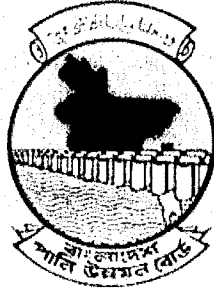


**PROJECT COMPLETION REPORT (PCR)**  
**IMED 04/2003 (Revised)**



**Name of the Project : Post Project Evaluation and Impact Assessment of  
10 BWDB Projects**

**Office of the Chief Engineer (Civil), Planning**  
**BANGLADESH WATER DEVELOPMENT BOARD**  
**MINISTRY OF WATER RESOURCES**  
**GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH**

**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 : Post Project Evaluation and Impact Assessment of 10 BWDB Projects (Project code- 224250800):
- a) Manu River Project;
- b) River Bank Protection Project at the Left Bank of Jamuna River from Bahadrabad Ghat to Futani Bazar, Harindhora to Hargila and Pingna Bazar in Jamalpur District;
- c) Chandpur Irrigation Project;
- d) Bhairab River Re-excavation Project;
- e) Water Logging Mitigation Project for Kobadak River (Phase-I);
- f) Gorai River Restoration Project (Phase I & II);
- g) New Dakatia-Old Dakatia and Little Feni River Basin Development Project;
- h) Dampara Water Management Project;
- i) Mahamaya Chhara Irrigation Project;
- j) Capital (Pilot) Dredging of River System in Bangladesh Project;
02. Administrative Ministry/Division : Ministry of Water Resources
03. Executing Agency : Bangladesh Water Development Board
04. Location of the Project :

| Division   | District                                         |
|------------|--------------------------------------------------|
| Dhaka      | Jamalpur, Netrokona                              |
| Chattogram | Chandpur, Lakshmipur, Feni, Noakhali, Chattogram |
| Sylhet     | Maulvibazar                                      |
| Khulna     | Meherpur, Jashore, Satkhira, Jhenaidah, Kushtia  |
| Rajshahi   | Sirajganj                                        |

05. Objectives of the Project:

The major objectives of the evaluation performance of the 10 projects are to explore the benefits and achievement of the targeted objectives of the projects. The specific objectives of the study are to:

- Prepare a benchmark for the pre-project situation of the projects;
- Identify the indicators for performance evaluation of the projects;
- Evaluation of each projects against the objectives of the projects;
- Evaluate the project benefit;
- Compare the existing performance of the project with the pre-project situation following national and international standards with description of these standards;
- Finding out the way for future improvement for each project;
- Assessment of the contribution of each project to the GDP of Bangladesh; and
- To take lessons from these projects for better management of water resources of Bangladesh;

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## 06. Estimated Cost:

(In lakh Taka)

|                      | Original | Latest Revised |
|----------------------|----------|----------------|
| (a) Total            | 344.00   | -              |
| (b) Taka             | 344.00   | -              |
| (c) Foreign Currency | -        | -              |
| (d) Project Aid      | -        | -              |
| (e) RPA              | -        | -              |

07 Date of Approval : PCP/PFS PP

(a) Original : 18.04.2018

(b) Latest Revised : -

(c) No Cost Time Extension : 20.09.2019

08. Implementation Period :

Date of Commencement

Date of Completion

(a) Original January 2018

September 2019

(b) Latest Revised January 2018

March 2020

(No Cost Time Extension)

(c) Actual January 2018

March 2020

## 9. 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 Effectiveness | 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                     |
| 344.00       | -    | 344.00 | -                     |

9.2 Utilization of Project Aid: *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                 |
|            |              |                   |                    |                   |                   |                   |

### 9.3 Re-imbursible Project Aid (RPA): *Not Applicable*

(In lakh Taka)

| R P A Amount   |                  | Amount Spent | Amount Claimed | Amount Re-imbursed | Remarks |
|----------------|------------------|--------------|----------------|--------------------|---------|
| As per PP      | As per Agreement |              |                |                    |         |
| 1              | 2                | 3            | 4              | 5                  | 6       |
| Not Applicable |                  |              |                |                    |         |

## B. IMPLEMENTATION POSITION

### 01. Implementation Period:

| Implementation Period as per PP         |                                      | Actual Implementation Period         | Time Over-run (% of original implementation period) | Remarks                                                                                                                                                                                                                                         |
|-----------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Original                                | Latest Revised                       |                                      |                                                     |                                                                                                                                                                                                                                                 |
| 1                                       | 2                                    | 3                                    | 4                                                   | 5                                                                                                                                                                                                                                               |
| January 2018-September 2019 (1.75 year) | January 2018-March 2020 (2.25 years) | January 2018-March 2020 (2.25 years) | 0.5 year (28.57%)                                   | The project period was extended vide no cost time extension application by the consultant. Video documentary, one of the project components, delayed due to the Monsoon period and the immense flooding condition around the project locations. |

### 02. Cost of the Project:

(In lakh Taka)

| Description | Estimated Cost |                | Actual expenditure | Cost over-run (% of original cost) | Remarks                                                                   |
|-------------|----------------|----------------|--------------------|------------------------------------|---------------------------------------------------------------------------|
|             | Original       | Latest revised |                    |                                    |                                                                           |
| 1           | 2              | 3              | 4                  | 5                                  | 6                                                                         |
| TOTAL       | 344.00         | -              | 324.45             | -                                  | The actual contract with the consultant was less than the estimated cost. |
| TAKA        | 344.00         | -              | 324.45             | -                                  |                                                                           |
| PA          | -              | -              | -                  | -                                  |                                                                           |

**03. Project Personnel:** The project has been implemented by the existing manpower of Office of the Chief Engineer (Civil), Planning and Directorate of Planning-1, BWDB, Dhaka.

| Sanctioned strength as per PP | Manpower employed during execution | Status of the existing manpower        |                             |        | Manpower Employed |        |
|-------------------------------|------------------------------------|----------------------------------------|-----------------------------|--------|-------------------|--------|
|                               |                                    | Manpower requirement for O&M as per pp | Existing manpower for O & M | Others | Male              | Female |
| 1                             | 2                                  | 3                                      | 4                           | 5      | 6                 | 7      |
| Officer (s)                   | 8                                  | -                                      | -                           | -      | 6                 | 2      |
| Staff(s)                      | 12                                 | -                                      | -                           | -      | 10                | 2      |
| Total :                       | 20                                 | -                                      |                             |        | 16                | 4      |

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

| Field of<br>Training<br>/Study<br>tour/workshop/<br>Seminar etc. | Provision as per PP |                 | Actual              |                 | Remarks |
|------------------------------------------------------------------|---------------------|-----------------|---------------------|-----------------|---------|
|                                                                  | Number of<br>person | Man -<br>months | Number of<br>person | Man -<br>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<br>(as per PFS)           | Unit      | Target (as per PFS)    |           | Actual Progress        |           | Reasons for deviation<br>(±)                                          |
|-----------------------------------------|-----------|------------------------|-----------|------------------------|-----------|-----------------------------------------------------------------------|
|                                         |           | Physical               | Financial | Physical<br>(%)        | Financial |                                                                       |
| 1                                       | 2         | 3                      | 4         | 5                      | 6         | 7                                                                     |
| Revenue                                 |           |                        |           |                        |           |                                                                       |
| Honorarium                              | item      | 100%                   | 4.00      | 22%                    | 0.88      | Honorarium remained unspent because of not holding seminar/workshops. |
| Seminar, conference Expenses            | item      | 100%                   | 15.00     | 26%                    | 3.94      | Scheduled Seminar, Workshops couldn't hold.                           |
| Travel Expenses                         | item      | 100%                   | 1.00      | 100%                   | 0.93      |                                                                       |
| Stationaries, Seals and Stamps          | item      | 100%                   | 2.00      | 100%                   | 2.00      |                                                                       |
| Consultancy (125 MM including IT & VAT) | Man-Month | 125                    | 319.50    | 125                    | 314.71    | Contract value is less than PFS value.                                |
| Sub-total (Revenue):                    |           |                        | 341.50    |                        | 322.46    |                                                                       |
| Capital                                 |           |                        |           |                        |           |                                                                       |
| Computers and accessories               | Nos       | Desktop-2<br>Printer-2 | 2.50      | Desktop-2<br>Printer-2 | 1.99      |                                                                       |
| Sub-total (Capital):                    |           |                        | 2.50      |                        | 1.99      |                                                                       |
| Grand-Total                             |           | 100%                   | 344.00    | 97%                    | 324.45    |                                                                       |

06. Information regarding Project Director (s):

| Name &<br>Designation with pay<br>Scale.                           | Full<br>time | Part<br>time | Responsible<br>for more than<br>one project | Date of    |              | Remarks |
|--------------------------------------------------------------------|--------------|--------------|---------------------------------------------|------------|--------------|---------|
|                                                                    |              |              |                                             | Joining    | Transfer     |         |
| 1                                                                  | 2            | 3            | 4                                           | 5          | 6            | 7       |
| Liton Kumar Sarker<br>Executive Engineer<br>Grade-5; 43,000-69,850 | Full<br>time | -            | No                                          | 10.07.2018 | Till<br>date |         |

07. Procurement of Transport (in Nos.): *Not Applicable*

| Type of<br>transport | Number<br>as per<br>P.P. | Procured<br>with date | Transferred to<br>Transport<br>Pool with date | Transferr<br>ed to<br>O & M<br>with date | Condemned/<br>damaged<br>with date | Remarks |
|----------------------|--------------------------|-----------------------|-----------------------------------------------|------------------------------------------|------------------------------------|---------|
| 1                    | 2                        | 3                     | 4                                             | 5                                        | 6                                  | 7       |
| Not Applicable       |                          |                       |                                               |                                          |                                    |         |

## 8. Procurement of Goods, Works and Consultancy Services:

8.1 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 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          |
| Consultancy Services for "Post Project Evaluation and Impact Assessment of 10 BWDB Projects" | 319.50                                  | 314.71           | 14.06.2018          | 26.07.2018                         | 31.03.2020                                               | 22.03.2020 |

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

| Name of the Field | Approved man month |                 | Actual man month utilised | Remarks |
|-------------------|--------------------|-----------------|---------------------------|---------|
|                   | As per PP          | As per contract |                           |         |
| 1                 | 2                  | 3               | 4                         | 5       |
| a) Foreign :      | -                  | -               | -                         |         |
| b) Local          | 125                | 125             | 125                       |         |

## 9. 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       |
| Desktop Computer     | 2                    | 2<br>(26/06/2019)           | 01/07/2020                     | -                                  | 2       | -       |
| Printer              | 2                    | 2<br>(26/06/2019)           | 01/07/2020                     | -                                  | 2       | -       |

## 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 latest revised PP |      |      |            |
|----------------|----------------------------------------------------------|--------|------|------------|----------------------------------------------------------------|------|------|------------|
|                | Total                                                    | Taka   | P.A. | Physical % | Total                                                          | Taka | P.A. | Physical % |
| 1              | 2                                                        | 3      | 4    | 5          | 6                                                              | 7    | 8    | 9          |
| 2017-18        | 38.70                                                    | 38.70  | -    | 15%        | -                                                              | -    | -    | -          |
| 2018-19        | 138.30                                                   | 138.30 | -    | 45%        | -                                                              | -    | -    | -          |
| 2019-20        | 167.00                                                   | 167.00 |      | 40%        |                                                                |      |      |            |
| Total          | 344.00                                                   | 344.00 | -    | 100%       | -                                                              | -    | -    | -          |

01. (b) Revised ADP allocation and progress :

(In lakh Taka)

| Financial<br>Year | Revised Allocation & target |        |      |                 | Taka<br>Release | Expenditure & physical progress |        |      |                 |
|-------------------|-----------------------------|--------|------|-----------------|-----------------|---------------------------------|--------|------|-----------------|
|                   | Total                       | Taka   | P.A. | Physical<br>(%) |                 | Total                           | Taka   | P.A. | Physical<br>(%) |
| 1                 | 2                           | 3      | 4    | 5               | 6               | 7                               | 8      | 9    | 10              |
| 2017-18           | 0.00                        | 0.00   | -    | 0%              | 0.00            | 0.00                            | 0.00   | -    | 0%              |
| 2018-19           | 136.00                      | 136.00 | -    | 60%             | 136.00          | 123.79                          | 123.79 | -    | 60%             |
| 2019-20           | 208.00                      | 208.00 |      | 40%             | 208.00          | 200.66                          | 200.66 |      | 37%             |
| Total             | 344.00                      | 345.00 | -    | 100%            | 343.60          | 324.45                          | 324.45 | -    | 97%             |

**D. ACHIEVEMENT OF OBJECTIVES OF THE PROJECT:**

According to all objectives & ToR, the study has addressed all the scope of works. The specific objectives are illustrated below:

| Objectives as per PPPFS                                                                                                                                            | Actual achievement                                                                                                                            | Reasons for shortfall, if any |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Prepare a benchmark for the pre-project situation of the projects;                                                                                                 | Benchmark for pre-project situation has been prepared.                                                                                        |                               |
| Identify the indicators for performance evaluation of the projects;                                                                                                | Specific indicators have been identified for performance evaluation of the projects.                                                          |                               |
| Evaluation of each projects against the objectives of the projects;                                                                                                | Each project has been evaluated against the objectives of the project.                                                                        |                               |
| Evaluate the project benefit;                                                                                                                                      | Project benefits have been evaluated.                                                                                                         |                               |
| Compare the existing performance of the project with the pre-project situation following national and international standards with description of these standards; | A comparison has been made between the performance of the project and pre-project situation.                                                  |                               |
| Finding out the way for future improvement for each project;                                                                                                       | Suggestions and recommendations have been made for future improvement for each project.                                                       |                               |
| Assessment of the contribution of each project to the GDP of Bangladesh;                                                                                           | Direct contribution of each project to GDP of Bangladesh has been assessed.                                                                   |                               |
| To take lessons from these projects for better management of water resources of Bangladesh.                                                                        | Lesson learning is a continuous process. Obviously this study project will benefit us for better management of water resources of Bangladesh. |                               |

\* Output & Recommendations of Performance evaluation of "Project" is attached in Annexure-A.

