized Amount	
	In US $	In Local Currency	In US $	In Local Currency	In US $	In Local Currency
1	2	3	4	5	6	7
-	-	-	-	-	-	-

04. Training of Project Personnel (Foreign/Local) : No provision of training in this project

Field of Training /Study tour/workshop/Seminar etc.	Provision as per PP		Actual		Remarks
	Number of persons	Man - months	Number of persons	Man - months	
1	2	3	4	5	6
a. Foreign	-	-	-	-	-
b. Local	-	-	-	-	-

05. Component-wise Progress (As per latest approved PFS):

(In lakh Taka)

Items of work (as per PFS)	Unit	Target (as per PFS)		Actual Progress		Reasons for deviation (±)
		Financial	Physical (%)	Financial	Physical (%)	
1	2	3	4	5	6	7
A. Revenue						
1. Feasibility Study (Hydrological & Morphological Model Study) (Local Professionals 34.00 Man-month)	Lot	219.58	100.00%	200.00	100.00%	
2. Feasibility Study (ESIA Study) (Local Professionals 26.00 Man-month	Lot	141.80	100.00%	127.63	100.00%	
3. Other stationery	LS	1.62	100.00%	0.00	0.00%	
4. Honorarium	LS	3.50	100.00%	0.56	16.00%	
Sub-total (Revenue):		**366.50**	**100.00%**	**328.19**	**98.76%**	
B. Capital						
5. Office Equipment	LS	2.50	100.00%	0.00	0.00%	
Sub-total (Capital):		**2.50**	**100.00%**	**0.00**	**0.00%**	
Grand-Total		**369.00**	**100.00%**	**328.19**	**98.09%**	

06. Information regarding Project Director (s):

Name & Designation with pay Scale.	Full time	Part-time	Responsible for more than one project	Date of		Remarks
				Joining	Transfer	
1	2	3	4	5	6	7
Md. Razaul Karim Executive Engineer (Civil) Office of the Chief Engineer (Civil), Planning, BWDB Grade-5 (43,000 to 69,850)	-	Part-time	Yes	07.07.2022	Till date	-

07. Procurement of Transport (in Nos.): Not applicable

Type of transport	Number as per P.P.	Procured with date	Transferred to Transport Pool with date	Transferred to O & M with date	Condemned/damaged with date	Remarks
1	2	3	4	5	6	7
Car	-	-	-	-	-	-
Jeep	-	-	-	-	-	-

08. Procurement of Goods, Works and Consultancy Services:

08.1 Goods & Works of the Project costing above Tk. 200.00 lakh. and Consultancy above Tk. 100.00 lakh:

Description of procurement (goods/works /consultancy) as per the bid document	Tender/Bid/Proposal Cost (in lakh Taka)		Tender/Bid/Proposal		Date of completion of works/services and supply of goods	
	As per PFS	Contracted value	Invitation date	Contract signing/ L.C opening date	As per contract	Actual
1	2	3	4	5	6	7
"Hydrological and Morphological Model Study for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin in Sylhet District"	219.58	200.96	07.08.2022	13.10.2022	28.02.2023	26.06.2023
"Environmental and Social Impact Study for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin in Sylhet District"	141.80	130.05	07.08.2022	10.10.2022	28.02.2023	26.06.2023

8.2 Use of Project Consultant (s) (Foreign/Local):

Name of the Field	Approved man month		Actual man month utilized	Remarks
	As per PP	As per contract		
1	2	3	4	5
a) **Foreign:**	-	-	-	
b) **Local:**	34 & 26	34 & 26	34 & 26	Conducted by IWM & CEGIS respectively.