### E. BENEFIT ANALYSIS

01. Annual Out-put: Not Applicable for the Study Project. The project is a Study Project.

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

02. Cost / Benefit: *Not Applicable* (It is not an investment project, hence *not applicable*)

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

03. Please give reasons for shortfall, if any, between the estimated and actual benefit:  
*Not Applicable*

### F. MONITORING AND AUDITING

01. Monitoring: *Not Applicable for study project.*

| 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)

## 02. Auditing during and after Implementation:

### 2.1. Internal Audit: *No audit conducted.*

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

### 2.2. External Audit:

| Audit period | Date of submission<br>of Audit Report | Major findings/<br>objections | Whether objections<br>resolved or not. |
|--------------|---------------------------------------|-------------------------------|----------------------------------------|
| 1            | 2                                     | 3                             | 4                                      |
| 2018-19      |                                       | Yet to be conducted           |                                        |
| 2019-20      |                                       | Yet to be conducted           |                                        |

## G. DESCRIPTIVE REPORT

### 1. General Observations/Remarks of the Project on:

#### 1.1 Background

Bangladesh Water Development Board (BWDB) is the major implementing agency under Ministry of Water Resources (MoWR) of the Government of Bangladesh (GoB) for sustainable management of water resources. BWDB has so far implemented more than 800 projects of various types like; Irrigation, Flood Control and Drainage (FCD) and Flood Control, Drainage and Irrigation (FCDI), Land reclamation, River bank protection, Dredging of rivers and many more. The implementation of the projects commenced since 1960 and is still being implemented for the socio-economic uplifting of the country. The aim of the projects was to increase agriculture production as well as save lives and properties through flood management, development of drainage system, providing irrigation facilities, river bank protection etc.

The engineering aspects of the projects are different for different hydrological regions. Some projects were developed to protect Boro crops through implementation of submergible embankment with different water control structures in North-East region of the country. Some projects were developed to increase crop production by providing supplementary irrigation due to scarcity of rain water for Aman crops in North and North-West region of the country. On the other hand, some projects were implemented to protect saline water intrusion in agriculture crop field to facilitate increasing irrigable area, production of Aman rice and extension of Boro cultivation area in South and South-West region.

The FCD/I and irrigation projects in different hydrological regions are functioning very well and improved the livelihood of rural areas in Bangladesh.

The present study has evaluated the performance of 10 projects of BWDB against their targeted objectives. Moreover, the evaluation would include contribution of projects in national GDP, improving socio-economic condition of the beneficiaries and over-all performance. In line with this, present Strength, Weaknesses, Opportunities and Threats (SWOT analysis) relating to the targeted performances would be checked and necessary recommendations would be made in favor of rehabilitation of the projects in future. The projects have been selected from different types and regions considering importance and size i.e. benefitted area of the projects.

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### 1.2 Justification/Adequacy

BWDB has so far implemented more than 800 projects since 1960. The implementation of the projects contributed to enhancement of macro economic objectives of the nation like increased GDP, food production and rural employment as well as increased household level income, employment, security against water-induced risks and vulnerabilities of disaster-prone communities in the country. A huge amount of engineering, social, economic, environmental and management experience has been gathered during more than half a century of planning, design, implementation, operation and maintenance of these projects.

As an implementing agency BWDB may also look back to learn lessons for fortifying its effort to face upcoming challenges of natural disasters, threats of climate change and to achieve national development objectives. This study has been designed to evaluate and assess impacts of 10 completed projects.

Other than evaluation, the study project aimed to make physical prototype and videography of each projects. The study includes 10 such completed projects that represent BWDB's area of activities. The projects selected for evaluation includes one that implemented long back in the seventies of twentieth century and one recently in 2017.

### 1.3 Objectives

The major objectives of the evaluation performance of the 10 projects are to explore the benefits and achievement of the targeted objectives of the projects. The specific objectives of the study are to:

- Prepare a benchmark for the pre-project situation of the projects;
- Identify the indicators for performance evaluation of the projects;
- Evaluation of each projects against the objectives of the projects;
- Evaluate the project benefit;
- Compare the existing performance of the project with the pre-project situation following national and international standards with description of these standards;
- Finding out the way for future improvement for each project;
- Assessment of the contribution of each project to the GDP of Bangladesh; and
- To take lessons from these projects for better management of water resources of Bangladesh;

### 1.4 Project revision with reasons: Didn't require.

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

BWDB felt a need to look back efficacy and efficiency of its projects and as such came up with a study project. BWDB so far completed over 800 projects i.e., FCD/FCDI, Bank Protection, Drainage control, Salinity intrusion and land reclamation. Different types of engineering interventions have been made to achieve objectives of the projects. Out of such varied projects the study project aimed at performance evaluation and impact assessment of 10 such BWDB projects that represent BWDB's area of activities. The study project will facilitate for future planning for better management of water resources. The project is a feasibility study type project that will explore over all performance of the selected projects with respect to the targeted objectives.

According to the original PFS the project implementation period of the study project was from January, 2018 to September, 2019. But Video documentary, one of the project components, delayed due to the Monsoon period and the immense flooding condition around the project locations. Thus project implementation period

was extended by MoWR from January, 2018 to March, 2020 vide memo no 42.00.0000.039.14.025.17-347, Date: 29.09.2019 without increasing of cost.

Moreover, the contract agreement signed at lower cost than the approved cost. Hence, the project cost reduced by Tk. 4.79 lakh. The expenditure of the project is 324.45 lakh Tk. and achievement is 97% and the project completed in approved time.

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

#### ◆ Project Identification

BWDB over the last sixty years has gone through a long way in project planning, preparation and implementation of water resources management projects. Many of the projects of BWDB were implemented long ago. Some of those need rehabilitation to escalate the performance at the desired level and removal of project depreciation. The projects need to be evaluated with respect to their performances in pre and post project condition. Projects identified for the study such that it covers BWDB's areas of activities. 10 such projects were identified for this study.

#### ◆ Project Preparation

In view of the above, BWDB decides to conduct post project evaluation and impact assessment of 10 such completed projects. BWDB prepared a PFS for such a study.

#### ◆ Appraisal

A DPEC meeting on the PFS titled "Post Project Evaluation and Impact Assessment of 10 BWDB Projects" was held on 20/12/2017. In the meeting decisions were made to select completed projects that were not evaluated by IMED and that cover BWDB's areas of activities.

- Credit Negotiation
- Credit Agreement
- Credit Effectiveness
- Loan Disbursement
- Loan Conditionalities

Applicable for  
Investment  
Project

- Project Approval: The project was approved by Honorable State Minister, MoWR on 18 August, 2018
- Others (if any)

### 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 women-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 programmes and Comments on overlapping with any NGO activities.

5. *Problems encountered during Implementation (with duration & steps taken to remove those)*

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

*It is a contract base consultancy project. The above problems didn't occur*

6. **Remarks & Recommendations of the Project Director:**

The major objectives of the performance evaluation of 10 projects are to explore the benefits and achievement of the targeted objectives of the projects, finding out the way for future improvement for each project and to take lessons from these projects for better management of water resources in Bangladesh. The project successfully completed in March, 2020. Due to pandemic worldwide a scheduled seminar on the Draft Final Report (DFR) of the project couldn't held.

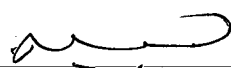
The outcome of the project consists of Pre-project baseline selection, identification of indicators for performance evaluation; compare the existing performance of the projects with the pre-project situation; ratings for achievement of project objectives i.e., physical, institutional and overall rating; impact assessment; overall performance of the projects including contribution to the GDP of Bangladesh and scope of future improvements for each project.

The outcome of the project also includes Geo-referenced map of each project; Physical prototype and Videography.

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For each project a set of recommendations and suggestions for future improvements has been made. This can be used for improvement of performance of each project and a tool for better management of water resources in Bangladesh. For the first time BWDB has taken such initiative and such study can be done on regular basis.

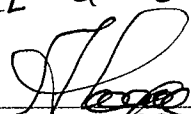
Date: 09-09-2020

  
Signature and seal of the Project Director  
(Liton Kumar Sarker)  
PD/Executive Engineer  
Office of The Chief Planning  
BWDB, Dhaka.

7. Remarks/Comments of Agency Head:

Since inception, BWDB has been implementing infrastructural development projects on water resources section of Bangladesh. This project is a performance evaluation study of 10 successful completed projects of BWDB. Recommendation and suggestion from this study project will be taken into consideration for future projects planning and implementation. With the consent from MoWR, BWDB would like to take similar projects for impact assessment.

Date:

  
Signature and Seal

15.09.2020  
(A. M. Aminul Haque)  
Director General  
BWDB, Dhaka.

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

Date:

Signature and Seal

## Annexure-A

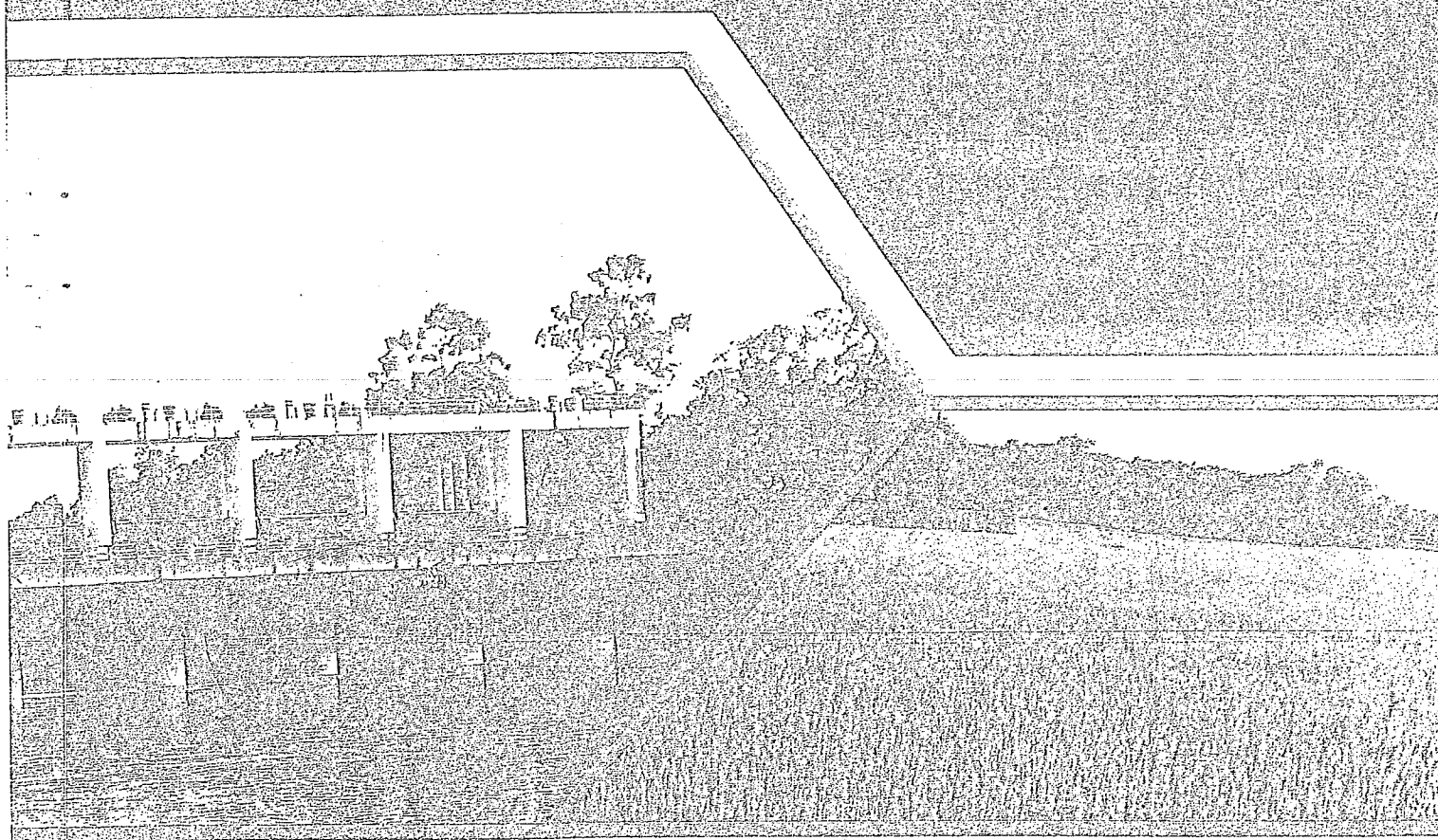


Bangladesh Water Development Board

# Final Report

## Post Project Evaluation and Impact Assessment of 10 BWDB Projects

### Monu River Project



March 2020



Center for Environmental and Geographic Information Services  
House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh. Tel: 88 02 58817649-52; 9842581, 9842551. Fax: 88 02 9843128

## 8.9 Overall Performance

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.24.

Table 8.24: Overall Performance of the Project

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                                                                |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flooding                          | ✓               | -                  | -             | Comparison between pre-project and study period situation, present flooding problem in the above mentioned areas has been reduced than previous as stated by local people.                                                                                                                                                        |
| Drainage                          | -               | ✓                  | -             | The inundated area decreased by 1,850 Ha.                                                                                                                                                                                                                                                                                         |
| Irrigation                        | -               | ✓                  | -             | Net benefited area (cultivable) decreases by 2502 Ha because of pumping problem of Kasimpur Pump Station since 2017.<br>LLP Inlets are very much needed to meet up water demand for increasing crop production but for the last 8 to 10 years LLP inlets have no existence within the project area.                               |
| Flood damage                      | ✓               | -                  | -             | Reduce                                                                                                                                                                                                                                                                                                                            |
| Standard of living                | ✓               | -                  | -             | Quality of life indicates how the people are leading their life in a locality. Due to Manu project their occupation, income, health, has improved.                                                                                                                                                                                |
| Reduce poverty                    | -               | ✓                  | -             | <ul style="list-style-type: none"> <li>➤ Marginal and landless farmers got the chance to be involved in the agricultural production beside the wage labors</li> <li>➤ Subleasing system becomes popular for all types of farmer.</li> <li>➤ People takes meal 3 times in a day</li> <li>➤ Average income has increased</li> </ul> |
| Cropping pattern                  | ✓               | -                  | -             | Replacement of local varieties with low yield potential by high yielding varieties with high yield potential coupled with more intensive cropping is reflected in higher agricultural crop production.                                                                                                                            |
| Crop Production                   | ✓               | -                  | -             | The annual total rice production of 50,995 tons under the pre-project condition increased to 93,499 tons during the study period.                                                                                                                                                                                                 |

## Conclusions and Recommendations

### 10.1 Conclusions

Kasimpur Pump Station was working properly in full swing since 2017 after repairing it by BWDB. As a result drainage problem within the project area would be reduced to provide better facility to general people.

LLP Inlets are very much needed to meet up water demand for increasing crop production but for the last 8 to 10 years LLP inlets have no existence within the project area.

Environmental quality data (pH, DO, BOD, COD) has been presented in current scenario, water quality of the project areas are good compare with the DoE standard.

Cropping intensity increased by 16% compared to that of the pre-project condition.

The annual total rice production of 50,995 tons under the pre-project condition increased to 93,499 tons during the study period. Such increase in rice production was contributed by increase in high yielding varieties with the facilities created by the Manu River Project.