09. Construction/Erection/Installation Tools & Equipment: Not Applicable

Description of items	Quantity (as per PP)	Quantity procured with date	Transferred to O & M with date	Disposed off as per rule with date	Balance	Remarks
1	2	3	4	5	6	7

C. FINANCIAL AND PHYSICAL PROGRAMME:

01. (a) Original and revised schedule as per PFS:

(In lakh Taka)

Financial Year	Financial provision & physical target as per original PP				Financial provision & physical target as per the latest revised PP			
	Total	Taka	P.A.	Physical %	Total	Taka	P.A.	Physical %
1	2	3	4	5	6	7	8	9
2021-22	0.00	0.00		0.00%				
2022-23	369.00	369.00	-	98.09%	-	-	-	-
Total	**369.00**	**369.00**	-	**98.09%**	-	-	-	-

01. (b) Revised ADP allocation and progress:

(In lakh Taka)

Financial Year	Revised Allocation & target				Taka release	Expenditure & physical progress			
	Total	Taka	P.A.	Physical %		Total	Taka	P.A.	Physical %
1	2	3	4	5	6	7	8	9	10
2021-22	0.00	0.00	-	0.00%	0.00	0.00	0.00	-	0.00%
2022-23	369.00	369.00		100.00%	331.22	328.19	328.19		98.09%
Total	369.00	369.00	-	100.00%	331.22	328.19	328.19	-	98.09%

D. ACHIEVEMENT OF OBJECTIVES OF THE PROJECT:

Objectives as per PFS	Actual achievement	Reasons for shortfall, if any
Objectives of Mathematical Modelling Study:		
To identify and analyze the causes of flash floods, sedimentation and erosion problems in the Surma-Kushiyara river basin and suggest sustainable measures;	The causes of flash floods, sedimentation and erosion problems in the Surma-Kushiyara river basin have been identified during field visits (Section-4.3).	-
To assess the need of dredging, dredging alignment & dredging volume with design and prepare dredged material management plan;	A detailed dredging plan has been prepared in the study report (Section 4.4.1). Dredging is planned for a total length of 51.33 km in the course of Surma River where the estimated dredging volume is 76.94 Lakh cubic meters (Table 4-13) and 52.00 km in the course of Kushiyara River where the estimated dredging volume is 63.03 Lakh cubic meter (Table 4-13). Dredging planned in 3 secondary rivers is around 70 km where the estimated dredging volume is 40.94 Lakh cubic meters. A dredged earth management plan has been given in Section 4.4.8.	-
To assess the adequacy of the existing embankment, fix the alignment in case of new embankment/flood-wall and give sustainable solutions considering future aspects including city corporation area;	The existing alignment of embankments is shown in Figure A-4. The condition of the existing embankment on both banks of the Surma-Kushiyara River has been identified (Section 4.3.7). The construction of a Floodwall has been suggested (Section 4.4.5). A total of 3500 meters of flood walls of three types (Type-I: 1400 meters, Type-II: 1400 meters and Type-III: 700 meters) is proposed to be required to provide flood protection. Map showing the alignment of flood wall and upgradation of roads have been given in Figure C.4 in Appendix C.	-
To predict and assess drainage problems considering post-project conditions;	Drainage problems considering post-project conditions are assessed in the study (Section 4.4.7).	-
To prepare a holistic, integrated and sustainable river management plan for the Surma-Kushiyara River basin considering trans-boundary river issues, Climate Change and Sea Level Rise;	An analysis considering trans-boundary river issues, Climate Change and Sea Level Rise has been done (Section 4.6). Transboundary river flow has been calculated using a rating curve in the transboundary river.	-

Objectives as per PFS	Actual achievement	Reasons for shortfall, if any
	provided by the Technical Study Team (IWM). As described in Chapter 7.	
Conservation of bio-diversity of the study area considering its importance regarding the hotspots of BDP-2100;	Conservation of bio-diversity of the study area has been considered. Described in Chapter 5.	-
Assess environmental and social impacts of proposed project interventions;	The impacts before implementation of the project are identified quantified and evaluated. As described in Chapter 8.	-
Prepare an Environmental Management Plan (EMP) which should include mitigation measures, enhancement measures, compensation measures and an environmental monitoring plan.	An Environmental Management Plan (EMP) including mitigation measures, enhancement measures, compensation measures, and an environmental monitoring plan for different resources based on positive or negative impacts has been prepared considering the proposed interventions provided by the Technical Study Team (IWM) As described in Chapter 09 (Table 9.1 and Table 9.2)	-

E. BENEFIT ANALYSIS

01. Annual Out-put: Not applicable to the Study Project

Items of out-put	Unit	Estimated quantity expected at full capacity	actual quantity of output during the 1st year of operation at full capacity (or during, real production for the newly completed project).
-	-	-	-

02. Cost / Benefit: Not Applicable for the Study Project

Item	Estimated	Actual
(1) Benefit-cost ratio of the project	-	-
(i) Financial		
(ii) Economic		
(2) Internal Rate of Return		
(i) Financial		
(ii) Economic		

03. Please give reasons for shortfall, if any, between the estimated and actual benefit: N/A

F. MONITORING AND AUDITING

Monitoring: Nil

Name & designation of the inspecting official	Date of Inspection	Identified Problems	Recommendations
1	2	3	4
(a) Ministry / Agency: (b) IMED: (c) Others: (Please specify)	-	-	-

2. Auditing during and after Implementation:

2.1. Internal Audit: No audit conducted.

Period of Audit	Date of submission of Audit Report	Major findings/ objections	Whether objections resolved or not.
1	2	3	4
-	-	-	-

2.2. External Audit:

Audit period	Date of submission of Audit Report	Major findings/ objections	Whether objections resolved or not.
1	2	3	4
	-		-

G. DESCRIPTIVE REPORT

1. General Observations/Remarks of the Project on:

1.1 Background

The Surma River is a major river in Bangladesh, part of the Surma-Meghna River System. It starts when the Barak River from northeast India divides at the Bangladesh border into the Surma and the Kushiyara rivers. It ends in Kishoreganj District, above Bhairab Bāzār, where the two rivers rejoin to form the Meghna River. The waters from the river ultimately flow into the Bay of Bengal.

The Kushiyara River is one of the trans-boundary rivers of Bangladesh. The barak of India originates from the northern hills of Assam in India and then it flows further creating the border between Nagaland and Manipur states. The river enters Bangladesh along 24°53' north latitudes and 92°32' east longitudes after flowing westward from Milchar in Kachar district (India). The Barak separates into two branches at Amalshid in the northeast border of Zakiganj upazila of Sylhet district. The northwest arm is the Surma and the southwestern arm is the Kushiyara. The Kushiyara rejoins with the Surma at Markuli in Ajmiriganj upazila and flows south up to Bhairab Bazar receiving the name Kalni. The Kalni meets with the Dhanu, a branch of the Surma and renamed as the meghna. In the upstream from Markuli, partly the course of the Kushiyara is known as the Bibiyana.

These rivers experience erosion and flash floods which cause damage to Boro rice, submergible embankments and other infrastructure, reduced river discharge capacity caused by sedimentation in monsoon floods and poor drainage. According to the opinion of local people and analysis, the Surma River is subjected to severe erosion every year which causes the collapse of embankment on several portions of the river. The surge of river water from upstream causes the Surma and Kushiyara rivers to swell which causes erosion in the upazila's of Sylhet. Also due to an unplanned drainage network, the Surma River is dying day by day.

One of the main problems is the navigability issue in the Surma-Kushiyara river system which is caused by inflow of silt carried by floodwater from upstream. Barak River flow divides into Surma and Kushiyara at Amalshid point and most of the silt deposits in Surma River. As a result, the Surma is dying every day and most of the water flows run through the Kushiyara River causing horrific erosion on the river banks.

To overcome these problems, two DPPs "Embankment Rehabilitation and Riverbank Protective Works on Both Banks of Kushiyara and Surma Rivers" and "Border Riverbank Protective Works and Development Project in Zakiganj Upazila of Sylhet District" were formed. On 12/08/2021 a DPP review meeting was held which was presided over by the ADG (Planning, Design and Research). According to the decision of the Planning Commission, a feasibility study needs to be conducted for the project worth 50 crore BDT. Then he directed the concerned division to propose conducting a feasibility study regarding these DPPs.

In view of the above, BWDB decided to conduct a detailed feasibility study for the Integrated Water Resources Management and Development of the Surma-Kushiyara River Basin. The study is being conducted in two components, the Hydrological and Morphological Model Study as Component-

1, and the Environmental and Social Impact study as Component-2. A map showing the study area with river systems is shown in Figure 2.1.