Input use increased between pre-project and during study period. Per hectare use of chemical fertilizers (urea, TSP and MP) in rice and others crop increased but use of manures per hectare decreased. Per hectare use of pesticides decreased during the study period. The Upazila Agriculture Officer (UAO) and local farmers informed that attitude of farmers were positively changing towards HYV crop cultivation instead of local variety. They also said that now a day farmers use balance fertilizer dose in their crop for optimum yield. Farmers followed IPM method both in rice and vegetable field.

Total culture fish habitat is same 334 Ha in pre and post project time. But the non-culture ponds were converted into culture pond due to protection of flood water in monsoon period. At present culture pond area is 196 ha and non-cultured pond is 138 ha.

The capture fish production increased to 6,258 MT per year. The fish production from culture fish habitat increased by 596 MT per year. Change of species richness of some fishes namely *Jat Puti*, *Kholisha*, *Koi*, *Darkina*, *Guchi Baim*, *Chanda* etc increased. Some fishes like *Gazar*, *Baro Baim*, *Deshi Sarputi*, *Chapila* etc. are reduced due to disruption of fish migration.

By comparing plant species composition between pre-project and study period situations, it is concluded that the composition of plant species is slightly progressive in terms of species diversity, and richness.

The agricultural production has increased. With the flood protection, a large amount of land became usable for crop production. In this aspect, production pattern of this area has been changed, and made a significant impact in the employment opportunities during the present condition. As a result scope for employment opportunities also increased. Communication and transportation system including internal road connectivity has developed. People are becoming self-reliant. Now most of the people are able to manage work in the project area. Their tendency to go outside for searching better working opportunity has stopped.

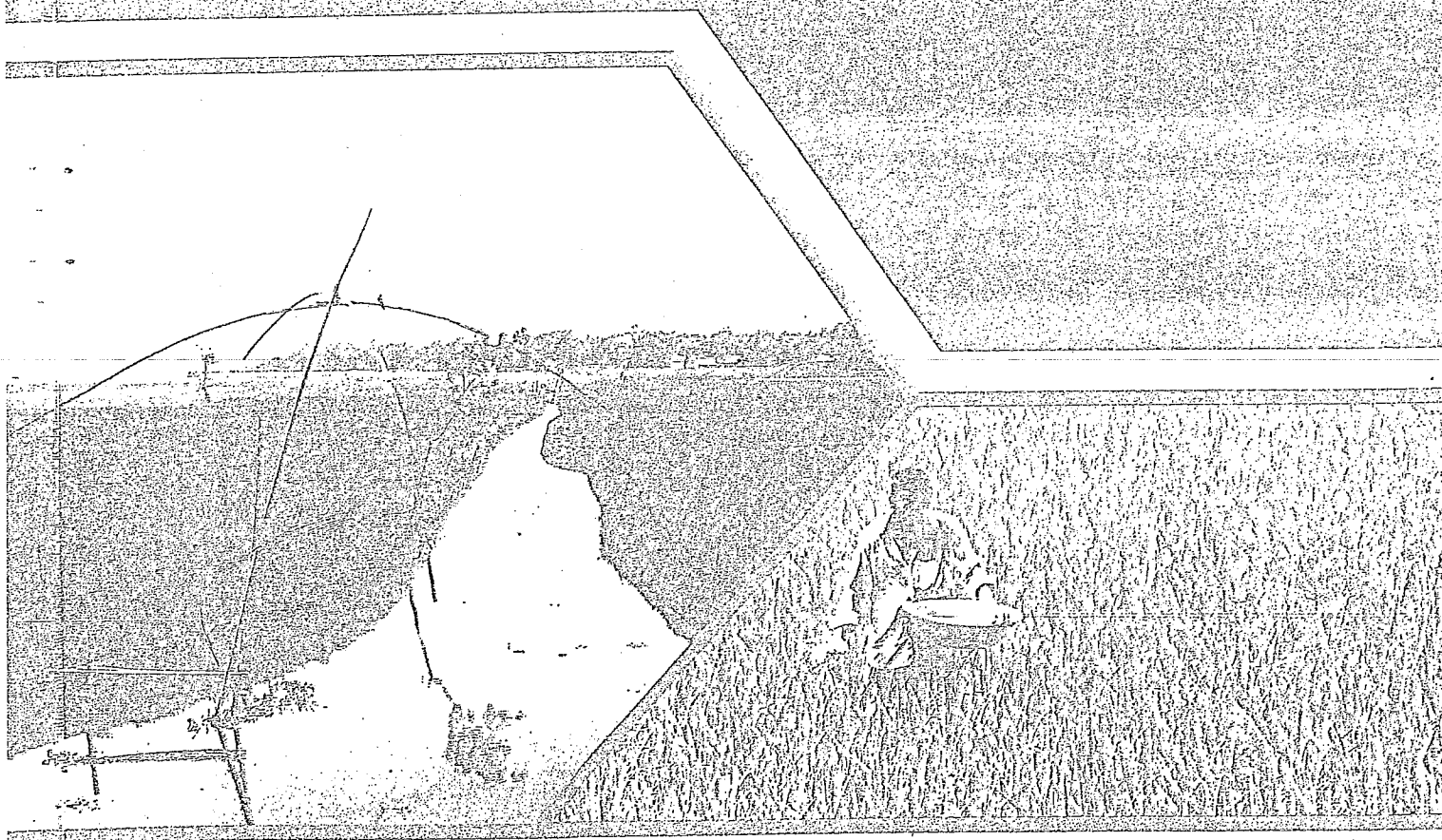
- Regular monitoring and maintenance of BWDB or authorized committee nominated by BWDB are very much needed in both Moulvibazar Sadar irrigation canals and Rajnagar Irrigation Canals to keep all the canals functional. The operation systems of the interventions should be improved and strengthened by increasing O& M budget.
- Sedimentation below the culvert at RL-4 canal in Shibirpur area will have to be excavated or removed to make it more functional. As Manu River is facing bank erosion as obtained by satellite image, bank protection work should be provided to make the river bank more stable and active.
- Leasing of water bodies are generally influenced by the local leader or the rich man of the area. Leasing of water bodies should be given to the registered fishers committee and monitor the activities by the related upazila fisheries officials.
- Development of fish sanctuary in the adjacent (inside the project area) of fish pass at Kashempur to protect brood stock for next year propagation. And monitor the activities through management committee.
- There is no initiative to strengthen the existing Water Management Organizations (WMOs) formed under this project. The active WMO has good role for small-scale O&M of this project, especially the maintenance of embankment. There are only 2 registered WMGs in this area and more 4 WMGs are waiting for registration. The active WMO is required for better and efficient functioning of the Project. Members of WMOs are active to protect the embankment and afforestation on the aligned roadways. They can play significant role to manage any kinds of social and other problems for regular maintenance of the embankment. Based on the systematic arrangement between BWDB and local active WMOs, the members of these WMOs get benefit through different Income Generation Activities (IGA) training for alternative options for income generation. They solve the problems about the distribution of irrigation water among different farmers group.
- It is mandatory to keep provision of regular Operation and Maintenance (O&M) of any implemented project. The embankment, inlet, outlet, sluice gate may be damaged anytime due to natural calamities or manmade causes. So the O&M has to be ensured for sustainability of the Manu River Project.

Government of the People's Republic of Bangladesh  
Ministry of Water Resources



Bangladesh Water Development Board

**Final Report**  
**Post Project Evaluation and**  
**Impact Assessment of 10 BWDB Projects**  
**Dampara Water Management Project, Netrokona**



March 2020



Center for Environmental and Geographic Information Services  
House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh. Tel: 88 02 58817649-52; 9842581, 9842551. Fax: 88 02 9843128

**Table 8.19: Comparison of Value of Production in Post over Pre-project**

| Value of Production in Project Area | Pre-Project (1991 prices to 1995-96 prices) | Current Value (2017/18 prices) | Post Project converted value at 1995-96 prices of current value |
|-------------------------------------|---------------------------------------------|--------------------------------|-----------------------------------------------------------------|
| Value of Crop Production            | 7,700                                       | 24,809                         | 10,074                                                          |

### 8.6.8 Employment Generation

Employment generation in the crop production was increased in Current situation over the pre and forecasted number shown in the feasibility study of the project.

**Table 8.20: Comparison of Employment in Project area Current, Pre-project and Forecasted (Lac man-days)**

| Employment (mandays) in Project Area | Pre-Project (1995-96) | Current (2017/18) | Forecasted for With Project (As per FS of the project) |
|--------------------------------------|-----------------------|-------------------|--------------------------------------------------------|
| Crops                                | 30.3                  | 36.23             | 34.10                                                  |

Source: CEGIS estimated, 2019

### 8.7 Overall Performance

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.21.

**Table 8.21: Overall Performance of the Project**

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                    |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flooding                          | ✓               | -                  | -             | About 73% of gross area has become flood free or inundation level is very low; and damage to infrastructures, homesteads and crops has reduced..                                                                      |
| Drainage                          | -               | ✓                  | -             | All drainage structures are working successfully except Kalihar regulator and improved the drainage condition as expected with the existence of drainage problem in limited area at and around the Kalihar regulator. |
| Irrigation                        | -               | ✓                  | -             | Base flow as well as groundwater recharge potential increased due to increased use of LLP irrigation; Irrigation coverage increased; and Local people are getting more water through HTWs.                            |
| Flood damage                      | ✓               | -                  | -             | Reduce                                                                                                                                                                                                                |
| Standard of living                | ✓               | -                  | -             | Quality of life indicates how the people are leading their life in a locality. Due to Dampara project their occupation, income, health, has improved.                                                                 |

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                            |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reduce poverty                    | -               | ✓                  | -             | Marginal and landless farmers got the chance to be involved in the agricultural production beside the wage labors<br>Subleasing system becomes popular for all types of farmer.<br>People takes meal 3 times in a day<br>Average income has increased                                         |
| Cropping pattern                  | ✓               | -                  | -             | Use of local varieties reduced while adoption of high yielding varieties is increased.                                                                                                                                                                                                        |
| Crop Production                   | ✓               | -                  | -             | The annual total rice production of 68,324 tons under the pre-project condition increased to 71,814 tons during the study period.                                                                                                                                                             |
| Cropping Intensity                | -               | ✓                  | -             | Cropping intensity is increased to 221% from the pre-project cropping intensity of 194%. Thus overall cropping intensity is increased by 27%.                                                                                                                                                 |
| Capture Fish Habitat              | -               | ✓                  | -             | Capture fish habitat decreased by about 6,151 ha, which is about 50% of the Pre-Project condition.<br>Capture fish habitat decreased due to reduction of water surface area and alternation of habitat type.<br>Capture habitat of an area of 264 ha was transformation into culture habitat, |
| Fish Diversity                    |                 | ✓                  |               | Fish species diversity decreased due to reduction of capture fish habitat and increased culture habitat and obstacle to fish migration, which is mentioned above.                                                                                                                             |

9.2.1

## Conclusions and Recommendations

### 10.1 Conclusions

The overall evaluation of the Dampara Water Management Project is done with due care considering different resources and cross-cutting issues of the project area. Implementation of the project has achieved the set objectives of the project successfully. In its course of evaluation study following major observations are made:

- Flood inundation has been reduced by about 73% of gross area and largely reduced the damage to infrastructures, homesteads and crops;
- Drainage condition has been improved largely but still needs to retrofit the Kalihar Regulator;
- Increased the surface water use in irrigation through installing LLPs sufficiently and irrigation coverage has been increased;
- Overall crop production has been increased by about 68%; rice production has increased only by 5% whereas non-rice production by about 1500%;
- Agriculture-based livelihood has been increased largely due to increase in crop production;
- Aquaculture-based livelihood has been increased immensely due to expansion of fish culture ponds as the area is secured from flooding inundation. On the other hand, capture fishery-based livelihood has been decreased largely;
- Household income has been increased and hence quality of life of the society is being facilitated;
- Roadways movement has been increased and accelerating the daily activities; and
- Post project economic performance is found better than the Pre Project condition.

### 10.2 Recommendations

Some recommendations are put in place for better functioning of the project in near future though the project has been performing well. The following recommendations can be considered in future management of the project:

- Height of the embankment at some places mentioned in baseline condition should be increased and brought under development;
- Re-excavation of the upstream of the Dhalai Channel may provide a better drainage system to the nearby areas;
- Some portions of the three major khals (Kalihar, Balia and Dhalai) of the project area should be brought under re-excavation program for making more water room;
- Kalihar regulator at Khatuair (R-2) on Kalihar Channel should be amended;
- Protection should be taken at the riverside portion of the Balia Regulator (R-2) for its sustainability;

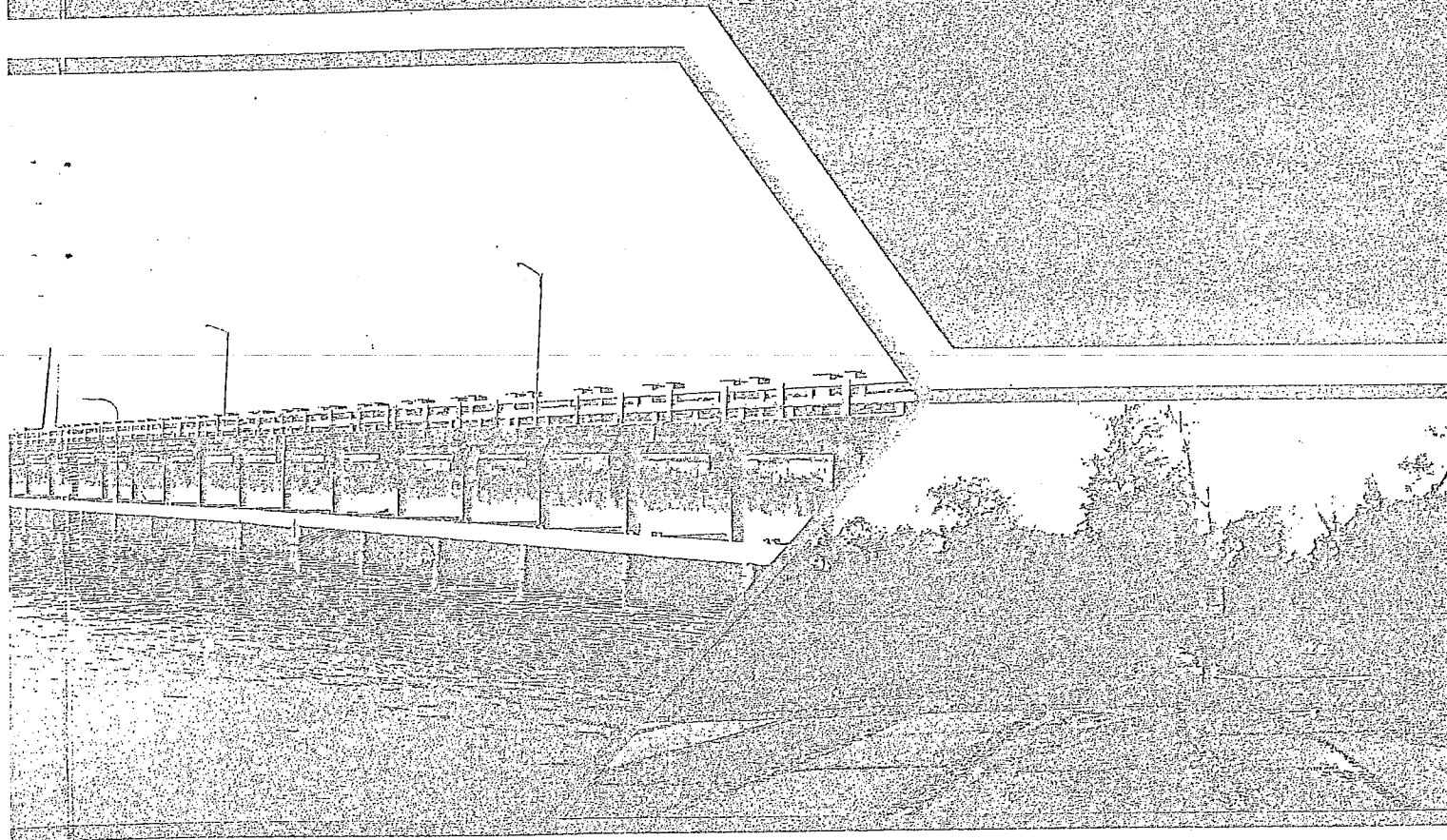
- Drainage structure-based village committee should be formed for better operation of the same structure;
- More LLP should be installed for ensuring more irrigation coverage;
- Beel should be re-excavated for creating more room for water for supporting capture fishery and irrigation as well;
- Encroachment of Beels should be prevented and stopped and if required apply 'Public Water Body Management (PWBM) Policy, 2009;
- Plantation along the embankment should be done with the native species of plants; and
- WMOs should be increased in number and operationalize with incentives.