1.2 Justification/Adequacy

The project relevance has been derived from national master plan and national goal of the country. The National Master Plan, Bangladesh Delta Plan 2100, Perspective Plan of Bangladesh and the 8th Five Year Plan have been consulted to frame the project. The relevant slice of the text of the plans are furnished below:

- **Perspective Plan of Bangladesh 2021 – 2041**[1]. This Plan addresses governance, human development (including rural women and youth), industry and trade, agriculture, power and energy, climate change and the environment. The Plan presents a path to shift Bangladesh from a rural agrarian economy to a primarily industrial and digital economy.

- **Bangladesh Delta Plan 2100**[2]**.** BDP 2100 focuses primarily on the delta agenda through 2050 while reflecting the longer-term challenges of sustainably managing water, ecology, environment, and land resources in the context of natural disasters and climate change risk. The Delta Plan addresses flood control, sea level rise, water logging, river-bank erosion, irrigation, urban and rural water supply, water pollution, land reclamation, river dredging for inland water traffic, environmental protection, fisheries, and preservation of biodiversity.

- **8th Five Year Plan, FY2021 to FY2025**[3]. The 8th FY Plan initiates the transition to the goals of the Perspective Plan and is built around six themes: (i) rapid recovery from COVID; (ii) GDP growth acceleration; employment generation, and rapid poverty reduction, (iii) a broad-based strategy of inclusiveness; (iv) a sustainable development pathway that is resilient to disaster and climate change; (v) improvement of critical institutions; and (vi) achieving the United Nations 17 sustainable development goals.

- **National Women Development Policy (2011)** which provides clear goals relating women, poverty, water, and agriculture in the context of climate change.

To meet the Sustainable Development Goals, it is essential to protect and restore water-related ecosystems such as wetlands, khals (Chharas) and rivers. Besides, the National Water Policy (NWPo-1999) indicates priorities for different multi-sectoral needs to be ensured in the planning & development of water management projects. Development of reservoirs in the area is required to improve the conservation of freshwater, facilitate the development of industries, and preserve natural habitats of fishes and other aquatic life thereby improving the socio-economic and environmental condition of the country.

---

1 Making Vision 2041 a Reality, Perspective Plan of Bangladesh 2021-2041, General Economics Division, Bangladesh Planning Commission, Ministry of Planning, Government of the People's Republic of Bangladesh, March 2020

2 Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century), General Economics Division, Bangladesh Planning Commission Ministry of Planning Government of the People's Republic of Bangladesh October 2018

3 Bangladesh 8th Five Year Plan, July 2020 to June 2025; Promoting Prosperity and Fostering Inclusiveness.

Linkage with Sustainable Development Goal (SDGs)

SDGs' targets	Integrated Issues (Development Targets) with Government 8FYP
SDG 13. Take urgent action to combat Climate change and its impacts	i) Protection against Floods for the safety of people, crops, and other resources. Conservation of rivers, waterways, wetlands etc. ii) River dredging to enhance navigability and to facilitate water transportation and utilization of surface water irrigation;
Achievement of Targets due to implementation of the project	
• Mitigation of Floods in Sylhet area. • Protection of land and resources in light of conserving the rivers. • Enhance food security by taking necessary measures of flood control embankment rehabilitation.	

Linkage with Bangladesh Delta Plan-2100 (BDP-2100)

- The Project will contribute to the implementation of the Bangladesh Delta Plan 2100 from the technical aspect.
- The concept of the project is in line with BDP2100. Particularly, the Project contributes to the following strategies and sub-strategies:

Strategy at the National Level

- Strategy FR 1: Protecting Economic Strongholds and Critical Infrastructure.
- Strategy FR 2: Equipping the FMD Schemes for the future.
- Sub-strategy FR 2.5: River management, excavation and smart dredging preceded by appropriate feasibility study.
- Strategy FR 3: Safeguarding Livelihoods of Vulnerable Communities.
- Sub-strategy FR 3.7: River management as well as improved flood management, drainage, O&M and flow management.

Hotspot Specific Strategies

- River Systems and Estuaries
- Improvement of the conveyance capacity as well as stabilizing the rivers.
- Strategy for sediment management including a strong capital dredging and maintenance program.

1.3 Objectives

The overall objective of the project is to carry out a comprehensive study for integrated water resources management and development of the Surma-Kushiyara River basin investigating the flash flooding mechanism, dynamic erosion and analyzing the need for embankment rehabilitation/ reconstruction and other protective measures for sustainable solutions. The study will be conducted in two components, hydrological and morphological model study as component-1 and environmental and social impact study as component-2.

The specific objectives of the hydrological and morphological model study but not limited to the following are:

Hydrological and Morphological Model Study (Component-1):

- To identify and analyze the causes of a flash flood, sedimentation and erosion problems in the Surma-Kushiyara River basin and suggest sustainable measures;
- To assess the need of dredging, dredging alignment & dredging volume with design and prepare dredged material management plan;

- To assess the adequacy of the existing embankment, fix the alignment in case of new embankment/flood-wall and give sustainable solutions considering future aspects including city corporation area;
- To predict and assess drainage problems considering post-project conditions;
- To prepare a holistic, integrated and sustainable river management plan for the Surma-Kushiyara River basin considering trans-boundary river issues, Climate Change and Sea Level Rise;
- To predict morphological changes both in the long and short term;
- To develop different potential options for protection measures considering hydrological and morphological conditions and assess the requirements of new water control structures and pump houses;
- To estimate the detailed cost of the project including economic and financial analysis to acquire the extended project outcomes.

1.4 Project revision with reasons: Not applicable

2. Rationale of the project in respect to Concept, Design, Location and Timing:

NWMP states that most of the parts of Bangladesh are dependent upon surface water. So, the development of surface water for multi-purpose use is an important issue. In this context, rivers and freshwater wetlands improvement programs would be prepared to integrate all users, social, environmental and fish migration requirements. Honorable Prime Minister, People's Republic of Bangladesh directed to restore surface water bodies for the development of the country. The importance of protection and safeguarding of the wetlands are mentioned in Article 18.A of the Constitution of Bangladesh. There are numerous numbers of rivers, khals, beels, jheels, haors and baors flowing over the haor area. However, the area experiences flash flood impacts such as damage to Boro rice, damage to flood control & submergible embankments and other infrastructure, reduced river discharge capacity caused by sedimentation in monsoon floods, poor drainage and erosion of river banks, etc. Because of this situation, time demands to prepare a River Management Plan for the Surma-Kushiyara basin areas of Sylhet district. To achieve the Sustainable Development Goal (Goal no-6, Target no-6.6) it is essential to protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes river by 2020, a River Management Plan is essential. Besides this, the river system is one of the hotspots of Bangladesh Delta Plan-2100. To cope with upcoming challenges and to meet the water needs effective and sustainable management of rivers and wetlands is a crying need. BWDB prepared two DPPs in Sylhet district for rehabilitation of Flood Control Embankment and Bank Protection works in mainland & border areas which cost more than 50 crore. But there is an order of the Planning Commission that for DPP costing more than 50 crore a full feasibility study by the third-party consultant is required. According to this in the DPP Review meeting of BWDB on 12th August 2021, it was decided to take the initiative for conducting a feasibility study.

Because of the above-stated reasons this project has been proposed to conduct a feasibility study for Integrated Water Resources Management and Development of the Surma Kushiyara River basin.

3. Brief description of the planning and financing of the project and its applicability.

- **Project Identification:**

The Barak River of India originates from the northern hills of Assam in India and enters Bangladesh along 24°53' north latitudes and 92°32' east longitudes after flowing westward from Milchar in Kachhar district (India). The Barak separates into two branches at Amalshid in the northeast border of Zakiganj upazila of Sylhet district. The northwest arm is the Surma and the southwestern arm is the Kushiyara. The Surma and the Kushiyara rivers experience erosion and pre-monsoon floods which cause damage to Boro rice, submergible embankments in haor sub-projects and other infrastructure, reduced river discharge capacity caused by sedimentation in monsoon floods and poor drainage. Another problem is the navigability issue in the Surma-Kushiyara River system which is caused by silt carried by floodwater

from upstream. Most of the silt deposits in the Surma River and as a result, the Surma is dying every day and most of the water flows through the Kushiyara River causing horrific erosion on the river banks.

To overcome these problems, two DPPs in Sylhet district for rehabilitation of Flood Control Embankment and Bank Protection works in mainland & border area with cost more than 50 crore. But there is an order of the Planning Commission that for DPP costing more than 50 crore a full feasibility study by the third-party consultant is required. According to this in the DPP Review meeting of BWDB on 12th August 2021, it was decided to take initiatives for conducting a feasibility study.