Government of the People's Republic of Bangladesh  
Ministry of Water Resources



Bangladesh Water Development Board

**Final Report**  
**Post Project Evaluation and**  
**Impact Assessment of 10 BWDB Projects**  
**New Dakatia-Old Dakatia and Little Feni River**  
**Basin Development Project**



March 2020



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| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                          |
|-----------------------------------|-----------------|--------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Intensity                         |                 |                    |               | against the pre-project cropping intensity of 155.66% with the resultant increase of cropping intensity by 68.34%.                          |
| Fish Habitat                      | ✓               |                    |               | Fish habitat increased by about 1948 ha. All the perennial Beels are transformed into seasonal Beels which act as flood lands.              |
| Fish Diversity                    | ✓               |                    |               | Fish species is decreased due to increase of number of fishing people, overfishing etc. However, now cultured species are found abundantly. |
| GDP                               | ✓               |                    |               | The project is contributing BDT 10.56 Million annually.                                                                                     |

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## Conclusions and Recommendations

### 10.1 Conclusions

New Dakatia and old Dakatia-Little Feni River Drainage project is a part of 'South Comilla and North Noakhali Comprehensive Drainage Project' which was implemented to provide drainage improvement, protection of saline water intrusion, reduce crop damage, and accelerate agriculture productivity by irrigation facility and others of the area. In addition, it also achieved flood control facilities, safety of human livelihood, public assets and natural resources and comprehensive drainage mitigation in the region.

Drainage condition has improved as planned in the project area which is now fully protected from intrusion of saline water. The overall cropping intensity of the project area has increased. Net cultivated land reduced from pre-project condition to study period, but total cropped area increased through more intensive cropping. Culture fish production has come down while capture fish production increased which is favourable from social point of view. Fish consumption has increased due to increased capture fish production. Agriculture production and overall employment status has increased. Increased price of land is a big advancement for the local people. Improvement of these indicators has changed the socio economic status of this area.

The project has exceeded the target values of the feasibility indicators explaining the success of the project. Namely, B/C ratio has increased from 3.61 to 14.35, NPV from Tk 1850 million to Tk. 6391 million (in 2012/13 prices) and IRR from 29.8% to 88%. The overall benefits inclusive of crops, fisheries and navigation benefits, the project has been generating a B/C ratio of 14.6, NPV of Tk 23,677 million and IRR of 114%. These feasibility indicators show a very satisfactory level of the impact of the project.

Economic Rate of Return of the project achieved in 2018/19 is nearly three times more than that forecasted for 2018/19 for Dakatia project. Similar is the increase in case of B/C ratio. The project is contributing Tk 10.56 billion annually. Highest contribution to GDP is made by Boro (HYV) followed by Aman (HYV). Among the non-food grain crops, highest contribution is made by Vegetables followed by Potato.

### 10.2 Recommendations

The following suggestions have been made by the multidisciplinary team for sustainability of the project:

- The proposed project, bank protection work is required at both banks of the diversion channel at U/S and D/S of the Musapur regulator to ensure the stability and sustainability of the Regulator.
- Proper monitoring and regular maintenance of the suggested bank protective works and other components such as the Musapur closure and regulator need to be continued. There should be an allocation of budget for regular and periodic O&M of the project to protect damage during monsoon.

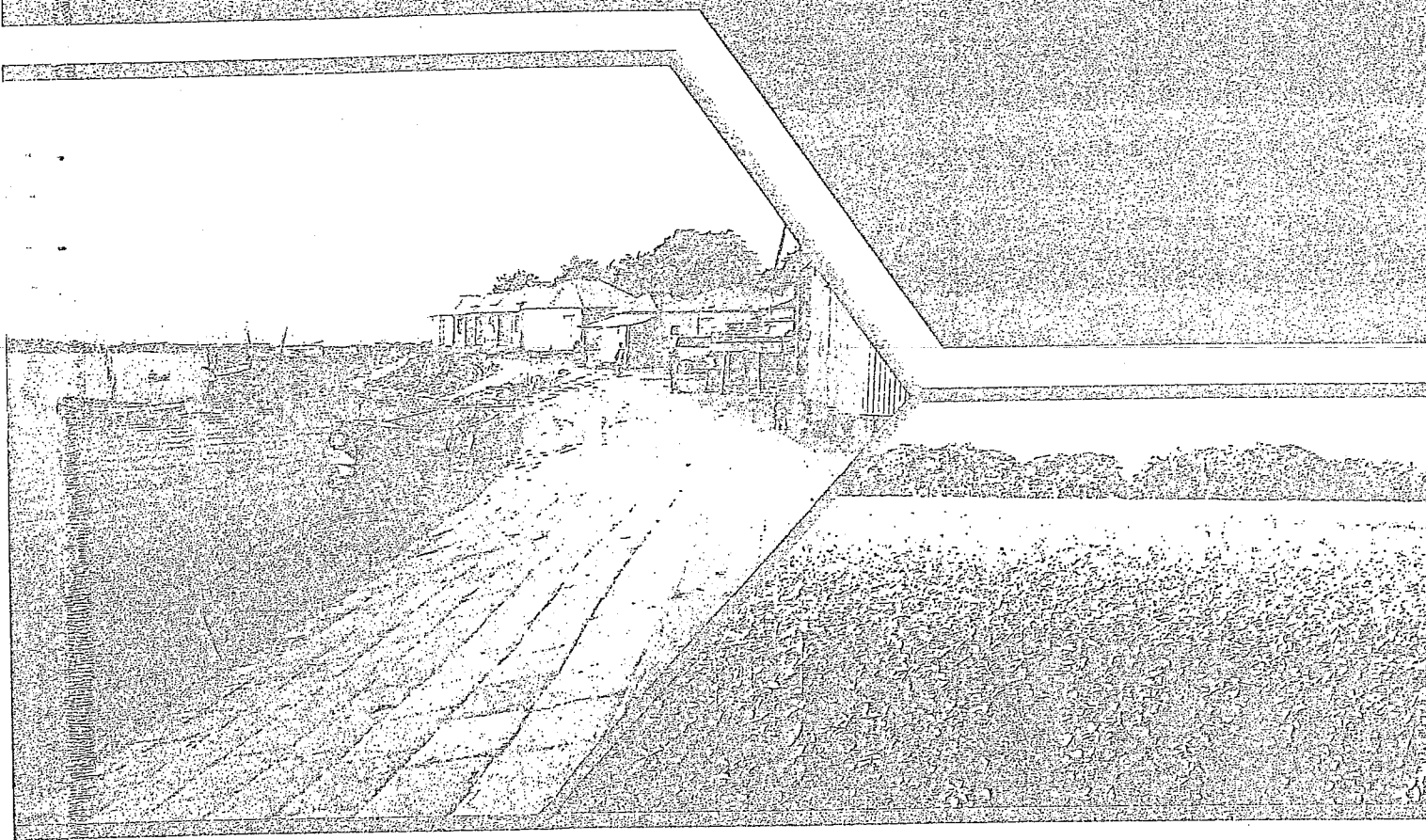
- Re-excavation of Sonaichari khal, Chanpur khal, Boaljuri khal, Gungiajuri khal, Laksham khal, Curzon khal and other drainage channels in Comilla district is strongly recommended.
- Some of the areas of the river side have been encroached by the local elites and other people. Encroachment of the river side should be stopped.
- Water Management Organizations (WMO) should be formed for maintenance and monitoring of this project. Active WMO is required for better and efficient functioning of the project.

Government of the People's Republic of Bangladesh  
Ministry of Water Resources



Bangladesh Water Development Board

**Final Report**  
**Post Project Evaluation and**  
**Impact Assessment of 10 BWDB Projects**  
**Gorai River Restoration Project (Phase-I & II)**



March 2020



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forestry sector's share of GDP was 10.11% in 2018-19 (provisional); share of crops and horticulture was 7.05%; animal farming 1.47%; forestry and related services 1.38% and Fisheries sector's contribution was 3.5%. Given the above shares in country's GDP, contribution of a single project on GDP is very small and hence not mentioned

### 8.7 Overall Performance of the Project

The overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in Table 2.2.

Table 8.8: Overall Performance of the Project

| Performance of items and coverage                           | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------|-----------------|--------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Erosion                                                     | -               | ✓                  |               | By distinguishing between the pre-project and study period situation, erosion has decreased a lot in all four reaches than previous. On the other hand, accretion has decreased in two reaches such as Off-Take and Tidal Reach but increased in two reaches such as Kushtia Rly                                                                                  |
| Agricultural production                                     | ✓               | -                  | -             | Cropping intensity increased by 127% in the study area, where as The cropping intensity of the study area was 119%.<br>Total production of rice is 1308,331 metric tons and non-rice is 6355,863 metric tons, whereas rice was 655,087 metric tons and other crops was 1292,451 metric tons.                                                                      |
| Navigation facility,                                        | ✓               | -                  | -             | Easy transportation and navigation was one of the major objectives of the project intervention implementation. However, during the period immediate after the project intervention implementation, the navigation became available and most of the cases, passenger and cargo boats were getting the facilities to transport commodities, even in the dry season. |
| Fisheries development                                       | ✓               | -                  | -             | Culture fish production increased in 41,690 MT per year, whereas total culture fish production was 30,032 Metric Ton (MT) per year of which production from Shrimp was 18,959 MT, from pond 10,774 MT and from Baor 299 MT.                                                                                                                                       |
| Reduction of salinity in the impacted zone of the Sundarban | -               | ✓                  | -             | The natural forest i.e. the Sundarbans was benefited initially while flowing freshwater through Gorai to the Bay of Bengal via the SRF (Sundarban Reserve Forest). But, discontinuation of this freshwater flow resulted in deterioration from its previous condition. Lack of freshwater flow triggers mangrove forest into low diversified forestland.          |
| River and riparian zone                                     | -               | ✓                  | -             | Expected outcome of the proposed objective was not fulfilled due to lack of freshwater flow for improving                                                                                                                                                                                                                                                         |

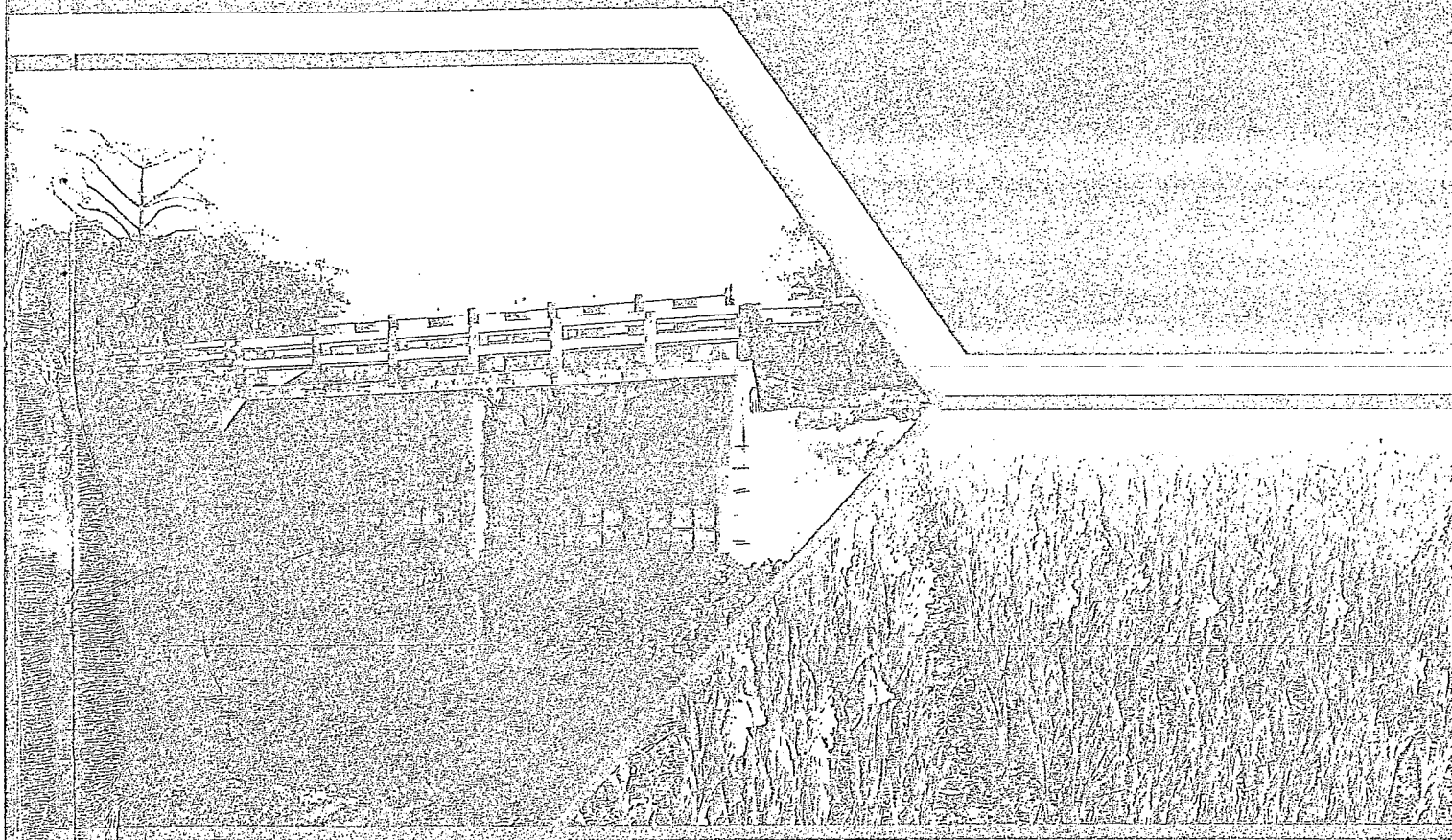


Bangladesh Water Development Board

# Final Report

## Post Project Evaluation and Impact Assessment of 10 BWDB Projects

### Water Logging Mitigation Project for Kobadak River (Phase-I)



March 2020



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## 8.9 Overall Performance of the Project

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.17.