Because of the above, BWDB decided to conduct a detailed feasibility study for the Integrated Water Resources Management and Development of the Surma-Kushiyara River Basin.

- **Project Preparation:**

The majority of Bangladesh's regions heavily rely on surface water, making the development of surface water resources for various purposes a critical concern. In light of this, comprehensive programs for enhancing rivers and freshwater wetlands are being devised to accommodate the diverse needs of society, the environment, and fish migration. The esteemed Prime Minister of the People's Republic of Bangladesh has issued directives to restore surface water bodies for the nation's development. The significance of protecting and preserving wetlands is enshrined in Article 18.A of the Constitution of Bangladesh.

The haor area boasts a multitude of rivers, khals, beels, jheels, haors, and baors. Nevertheless, it grapples with challenges such as flash floods that result in damage to Boro rice, harm to flood control and submergible embankments, along other infrastructure issues. These challenges stem from reduced river discharge capacity due to sedimentation during monsoon floods, subpar drainage systems, and erosion of riverbanks. Given this situation, it is imperative to formulate a River Management Plan for the Sylhet district's Surma-Kushiyara basin areas. To meet Sustainable Development Goal 6.6, aimed at safeguarding and restoring water-related ecosystems like mountains, forests, wetlands, rivers, aquifers, and lakes by 2020, the creation of a River Management Plan is indispensable.

Moreover, the river system plays a pivotal role in Bangladesh's Delta Plan-2100. To address forthcoming challenges and meet the increasing water demand, effective and sustainable river and wetland management is an urgent necessity. The Bangladesh Water Development Board (BWDB) has drafted two Detailed Project Proposals (DPPs) for the rehabilitation of Flood Control Embankments and Bank Protection works in the mainland and border areas of Sylhet district, with a total cost exceeding 50 crore. However, the Planning Commission has mandated that DPPs with costs exceeding 50 crore must undergo a thorough feasibility study conducted by a third-party consultant. Consequently, during the DPP Review meeting of BWDB on August 12, 2021, a decision was reached to initiate the process of conducting a feasibility study. Because of the above, BWDB prepared a PFS to execute the feasibility study project.

- **Appraisal:**
  Apprised on the Departmental Project Evaluation (DPEC) meeting held on 03/04/2022 at the Ministry of Water Resources

- **Credit Negotiation:** N/A
- **Credit Agreement:** N/A
- **Credit Effectiveness:** N/A
- **Loan Disbursement:** N/A

- **Loan Conditionalities:** N/A
- **Project Approval:** Approved by Honorable State Minister, MoWR on 01/08/2021.
- **Others (if any):** N/A

4. **Analysis of the Post-Implementation situation and result of the project:** Not applicable for this study project

4.1 Whether the beneficiaries of the project have clear knowledge about the Target/ Objectives of the project.
4.2 Programme for use of created facilities of the project
4.3 O & M programme of the project.
4.4 Impact of the project -
4.4.1 Direct
4.4.2 Indirect
4.5 Transfer of Technology and Institutional Building through the project
4.6 Employment generation through the project.
4.7 Possibility of Self employment
4.8 Possibility of employment opportunity
4.9 Women's participation in development
4.10 Probable Impact on Socio-Economic activity.
4.11 Impact on environment
4.12 Sustainability of the project
4.13 Contribution to poverty alleviation/reduction
4.14 Opinion of the public representatives, local elite, local administration, teachers, religious leaders, women's representatives, etc.
4.15 Contribution of Micro-credit programs and Comments on overlapping with any NGO activities.

5. **Problems encountered during Implementation (with duration & steps taken to remove those):** It is a consultancy service procurement project. The below-mentioned problems do not occur.