Table 8.17: Overall Performance of the Project

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                                                                                                                                         |
|-----------------------------------|-----------------|--------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sedimentation                     | ✓               | -                  | -             | Sedimentation problem has been removed or reduced prominently than previous as stated by BWDB officials and local people by using TRM. Implementation and operation of TRM of Pakhimara Beel is silting up continuously and sediment free back flow is keeping the river bed free of sedimentation increasing the conveyance capacity of the Kobadak River |
| Navigation                        | -               | ✓                  | -             | Navigation facility is contributing to easy communication for people of the rural area and transportation of agricultural products and getting better price of local commodities thus contributing to their livelihood                                                                                                                                     |
| Gher culture                      | ✓               | -                  | -             | At present, the gher area is 19962 ha. Increase the gher area is 16137 ha in compared to pre project condition. Total production is 14518 MT per year. And incremental production is 10535 MT per year.                                                                                                                                                    |
| Diversity of fish species         | -               | ✓                  | -             | Changing of riverine fish species due to dredging and tidal action are visible and water are available round the year.                                                                                                                                                                                                                                     |
| Biodiversity                      | ✓               | -                  | -             | Plant species composition in terms of diversity of species is better compared to pre-project situation. Therefore, the positive changes have taken place both on diversity and vegetation health.                                                                                                                                                          |
| Provisioning Services             | -               | ✓                  | -             | After completion of water-logging removal project the overall situation has improved to practice cultivation of fruit and timber trees including homestead area (BDT 22 000 Lakh for timber and fuel wood as well as annual value is about 39,723 Lakh BDT for vegetation products (fruits, fuel wood, etc.).                                              |
| Poverty                           | ✓               | -                  | -             | The lower poverty line by household size (number of members in the household) is monthly 13,353 taka (HIES, 2016). As the monthly average income is 24,121 taka of this project area (which is more than the 13,353 taka), therefore, most of the studied households are out of poverty based on their income.                                             |
| GDP                               | -               | ✓                  | -             | The project is contributing Tk 7.2 billion annually. Highest contribution to GDP is made by Boro (HYV) followed by Aman (HYV).                                                                                                                                                                                                                             |

## Conclusions and Recommendations

### 10.1 Conclusions

After implementation of the Water Logging Mitigation Project for Kobadak River (Phase-I), net 75000 ha area is free from the prolonged water logging problems. Cropping intensity increased from 206% under pre-project condition to 218% during the study period. However, area and production of rice was reduced with substantial increase in area and production of high value crops (spices, flowers, fruits and vegetables). High price of flowers and fruits are the attraction resulting in large scale increase in cultivation of these crops.

Habitat quality of river has improved. At present, the river is tidal, perennial in nature, and more suitable for fish habitation. Area under culture fish habitat increased with substantial increase of the Golda and Bagda Gher Area. After removal of drainage congestion the floodplain and adjacent Beel areas have been converted into gher area. These gher areas are used in both for agriculture crop production as well as gher culture.

After implementation of the project, people are involved in alternative income generating activities besides the major income generating sources. The removal of water logging made a positive impact for the development of communication system. Besides, the increased navigability (because of excavation) of Kobadak River has made it possible to use water transport for carrying passengers, goods and other items.

The project is contributing Tk 7.2 billion annually. Boro (HYV) followed by Aman (HYV) makes highest contribution to GDP. The overall benefits inclusive of crops, fisheries and navigation benefits, the project has been generating a B/C ratio of 14.6, NPV of Tk 23677 million and IRR of 114%.

### 10.2 Recommendations

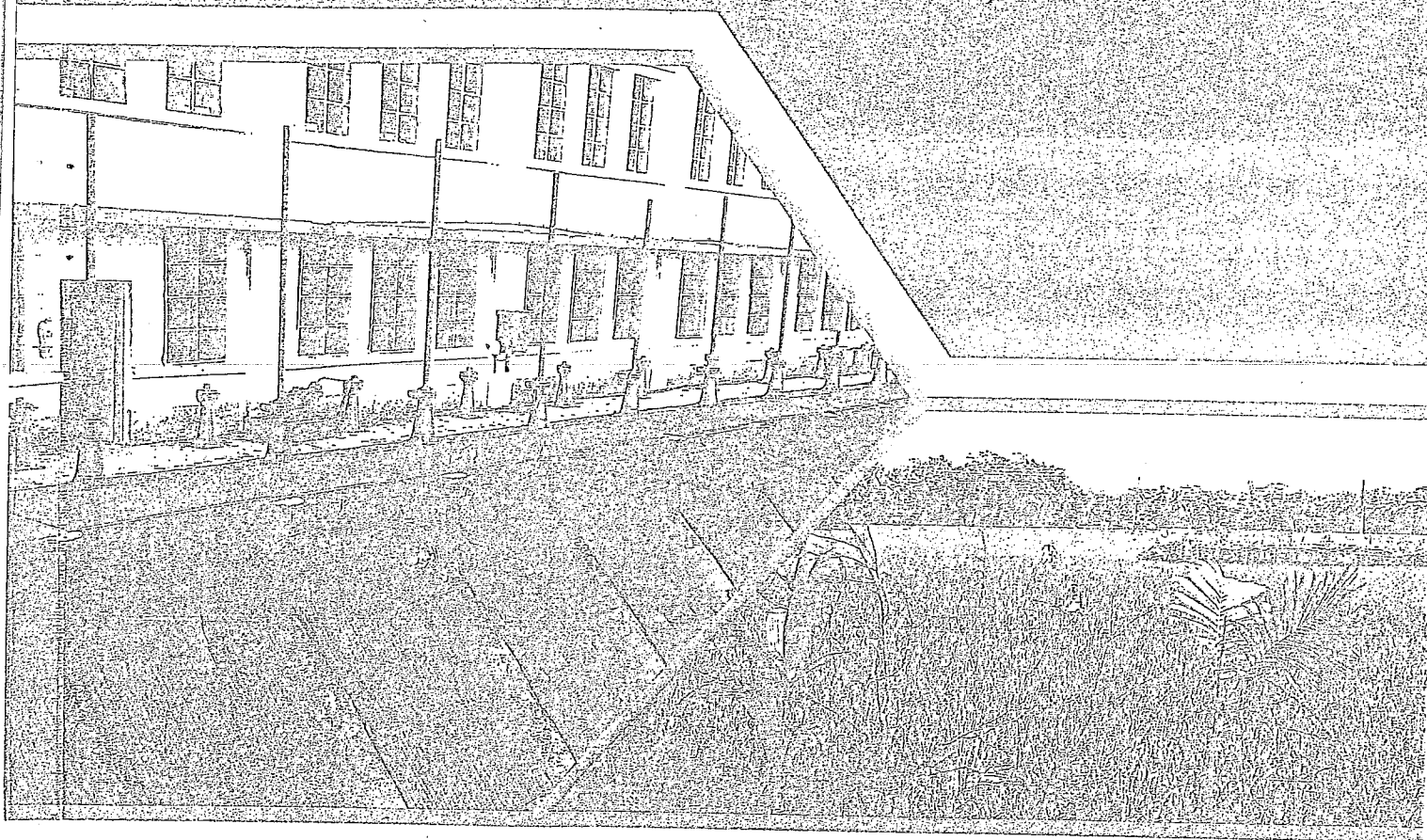
- A localized reach of Kobadak River 1.5 km downstream of Trimohoni should be re-excavated as it is already silted by now.
- Navigation can be facilitated through keeping active Kobadak River along with the surrounding rivers and Khals.
- A platform for introduction of social forest in the barren area should be prepared.
- The peripheral embankment around the Pakhimara Beel may be considered under social forestry practice through strip plantation.
- Fish culture should be stopped within the surrounding Beels for smooth sedimentation inside the Tidal Basin area until the basin gains expected/designed level.
- Re-excavation of numbers of link Khals is required for drainage improvement in the river and adjacent area for better movement of fishes.
- Release of carp fish fry in the river should be continued for increasing of fish production and species richness in the project area.

Government of the People's Republic of Bangladesh  
Ministry of Water Resources



Bangladesh Water Development Board

**Final Report**  
**Post Project Evaluation and**  
**Impact Assessment of 10 BWDB Projects**  
**Chandpur Irrigation Project**



March 2020



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| Name of Crop | Total Gross Return from Project Area (million Tk) | Total Material Cost (million Tk) | Net Return Project Area (million Tk) | Value Addition (million Tk) |
|--------------|---------------------------------------------------|----------------------------------|--------------------------------------|-----------------------------|
| Soybean      | 43.1                                              | 15.3                             | 27.8                                 | 27.8                        |
| Maize        | 112.0                                             | 27.3                             | 84.7                                 | 84.7                        |
| Non-rice     | 1935.9                                            | 151.4                            | 1784.4                               | 1715                        |
| Total        | 3304.8                                            | 151.4                            | 2271.0                               | 2,449                       |

Source: PCR as reported in Project Performance Audit report of Chandpur II Irrigation Project, World Bank 1981

Table above shows that the project is contributing Tk. 2.5 billion annually. Highest contribution to GDP is made by vegetables production (Tk. 1,389 million) followed by HYV Boro (Tk. 403.1 million). All crops except LT Aman is seen to be positively contributing to national GDP.

Thus BWDB project is contributing significantly to country's GDP. Considering national data, according to BBS reported in Bangladesh Economic Review (2019), agricultural and forestry sector's share of GDP was 10.11% in 2018-19 (provisional); share of crops and horticulture was 7.05%; animal farming 1.47%; forestry and related services 1.38% and Fisheries sector's contribution was 3.5%. Given the above shares in country's GDP, contribution of a single project on GDP is very small and hence not mentioned.

### 8.9 Overall Performance of the Project

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.6.

Table 8.7: Overall Performance of the Project

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                      |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flooding                          | ✓               | -                  | -             | The project area of about 53,000 ha land of Chandpur and Laxmipur District has been converted to flood free zone completely.                                                                                                            |
| Drainage                          | -               | ✓                  | -             | drainage problem in the project area is moderate due to decreased efficiency of the pumps, siltation of drainage canals and other obstacles like encroachment in the canals                                                             |
| Irrigation                        |                 |                    |               | the irrigation facilities to an area of 22,000 ha, and supplementary irrigation benefits to an area of 28,500 ha have been achieved and continued without any interruption.                                                             |
| Cropping pattern                  | ✓               | -                  | -             | • Rice based cropping patterns continued, but the coverage of high yielding varieties in Kharif-II and Rabi (Boro) seasons increased with corresponding reduction in the coverage of local varieties in all the three cropping seasons. |

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                                                                                                                      |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   |                 |                    |               | <ul style="list-style-type: none"> <li>There was no HYV Aus in pre-project condition. During study period HYV Aus, HYV Aman and HYV Boro area increased by 3,123 ha, 47,872 ha, and 8,361 ha respectively.</li> <li>New crops like maize, soybean and vegetables (different types) were introduced in the cropping patterns.</li> </ul> |
| Crop Production                   | ✓               | -                  | -             | <ul style="list-style-type: none"> <li>Total rice production increased 12,617 tons.</li> <li>Non-rice crop production decreased by 71,315 tons due to replacement of non-rice crop by HYV rice with increase in irrigated area.</li> </ul>                                                                                              |
| Cropping Intensity                | -               | ✓                  | -             | 67% increase in cropping intensity                                                                                                                                                                                                                                                                                                      |
| Livestock                         | -               | ✓                  | -             | The livestock and poultry population between pre-project condition and during study period increased by about 4,624,309 after the implementation of the project. Many new poultry and dairy farms have been established.                                                                                                                |
| Biodiversity                      | ✓               | -                  | -             |                                                                                                                                                                                                                                                                                                                                         |
| Vegetation                        | ✓               | -                  | -             |                                                                                                                                                                                                                                                                                                                                         |
| Income and expenditure            | ✓               | -                  | -             | Average household annual income in the project area is BDT 240,180.                                                                                                                                                                                                                                                                     |
| Land Price                        | ✓               | -                  | -             | Land price is BDT 69,271/dec for homestead land, BDT 39,554/dec for agricultural land and BDT 1,21,673/dec for commercial land                                                                                                                                                                                                          |
| Standard of Living                | ✓               | -                  | -             | Electricity facility, communication system, water and sanitation facility have been improved after implementation of the project.                                                                                                                                                                                                       |
| Fish Habitat                      | -               | ✓                  | -             | The net loss of fish habitat area is about 41,819 ha, which is majorly the resultant of floodplain loss. The creation of new habitat (Borrow pit) has offset the loss by about 324 ha.                                                                                                                                                  |
| Fish Diversity                    | -               | ✓                  | -             | Fish species diversity has decreased due to reduction of capture fish habitat.                                                                                                                                                                                                                                                          |
| GDP                               | -               | ✓                  | -             | The project is contributing Tk. 2.5 billion annually. Highest contribution to GDP is made by vegetables production (Tk. 1,389 million) followed by HYV Boro (Tk. 403.1 million). All crops except LT Aman is seen to be positively contributing to national GDP.                                                                        |

## Conclusions and Recommendations

### 10.1 Conclusions

CIP covers a gross area of 53,000 ha of which net cultivable area is 28,500 ha and the irrigable area is 22,000 ha. The project protects the area from flood with its 100 km embankment; ensure drainage through one large pump house, no. of regulators and drainage canals; facilitate irrigation through significant length of primary, secondary & tertiary irrigation canals along with no. of LLPs; and facilitate waterways through navigation lock gates as well as roadways with no. of bridges on the irrigation canals. Annual rice crop production amounting to 66,285 MT and non-rice crops 84,608 MT has been achieved. Cropping intensity increased to 232 percent. Poultry and livestock have been developed significantly. Fish hatchery and nursery have increased and culture fish production has increased. Overall plant species composition has improved. Poverty has been reduced due to diversified production and opportunities of business and other income. Livelihood and living standard of the local people has improved significantly due to flood protection and consequently development of growth centers alongside the embankment. Communication of the area has improved widely with the road cum embankment which was paved by RHD and LGED. Out of targeted 35, eleven (11) WMGs have been formed of which six (6) got registration. The results of financial and economic impact assessment shows better than actually achieved on project-targeted values. This happened due to continuation of agricultural production, shift to higher valued crops and cultured fisheries. The project is contributing Tk. 2.5 billion annually. Highest contribution to GDP is made by vegetables production (Tk. 1,389 million) followed by HYV Boro (Tk. 403.1 million). All crops except LT Aman is seen to be positively contributing to the National GDP.

### 10.2 Recommendations

- In order to mitigate exiting problems of the CIP there are some recommendation to improve the project benefit and its sustainability as well.
- Regarding drainage and irrigation the suggested measures are: (i) re-excavation of secondary and tertiary canals; (ii) remove of water hyacinth from the canals; (iii) removal of man-made structures and other obstacles over canals; (iv) renovation of pumps of Char Bagadi Pump House; (v) regular O&M of structures; (vi) construction of some check/cross regulators on secondary and tertiary canals to operate and control irrigation water properly; and (vii) demolish some under-designed bridges on the canals.
- Regarding improvement of environmental quality the proposed measures are: (i) stop throwing of domestic waste materials to water bodies; (ii) ensure controlled and limited use of fertilizer in the pond for fish culture; and (iii) ensure controlled discharge of industrial wastes to the drainage canals through regulatory authority concerned.
- Suggestions for improving agricultural resources are: (i) promote ICM methods to minimize use of chemical pesticide; (ii) introduce short duration high yielding or hybrid

varieties instead of long duration BRRI dhan29 variety; (iii) introduce more HYV in (kharif-I) Aus season; and (iv) provide training to the farmers on new technologies of crop production and post-harvest.

- Recommendation for capture fishery are: (i) establish fish sanctuary in Dakatia River taking technological assistance of DoF; (ii) ban usage of illegal fishing gears through enforcing rules and regulations; (iii) building awareness of local fishing communities for fish conservation and (iv) removal of water hyacinth from the river and canal for facilitating fish movement. For culture fishery the measures are: (i) introduce rice-cum-fish culture; (ii) introduce pen fish farming in suitable khals; and (iii) extension of cage fish culture in the project area.
- Regarding afforestation through establishing social forest are: (i) examine soil and water availability/qualities; (ii) select appropriate variety of plants considering soil quality; and (iii) ensure proper monitoring and maintenance program during and after plantation. Suggested biodiversity improvement plan may include: (i) selection of native fruit tree seedlings/saplings for supporting fruit-eating animals to survive; (ii) plantation of fruit, timber and medicinal tree species; and (iii) ensure appropriate management and conservation measures for local and threatened wildlife species.
- In order to ensure regular O&M of the project infrastructures the proposed activities are: (i) formation of remaining WMGs out of targeted 35 WMGs following GPWM; (ii) take necessary measures to get registration of all WMGs; (iii) keep functional the registered 6 WMGs; and (iv) ensure coordination among different occupational groups (farmer, fisherman, and businessman) for resolving conflicts.

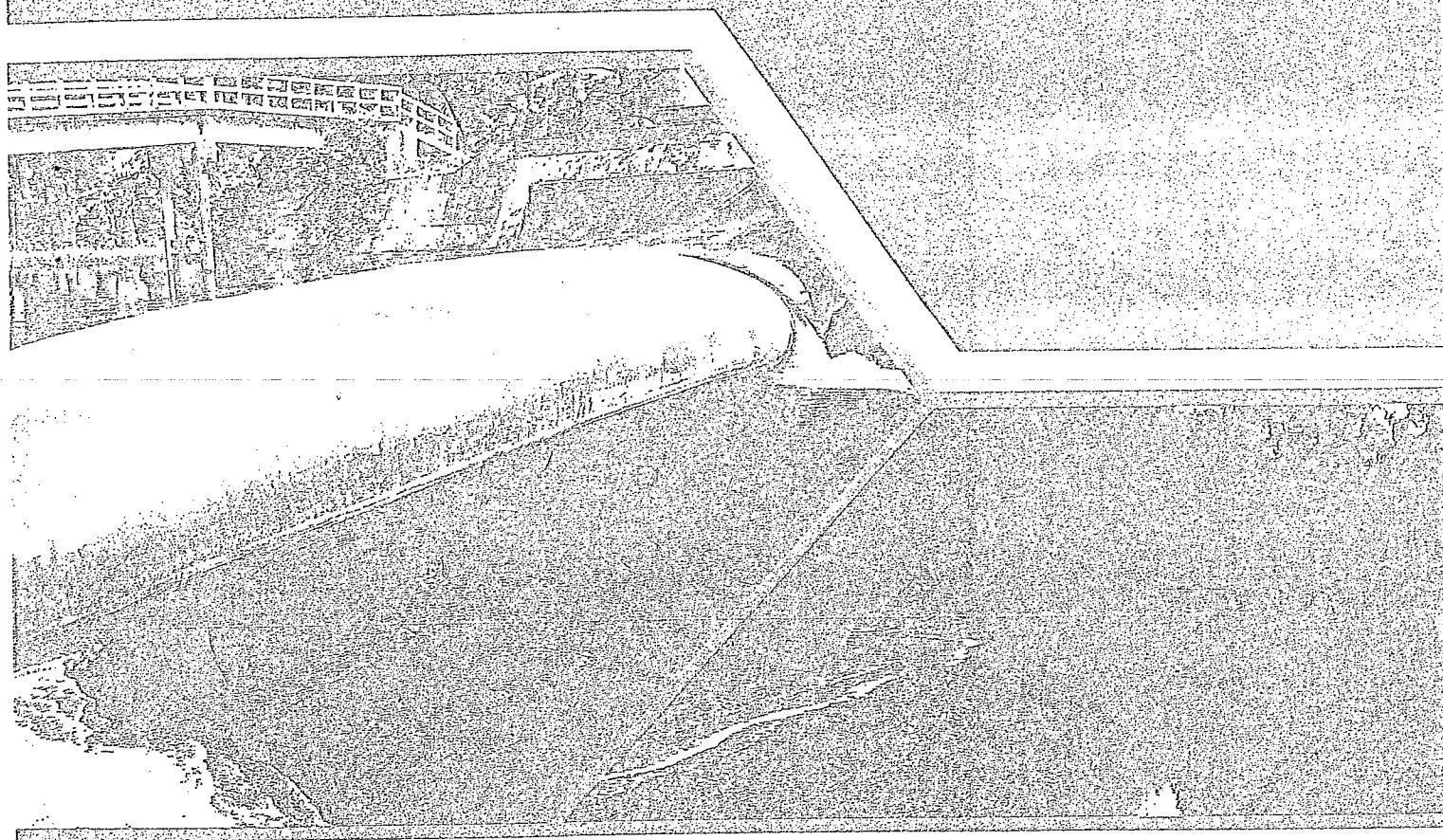


Bangladesh Water Development Board

# Final Report

## Post Project Evaluation and Impact Assessment of 10 BWDB Projects

### Mahamaya Chara Irrigation Extension Project



March 2020



Center for Environmental and Geographic Information Services  
House 6, Road 23/C, Gulshan-1, Dhaka-1212, Bangladesh. Tel: 88 02 58817649-52; 9842581, 9842551. Fax: 88 02 9843128

| Name of Crop | Total Gross Return in Project Area (million Tk) | Total Material Cost in Project Area (million Tk) | Value Addition in Project Area (million Tk) |
|--------------|-------------------------------------------------|--------------------------------------------------|---------------------------------------------|
| Sugarcane    | 12.4                                            | 0.48                                             | 11.90                                       |
| Sub-total    | 177.2                                           | 30.0                                             | 147.2                                       |
| Total        | 458.2                                           | 144.7                                            | 313.5                                       |

The above table shows that the project is contributing Tk 313.5 million annually. Highest contribution to GDP is made by HYV Aman (Tk 91.95 million) followed by Summer Vegetables production (Tk 48.36 million) followed by HYV Boro (Tk 38.45 million). Lowest contribution to GDP seems to be made by the fodder production.

Thus BWDB project is contributing significantly to country's GDP. Considering national data, according to BBS reported in Bangladesh Economic Review (2019), agricultural and forestry sector's share of GDP was 10.11% in 2018-19 (provisional); share of crops and horticulture was 7.05%; animal farming 1.47%; forestry and related services 1.38% and Fisheries sector's contribution was 3.5%. Given the above shares in country's GDP, contribution of a single project on GDP is very small and hence not mentioned

### 8.9 Overall Performance of the Project

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.15.

Table 8.15: Over-all Performance of the Project

| Performance of items and coverage | Better than 80% | Between 60 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                                                         |
|-----------------------------------|-----------------|--------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flooding                          | ✓               | -                  | -             | • Flooding problem has been largely reduced than previous days as stated by local people. Only high intensive rainfall in the hills and adjacent areas causes temporary flooding for short duration.                                                                       |
| Drainage                          | ✓               | -                  | -             | • After implementation of the project, water logged area reduced by 281.05 Ha.<br>• No further drainage congestion and water logging problem has been observed.<br>• One of the major objectives of the project has been achieved which was to remove drainage congestion. |
| Water Supply and Demand           | ✓               |                    |               | • Water coming from Mahamaya Chhara through canals are presently used for both domestic and drinking water purposes.<br>• Salinity was found in groundwater before implementation of the project. But presently                                                            |

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|-----------------|--------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   |                 |                    |               | has created scope for enhancing suitable habitats to small and medium-sized wildlife through protection from floods and providing water via irrigation system.                                                                                                                                                                                                                                                                                                                            |
| Community Safety and Security     |                 | ✓                  |               | • In comparing with the pre project situation, safety and security (related to the flash flood and water logging) improved at the current situation. In post project period people felt secured, and got that level of confidence to live closer to the valley (which was impossible at the pre project because of regular flash flood). With that safety, sanitation and health status improved because of protection due to BWDB's project interventions (i.e. embankment, rubber dam). |
| Settlement                        | ✓               | -                  | -             | • The housing status improved and affordability of people increased the rate of pucca and semi pucca housing structures.                                                                                                                                                                                                                                                                                                                                                                  |
| Sanitation Status                 | ✓               | -                  | -             | • The sanitation status has improved with the increased affordability among the people of the studied area. In this context, most of the people use sanitary latrine that also has a positive sense for the improvement of health situation. The infestation of water borne diseases has reduced because of proper sanitation coverage within the study area.                                                                                                                             |
| Drinking Water                    | ✓               | -                  | -             | • The improved water logging situation played a role to retain the water quality of this project area and tube-well become the prime source for drinking water in this project area. Thus, availability (except some hilly areas) and quality of drinking water improved as a result of the project intervention                                                                                                                                                                          |
| Communication                     | ✓               | -                  | -             | • The Mahamaya Lake has become an important tourist spot where people from the different corners come to see the natural beauty. An approach road was built connected with the Mahamaya Lake and it is working as an important road way network for the local people as well as tourists.                                                                                                                                                                                                 |

## Conclusions and Recommendations

### 10.1 Conclusions

Mahamaya Chhara Irrigation Extension Project is a surface water irrigation project executed by Bangladesh Water Development Board (BWDB). Reservoir creation was used as a means to increase fresh water supply for irrigation to enhance the agricultural production.

After implementation of the project, Protective Work is in good condition. Re-excavation has been completed successfully and the connecting khals are active though some parts of those khals are clogged with debris obstructing easy flow. Rubber Dam is also in good condition and functioning well. The Regulators are functional to pass out the water. So the Mahamaya Chhara Irrigation Extension Project has successfully played a positive role by conserving monsoon run-off in the reservoir for subsequent use for irrigation.

### 10.2 Recommendations

The following suggestions are put forward for sustainable development of the project:

- Bamsundar khal, Molihas khal, Mithanala khal, Mahamaya Old Chhara, Mahamaya New Chhara etc. needs to be re-excavated at suitable intervals to maintain smooth flow of water. All re-excavation should be done in such a way so that slope can be maintained with a standard design from upstream towards downstream direction.
- Fish culture should be stopped within the surrounding khals of project area for reducing sedimentation inside the khal until the basin gains expected/designed level.
- Lease of Mahamaya Lake should be given to the registered fishers group for the greater interest of the fishers and local community. Release of carp fish fry in the lake should be continued for increasing fish production and species richness.
- Three location in the Lake should be protected and undisturbed as a sheltering place of fish during fishing period. Protected area would be 3 Ha in each location (total 9 Ha) for sheltering and incremental fish production in the Lake.
- Conduct a detail study on habitat assessment and census of wildlife species including their conservation status and conservation importance; and plan a community-based ecotourism for a sustainable manner.
- Household waste and debris should not be dumped into the khals within the project area.
- In West Mithanala village because of bridge constructed by LGED water flow is disrupted. Monitoring and co-ordination among all Government Departments need to be facilitated.
- Heavy loaded vehicle's movement need to be stopped in the approach road towards Mahamaya Eco Park.
- Tourist movement within the Mahamaya Eco Park have to be restricted especially near the infrastructure developed by BWDB under this project.