5.1	**Project Management**	**5.12**	**Project aid disbursement and re-reimbursement**
5.2	**Project Director**		
5.3	**Land Acquisition**	**5.13**	**Mission of the development partners.**
5.4	**Procurement**	**5.14**	**Time & Cost Over-run**
5.5	**Consultancy**	**5.15**	**Project Supervision/Inspection**
5.6	**Contractor**	**5.16**	**Delay in Decision**
5.7	**Manpower**	**5.17**	**Transport**
5.8	**law & Order**	**5.18**	**Training**
5.9	**Natural calamity**	**5.19**	**Approval**
5.10	**Project financing, allocation and release.**	**5.20**	**Others.**
5.11	**Design formulation/approval**		

6. Remarks & Recommendations of the Project Director

"Feasibility Study for for Integrated Water Resources Management and Development of Surma-Kushiyara River Basin" was sanctioned in administrative approval from the Ministry of Water Resources given vide memo no: 42.00.0000.043.14.012.21-278, dated: 23/05/2022.

The main objective of the study is to carry out a comprehensive study for integrated water resources management and development of the Surma-Kushiyara River basin investigating the flash flood mechanism, dynamic erosion and analyzing the need for embankment rehabilitation/reconstruction and other protective measures for the sustainable solutions..

The study has been framed to attain its objectives through two components: **Component-1**- Hydrological and morphological model study, and **Component-2**- ESIA study. Component-1 has been carried out by IWM whereas Component-2 has been carried out by CEGIS. Under the Mathematical Modelling Component, a detailed hydromorphological analysis of the concerned area was done. Under the Environmental and Social Study Component of the project, a detailed environmental and social impact assessment (ESIA) has been completed to analyze the impact of the project interventions on the environment and the society of the project area.

The study strongly recommends implementing the physical works planned in the project to manage pre-monsoon & monsoon floods and post-monsoon drainage in the area. Bank protection work with river dredging is proposed under this study to reduce the severity of pre-monsoon and monsoon floods and expedite post-monsoon drainage. Flood walls, regulators, pump stations and drainage outlets are recommended for improving the flood situation in the Sylhet City Corporation and Sylhet Cantonment area. Improvement of internal drainage of the project areas and re-excavation of internal khals have been proposed. River bank protection works are recommended to be constructed as planned design for save loss of properties. Other structures proposed in the study will also improve the livelihood of the people in the project areas.

The team members have extensively visited the project area either individually or accompanied by officials of the Planning and field offices of BWDB. The study team members frequently discussed with local people comprising day laborers, farmers, small entrepreneurs, representatives of local government, industrialists, officials of different government and non-government organizations, etc. Based on the feedback received from discussions and analysis of data and information, a baseline hydro-morphological, socio-economic, and environmental setting of the area has been understood. Thereafter, the demands of the local community have been synchronized with the baseline condition, and the potential for development has been conceived. Both structural and non-structural measures have been suggested for future development including consideration of avoiding environmental disruption. The planning has been proposed including taking care of risk management and negative impacts of proposed interventions including necessary mitigation measures.

It is anticipated that the study project output will help in DPP preparation and implementation of the subsequent investment project.

All the objectives and scopes have been accomplished under this study project. The design, cost estimate and ESIA have been conducted through this study. The DPP of the investment project would be finalized for implementation of the proposed physical components based on the findings of this study project.

17.01.24

Date: .....

Signature and seal of the Project Director

(মোঃ রেজাউল করিম)
আইডি নং: ৮১০৬১৫০০২
প্রকল্প পরিচালক/নির্বাহী প্রকৌশলী (পুর)

7. Remarks/Comments of Agency Head

The main benefit of the project is to prevent pre-monsoon & monsoon floods and make available fresh water during the dry months. The project has been formulated to reduce the severity of pre-monsoon and monsoon floods, improve post-monsoon drainage, facilitate Boro rice harvesting, save loss of properties due to river bank erosion, improve navigation, enhance the availability of irrigation water and above all improve the environmental condition in the haor areas of Sylhet district.

It is expected that the implementation of the project based on the study outcomes would bring lots of benefits to the people living in the project area. It is also anticipated that the project will also generate a significant number of employment opportunities during implementation and post-project conditions. The project is technically feasible, economically viable and environmentally sustainable. The project is thus recommended for implementation.

Date: 17/01/2024

Signature and seal

(S. M. Shahidul Islam
ID NO: 650307001
Director General
BWDB, Dhaka.

8. Remarks/Comments of the officer in- charge of the Ministry/Division

The study project has been done successfully and subsequent investment projects will be taken as per the recommendations of the study.

Date: .....

Signature and seal