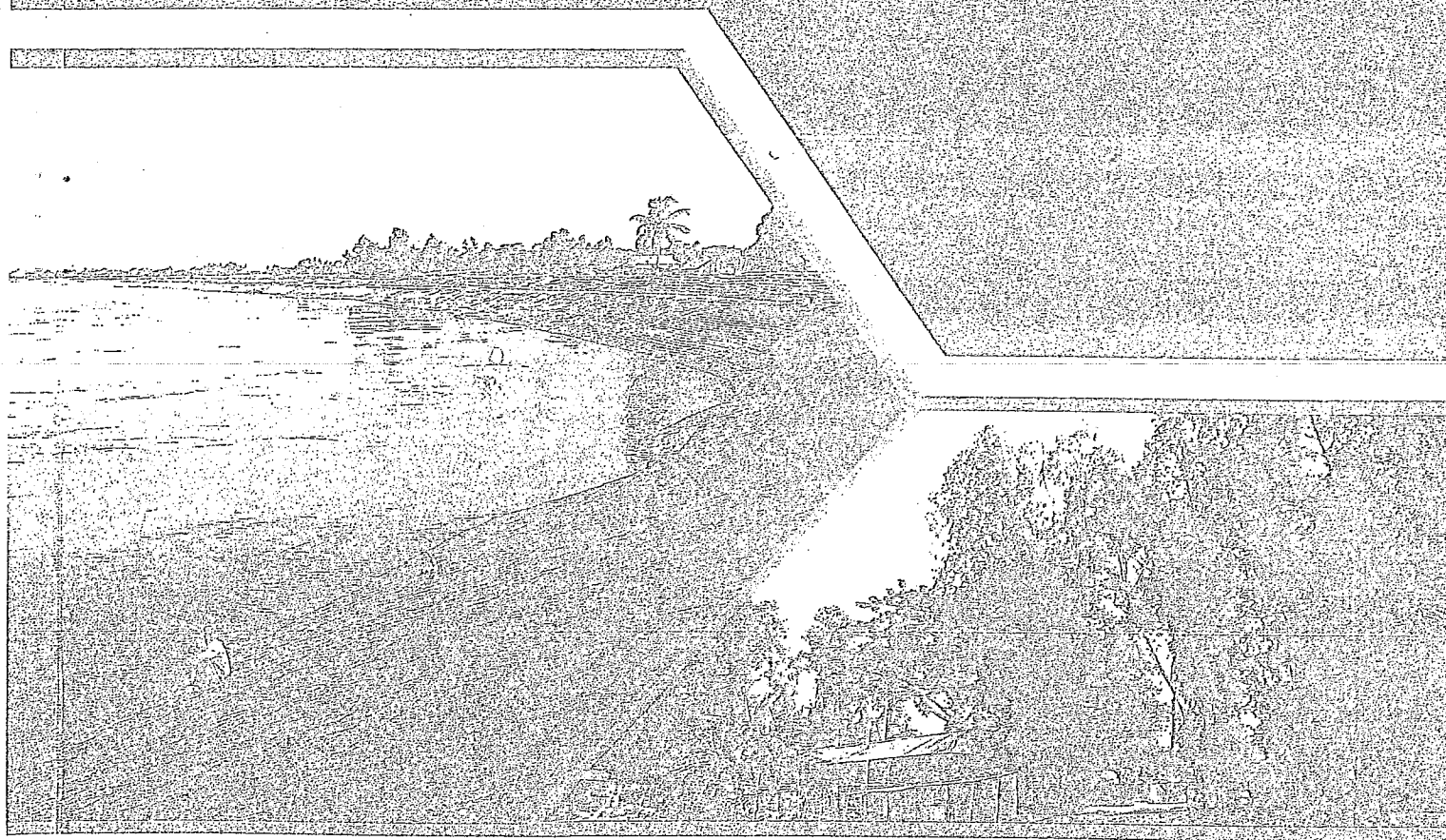


Bangladesh Water Development Board

# Final Report

## Post Project Evaluation and Impact Assessment of 10 BWDB Projects

Protection of Left Bank of the Jamuna River from Bahadurabad Ghat to Fufani Bazar in Dewanganj and Islampur Upazila, Pingna Bazar Area in Shariatshabari Upazila and from Horindhara to Hargia in Islampur Upazila under Jamalpur District



March 2020



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| Year      | Investment Cost | O & M cost | Total Cost | Benefit from saved Properties | Agricultural Benefit | Total benefit | Cash-flow |
|-----------|-----------------|------------|------------|-------------------------------|----------------------|---------------|-----------|
| 11        |                 | 1085       | 1085       | 30697.5                       | 2418.2               | 31700.7       | 30615.7   |
| 12        |                 | 1085       | 1085       | 30697.5                       | 2418.2               | 31700.7       | 30615.7   |
| 13        |                 | 1085       | 1085       | 30697.5                       | 2418.2               | 31700.7       | 30615.7   |
| 14        |                 | 1085       | 1085       | 30697.5                       | 2418.2               | 31700.7       | 30615.7   |
| 15        |                 | 1085       | 1085       | 30697.5                       | 2418.2               | 31700.7       | 30615.7   |
| B/C ratio | 3.13            |            |            | NPV (in Lac)                  | Tk. 66810            | IRR           | 40%       |

The above table shows that the implemented project is viable with IRR of 40%. Benefit cost ratio is 3.13. NPV is Tk 668.2 crore. Furthermore, the feasibility parameters improves further after implementation, compared to the pre-project situation.

The following table compares B/C ratio, NPV and IRR Calculations as originally forecasted in revised DPP.

**Table 8.17: Compares B/C ratio, NPV and IRR Calculations in 2010/11 prices (Lac Tk)**

|                                                                 | B/C ratio | NPV ( Crore Tk) | IRR   |
|-----------------------------------------------------------------|-----------|-----------------|-------|
| Feasibility parameters as in Revised DPP                        | 2.79      | 505.7           | 34.8% |
| Feasibility parameters as observed in 2017/18 from field survey | 3.13      | 668.5           | 40.1% |

The above table shows that all feasibility parameters have improved after the project. The reasons were the following: (i) protecting the assets as aspired in the project documents and (ii) deriving additional value from crop production grown in the agricultural areas protected by the project.

### 8.8 Overall Performance of the Project

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.18.

**Table 8.18: Over-all Performance of the Project**

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                     |
|-----------------------------------|-----------------|--------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Erosion                           | -               | ✓                  | -             | <ul style="list-style-type: none"> <li>Eroded 950 m at Bahadurabad Hard point;</li> <li>Eroded 600 m at Guthail Hard point.</li> </ul> |
| Biodiversity                      | ✓               | -                  | -             | Flora and fauna became less vulnerable after bank protection work.                                                                     |
| Vegetation                        | ✓               | -                  | -             | Vegetation losses minimized                                                                                                            |

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? Or explain positive sides of performances                                                                                                                                                                                                                                                    |
|-----------------------------------|-----------------|--------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Assets and Immovable properties   | ✓               | -                  | -             | All immovable properties have been protected (BDT. 30700 Million)                                                                                                                                                                                                                                                     |
| Safety and Security               | ✓               | -                  | -             | Ensure peoples life and livelihood security                                                                                                                                                                                                                                                                           |
| Land Price                        | ✓               | -                  | -             | Increase land value as 400 %                                                                                                                                                                                                                                                                                          |
| Standard of Living                | ✓               | -                  | -             | Affordability of expenses, and accessibility to health services increased                                                                                                                                                                                                                                             |
| Cropping pattern                  | ✓               | -                  | -             | Presently cropping pattern is increased from 12 to 14.                                                                                                                                                                                                                                                                |
| Crop Production                   | ✓               | -                  | -             | Non rice crop production is increased from 34,941 metric tons to 45,818 metric tons                                                                                                                                                                                                                                   |
| Cropping Intensity                | -               | ✓                  | -             | Cropping intensity is increased from 192% to 213%.                                                                                                                                                                                                                                                                    |
| Fish Habitat                      | -               | ✓                  | -             | Habitat condition of the river sections near the bank protection works improved due to Geo-bag and Cement Concrete (CC) blocks, a new habitat, which is used by small fishes for feeding purposes. As a result, presently, a considerable number of nektonic <sup>5</sup> small fishes were found near the riverbank. |
| Fish Diversity                    | -               | ✓                  | -             | Small fish species comparatively has increased due to improved habitat conditions and newly created fish habitat.                                                                                                                                                                                                     |
| GDP                               | -               | ✓                  | -             | BDT. 1376.2 Million Contributed in GDP in 2017-2018 fiscal year.                                                                                                                                                                                                                                                      |

<sup>5</sup>Nektonic Fish: The fish which use the open water littoral zone of the water body

## Conclusions and Recommendations

### 10.1 Conclusions

The project is located in the North-central hydrological region of Bangladesh and covers three Upazilas namely Dewanganj, Islampur and Sharishabari of Jamalpur District. The Project, known as 'Erosion protection' project was executed by BWDB in June 2017. Erosion protection was used as a means to protect the agricultural, residential and commercial lands along the Jamuna left bank.

After implementation of the project, Dewanganj Upazila Parishad, Railway Station, Railway track, Zill Bangla, Sugar Mill, Bahadurabad Ghat, Bhuapur-Tarakandi Road cum Embankment and many other public and private important establishments with total net worth of approx. BDT 30700 Million have been protected from left bank erosion of Jamuna River. And 9000 ha area of agriculture land have been saved from river banks erosion. Thus 3 lac people in habiting near the bank line of the river got directly benefited and these make the project successful.

### 10.2 Recommendations

The following suggestions have been made by the multidisciplinary team for sustainability of type project:

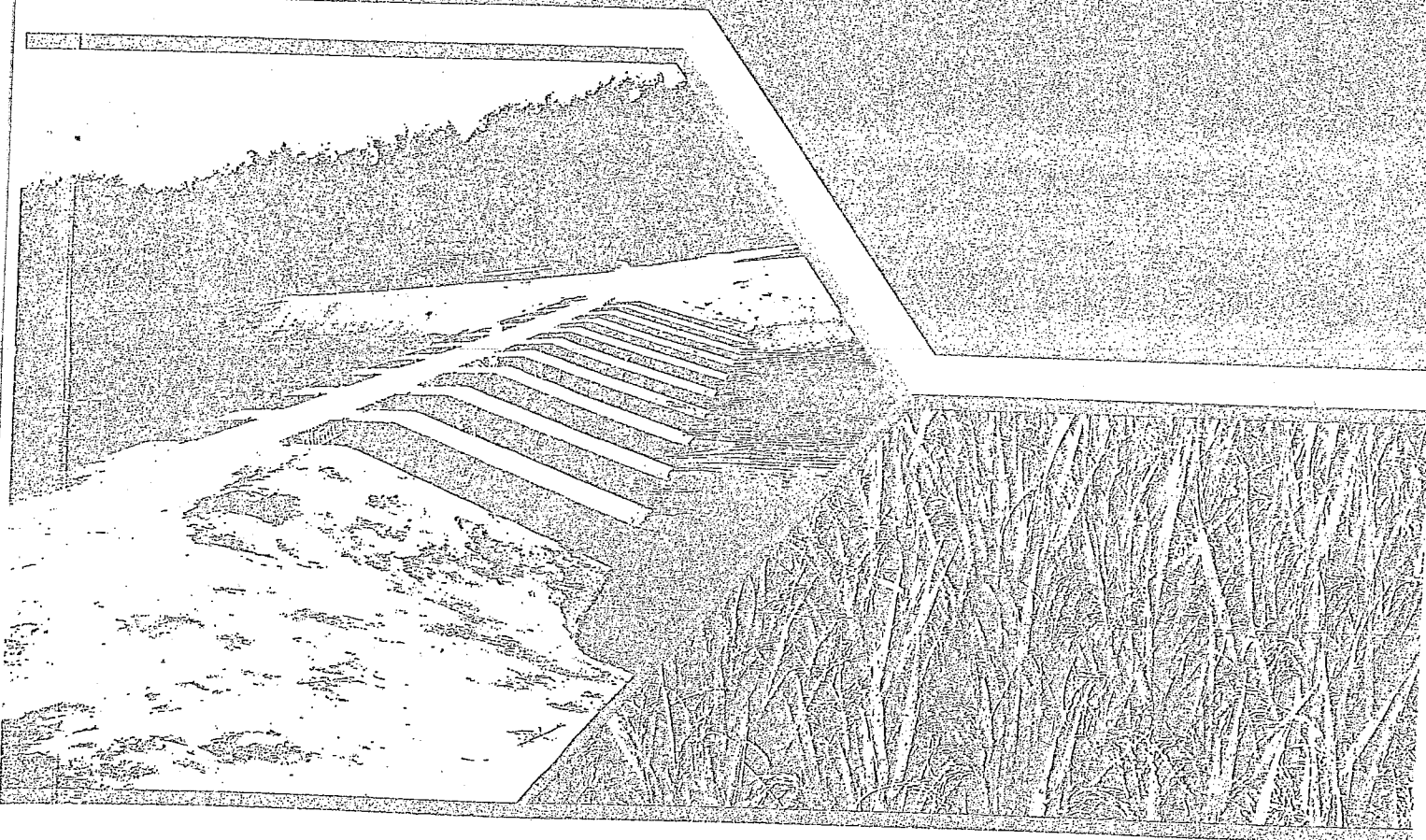
- There should be allocation of budget for O&M of the project to protect damage during monsoon at five locations in Moradubi Ghat, Shosharibari and Kulkandi and one location at Ulia Bazar.
- Approximately 5.00 km more bank protection is required in between the Bahadurabad Ghat to Futani Bazar works and Horindhara to Hargila works located in Islampur Upazila. This bank is still in danger of bank erosion which may hamper the completed works in future.
- Additional protective works for a length of approximately 5.00 km is needed at the end of the Pingna Bazar protective works to protect the river bank and Bhuapur-Tarakandi embankment-cum-road from devastating erosion near Pingna area in Sarishabari Upazila. The embankment-cum-road is the important communication network from Jamalpur District and Jamuna Fertilizer Industry factory towards entire northern part of the country.
- Proper monitoring and regular maintenance of the bank protective works need to be continued to ensure the sustainability of the project.

Government of the People's Republic of Bangladesh  
Ministry of Water Resources



Bangladesh Water Development Board

**Final Report**  
**Post Project Evaluation and**  
**Impact Assessment of 10 BWDB Projects**  
**Bhairab River Re-excavation Project, Meherpur**



March 2020



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## 8.8 Overall Performance of the Project

Overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in the Table 8.16.

Table 8.16: Overall Performance of the Project

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------|-----------------|--------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flooding                          | ✓               | -                  | -             | Inundation extent of flooding has declined fully in the Bhairab River Re-excavation Project area.                                                                                                                                                                                                                                                                                                                  |
| Storage of water                  | ✓               | -                  | -             | Conveyance capacity increased to 4.47 million m <sup>3</sup> .                                                                                                                                                                                                                                                                                                                                                     |
| Irrigation                        |                 | ✓                  | -             | Extensive surface water use for irrigation purpose was one of the main objectives of this project. But the farmers feel much comfort using shallow tubewell due to the rise of water table. This water table increase is also the result of re-excavation of Bhairab River.                                                                                                                                        |
| Flood damage                      | ✓               | -                  | -             | Decreased                                                                                                                                                                                                                                                                                                                                                                                                          |
| Standard of living                | ✓               | -                  | -             | River water is now good for regular uses. As a result it is not creating any water borne diseases now and good communication system has improved the quality of life.                                                                                                                                                                                                                                              |
| Reduce poverty                    |                 | ✓                  |               | Poverty level decreased                                                                                                                                                                                                                                                                                                                                                                                            |
| Cropping pattern                  | ✓               |                    |               | After re-excavation of Bhairab River, area and production of rice was reduced with substantial increase in area and production of high value vegetable crops. Farmers were interested to grow low water requiring high value vegetable crops against high water requiring rice crops. High price of vegetables was the other attraction resulting in large scale increase in vegetable cultivation and production. |
| Crop Production                   | ✓               | -                  | -             | Area under rice decreased from 25,980 ha to 19,805 ha while total rice production came down from 94,037 tons to 76,447 tons. Vegetable area and yield increased from 2,300 ha to 11,573 ha and production increased from 32,200 tons to 138,444 tons.                                                                                                                                                              |
| Cropping Intensity                | ✓               | -                  | -             | Cropping intensity increased to 218% against the pre-project cropping intensity of 177.31%. Cropping intensity increased by 40.69%.                                                                                                                                                                                                                                                                                |
| Fish Habitat                      | ✓               | -                  | -             | After re-excavation, habitat quality of river has changed because the river is perennial in nature. Good number of fishers are involved with catching fish in the river round the year. So positive changes of river habitat has started.                                                                                                                                                                          |
| Fish Production                   | -               | ✓                  | -             | No change of fish production.                                                                                                                                                                                                                                                                                                                                                                                      |
| GDP                               | -               | ✓                  | -             | Project has been contributing BDT 6453.4 Million to GDP annually in current 2018/19 prices. Largest contribution has been made by Vegetable production followed by banana production and HYV Boro production. Lowest contribution to GDP is made by the Oilseed production.                                                                                                                                        |

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## Conclusions and Recommendations

### 10.1 Conclusions

The main objective of the Bhairab River Re-excavation Project was to provide integrated drainage improvement, flood protection, navigation and irrigation facilities in the catchment of the Bhairab River. After implementation of the Bhairab River Re-excavation Project, the area is free from major flooding and the project area does not face drainage congestion. The project area is now completely free from the risk of water logging after the re-excavation work. When heavy rainfall occurs, it takes 2-3 hours to drain out the water through Bhairab River. The river have become perennial and the aquifer is at a depth of 5-6m. As a result irrigated area has gone up, but with ground water and not surface water. This has happened as irrigation with ground water, available from a shallow aquifer, is much cheaper. Increased availability of surface water in the river has led to increased use of domestic water as well.

Cropping intensity has increased from 177.31% under pre-project condition to 218% during the study period. After re-excavation of Bhairab River, area and production of rice was reduced with substantial increase in area and production of high value vegetable crops. Farmers were interested to grow low water requiring high value vegetable crops against high water requiring rice crops. High price of vegetables was the other attraction resulting in large scale increase in vegetable cultivation and production.

After re-excavation, fish habitat quality of river has changed because the river has become perennial. So fish production has increased partially.

The scope for employment opportunities and income increased due to increased agricultural production and agriculture product transport related activities. Thereby the overall income of local people has increased. In the pre-project condition, most of the women were self-employed and unpaid domestic laborers. Women are now involved in several income generation activities like poultry rearing, home based gardening, goat and cattle rearing. After the implementation of the project, the duck rearing and livestock rearing has increased substantially. As a result the women can contribute to income generating activities from home. They are becoming self-reliant and can contribute to raise the income of family. Their right to decision making is also increasing

### 10.2 Recommendations

- The soils that were excavated from the riverbed were simply dumped along the riverbank side in an unplanned way. The expectation was that the dredged earths will be taken by the local stakeholders which did not happen. Besides, no dressing, turfing and plantation program was undertaken. As there was no Earth Management Plan, the excavated soils that was dumped is going back to Bhairab River in small scale. As a result, the riverbed could rise again slowly. Landscape planning may be undertaken to avoid the problem.

- Flooding has reduced considerably. But the chance of flooding can be further reduced if khals like Saraswati gets connected with Bhairab River. Drainage system has improved significantly after completion of the project work. But the situation can be more strengthened if Kajla and Cheutia rivers which has connectivity with Bhairab River are dredged. Small scale rain cut was observed (no river erosion) as there was no surface drainage outlet. Water drains quickly to the Bhairab River. So, if surface drainage outlets are constructed according to proper design, this rain cut related problem will be resolved.
- There are some scope for improvement in the project area in respect of fisheries resources. Initiatives have already been taken by the upazila fisheries office of Mujibnagar and Meherpur Sadar upazila under Meherpur district. One fish sanctuary has been established at Rashikpur village by the Mujibnagar upazila fisheries office. Upazila Fisheries Officials suggested that more fish sanctuary is required in the project area to increase the fish diversity as well as fish production. Besides, cage culture activities is ongoing in the project area. There is a good scope to increase the cage culture activities in the Bhairab River. Six fish sanctuary (three in Mujibnagar and three in Sader upazila under Meherpur district) may be established in the project area. Release of fish fry in the river should be continued for uplifting fish production and species richness in the project area.
- Strong collaboration among the BWDB and WMOs are required during its regular monitoring and maintenance. Besides, it is required to ensure some financial support for the WMOs for making their work functiona regarding the issue of embankment.

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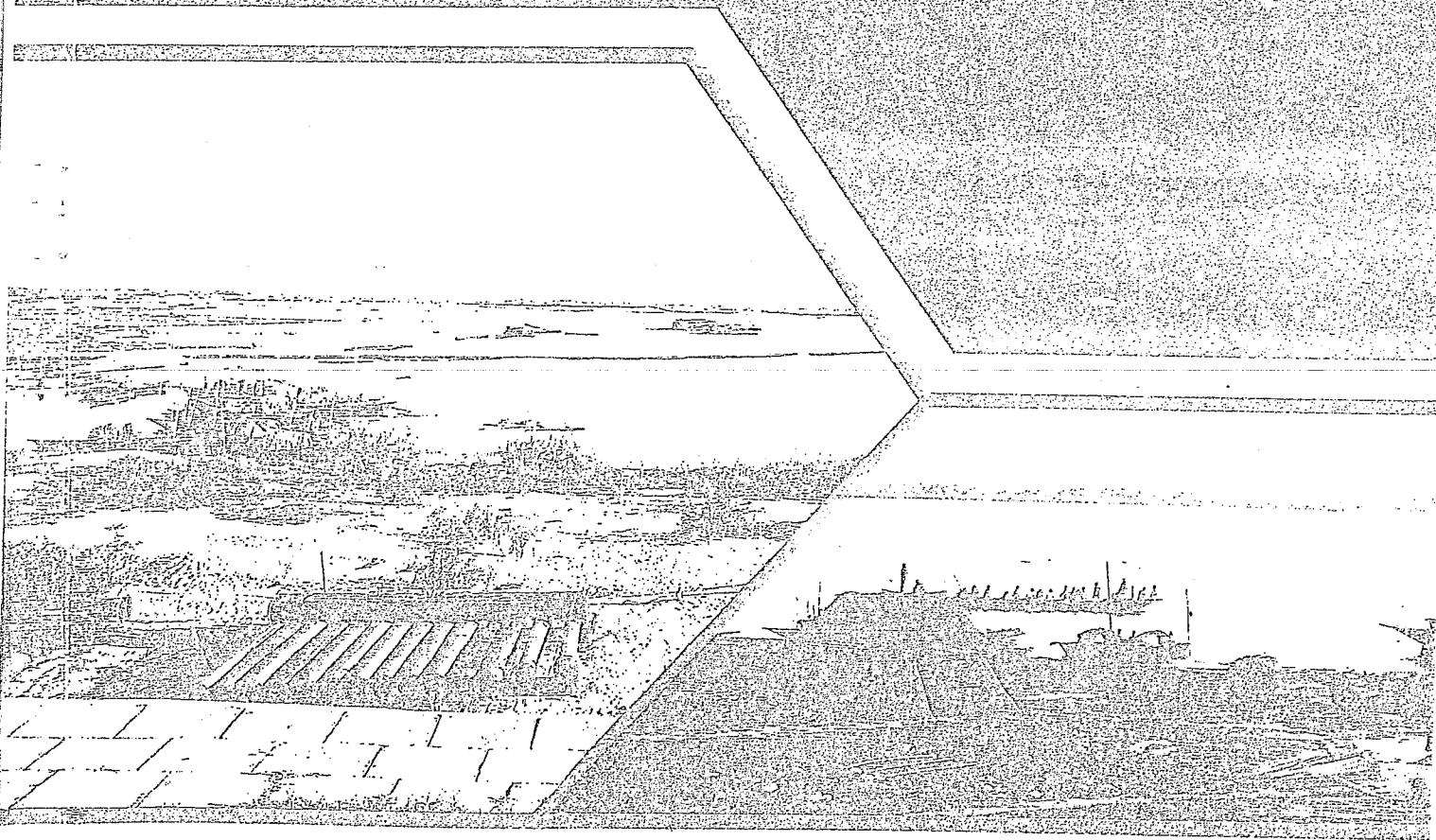


Bangladesh Water Development Board

# Final Report

## Post Project Evaluation and Impact Assessment of 10 BWDB Projects

### Capital (Pilot) Dredging of River System in Bangladesh Project



March 2020



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The table above shows that the project is contributing Tk 70.3million annually to the country's GDP from crop sector alone. Among the rice crops, the highest contribution to GDP is made by HYV Boro (Tk 24.0million). Among the non-rice crops, highest contribution to GDP is made by Sugarcane Production (Tk 23.7 million) followed by Jute (Tk8.8 million).

Thus BWDB project is contributing significantly to country's GDP. Considering national data, according to BBS reported in Bangladesh Economic Review (2019), agricultural and forestry sector's share of GDP was 10.11% in 2018-19 (provisional); share of crops and horticulture was 7.05%; animal farming 1.47%; forestry and related services 1.38% and Fisheries sector's contribution was 3.5%. Given the above shares in country's GDP, contribution of a single project on GDP is very small and hence not mentioned

### 8.8 Overall Performance of the Project

The overall performance of the project with respect to the targeted objectives and the impacts on the resources is mentioned in Table 2.2.

Table 8.6: Overall Performance of the Project

| Performance of items and coverage | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                                          |
|-----------------------------------|-----------------|--------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bank erosion                      | ✓               |                    |               | <ul style="list-style-type: none"> <li>• The risk of riverbed scouring along the Sirajganj Hardpoint has been reduced and the river has been flowing along the mid-channel.</li> <li>• Erosion of the upstream of the Hardpoint and the Right guide bundh of Bangabandhu Bridge has been reduced</li> </ul> |
| Sustainable River Management      | ✓               |                    |               | <ul style="list-style-type: none"> <li>• This comprehensive project combining Capital dredging, land reclamation, and bank protection by construction 4 crossbars has become a landmark project of BWDB and also opened the door for a future projects on sustainable river management.</li> </ul>          |
| Crop production                   |                 | ✓                  |               | <ul style="list-style-type: none"> <li>• After project implementation, total production of rice is 1,963 metric tons and non-rice is 15,808 metric tons where there were no crops in the pre-project condition</li> </ul>                                                                                   |
| Cropping intensity                |                 | ✓                  |               | <ul style="list-style-type: none"> <li>• The cropping intensity of the project area is 118.4 percent where there were no crops in the pre-project condition.</li> </ul>                                                                                                                                     |
| Biodiversity                      |                 |                    | ✓             | <ul style="list-style-type: none"> <li>• After the successful implementation of project intervention, flora and faunal status</li> </ul>                                                                                                                                                                    |

| Performance of items and coverage                                                            | Better than 80% | Between 50 and 80% | Less than 50% | Mention the reasons why? or explain positive sides of performances                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------|-----------------|--------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              |                 |                    |               | as well as biodiversity, are predicted to be improved and a new ecosystem is growing.                                                                                                                                                                                                                        |
| Land developed owing to the reclamation of Business center, industrial park and tourist spot |                 | ✓                  |               | • An Industrial Park and business center are developing in the reclaimed land. BISIC is going to establish an industrial park in the area adjacent to the crossbar 4 and BEZA is willing to develop an economic zone in the crossbar 3 area. Besides, informal tourism has been developed in crossbar areas. |
| Housing and settlement                                                                       |                 |                    | ✓             | • Cultivable land has increased due to the decrease of bank erosion and newly reclaimed land with the dumping of dredged spoil.                                                                                                                                                                              |
| Production of Goods and Service                                                              |                 | ✓                  |               | • The total value of crop production in the project area amounted to Tk 98.6 million                                                                                                                                                                                                                         |
| Income                                                                                       |                 | ✓                  |               | • The total Net margin from the entire project area is Tk. 55.8 million                                                                                                                                                                                                                                      |
| Employment                                                                                   |                 | ✓                  |               | • Total owned labor employment created in the project area is observed to be 33.6 thousand man-days annually.                                                                                                                                                                                                |
| Benefit/Cost (B/C) Ratio, Net Present Value (NPV) and Internal Rate of Return (IRR)          |                 | ✓                  |               | • Financial IRR of the project has improved over project-targeted                                                                                                                                                                                                                                            |
| Gross Domestic Production (GDP)                                                              |                 | ✓                  |               | • The project is contributing Tk 70.3 million annually to country's GDP                                                                                                                                                                                                                                      |

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## Conclusions and Recommendations

### 10.1 Conclusion

The Project, known as 'Capital/Pilot Dredging' project was executed by BWDB in June 2017. Capital Dredging was used as a means to protect the Sirajganj Hard Point and the Right guide bundh of Bangabanghu Bridge, to guide the east channel of Jamuna river to flow along the mid-channel, and reclamation of land by depositing dredged materials on the flood plain of Jamuna river at upstream and downstream of Hard point. It also provided sustainable river management and a 15 years comprehensive investment plan.

### 10.2 Recommendations

The following suggestions are put forward for sustainable development of the project:

- Proper monitoring and regular maintenance of the bank protective works and other components need to be continued to ensure the sustainability of the project. There should be allocation of budget for O&M of the project to protect damage during monsoon.
- Approximately 11 km embankment with protective work is required at upstream of the Hard point from Cross Bar-1 to the downstream of the Hard point to Cross Bar-4 and Right guide bundh of Bangabandhu Bridge to protect the reclaimed land and the project components as well (shown in Figure 9.1).
- For sustainability of the project, the maintenance dredging of the Jamuna river at this bank is essential every year. The maintenance dredging is required especially among the newly developed accreted land along the Cross Bar-2 and opposite to Cross Bar-3 (shown in Figure 9.1). The Jamuna river is the most sediment carrying river and braided in nature that changes its channel almost every year. Hence, there is a chance the river would flow again along the east channel instead of mid channel.
- One or more dredger should be kept as standby at Sirajganj under supervision of BWDB for carrying out the maintenance dredging in the river every year for sustainable development of the project and the future developing industry in the reclaimed land as well.
- Water bodies should be keep free from pollution. Throwing waste materials, doing household activities, bathing of cattle etc. should be prohibited to the water bodies of the project area.
- Providing fertilizers in the pond for fish culture should be controlled and limited. Excess fertilizer would deteriorated the quality of water.
- Strong monitoring team should be recruited for proper monitoring and supervision for cross bar 1 and 2;
- Local awareness should be enhanced to manage the natural beauty of the tourism sector.