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Report No: 28924-BD

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 67.5 MILLION
(US$102.26 MILLION EQUIVALENT)

TO THE

PEOPLE'S REPUBLIC OF BANGLADESH

FOR A

WATER MANAGEMENT IMPROVEMENT PROJECT

August 10, 2007

Sustainable Development Department
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective August 2006)

Currency Unit = Taka (Tk)

Tk 69 = US$1

US$1.51587 = SDR

GOVERNMENT FISCAL YEAR

July 1 – June 30

Weights and Measures

Metric System

1 meter (m)	=	3.280 feet	1 hectare (ha)	=	2.470 acres
1 Kilometer (km)	=	0.620 miles	1cubic meter (m)	=	35.310 cubic feet
1 million acre feet (MAF)	=	1.234 billion cubic meters			
1 cubic foot/second (cfs)	=	0.0283 cubic meters/sec (m3/sec)			

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	I-PRSP	Interim-Poverty Reduction Strategy Paper
ADP	Annual Development Plan	IUCN	International Union for Conservation of Nature
BPPRP	Bangladesh Public Procurement Reform Project	LGED	Local Government Engineering Department (GOB)
BWDB	Bangladesh Water Development Board	M&E	Monitoring and Evaluation
C&AG	Comptroller and Auditor General (GOB)	MOA	Ministry of Agriculture
CAAT	Computer Assisted Auditing Technique	MOFL	Ministry of Fisheries & Livestock
CASPR	Country Assistance Strategy Progress Report	MOWR	Ministry of Water Resources
CIDA	Canadian International Development Agency	NCB	National Competitive Bidding
CPAR	Country Procurement Assessment Report	NWMP	National Water Management Project (GOB)
CONTASA	Convertible Special Taka Account	NWP	National Water Policy (GOB)
DANIDA	Danish International Development Agency	NWRC	National Water Resources Council (GOB)
DAE	Department of Agricultural Extension (MOA)	NWRD	National Water Resources Database (GOB)
DFID	Department of International Development	O&M	Operations and Maintenance
DOF	Department of Fisheries (MOFL)	PCU	Program Coordination Unit
EMP	Environnemental Management Plan	PDO	Project Development Objective
ERR	Economic Rate of Return	PRA	Participatory Rural Appraisal
EMF	Environmental Management Framework	PSC	Program Steering Committee
FAPAD	Foreign Aided Project Audit Directorate (C&AG)	PSM	Participatory Scheme Cycle Management

FAP	Flood Action Plan (GOB)	QCBS	Quality and Cost Based Selection
FCD	Flood Control and Drainage	RAC	Regional Accounting Centre (BWDB)
FCDI	Flood Control, Drainage and Irrigation	RAP	Resettlement Action Plan
FMR	Financial Monitoring Report	RPF	Resettlement Policy Framework
GIS	Geographic Information Services	UNDP	United Nations Development Program
GOB	Government of Bangladesh	WARPO	Water Resources Planning Organization (GOB)
GON	Government of the Netherlands	WMA	Water Management Association
GPWM	Guidelines for Participatory Water Management (GOB)	WMF	Water Management Federation
ICB	International Competitive Bidding	WMG	Water Management Group
IDA	International Development Association	WMIP	Water Management Improvement Project
INTOSAI	International Organization of Supreme Audit Institutions	WMO	Water Management Organization
IPSWAM	Integrated Planning for Sustainable Water Management		

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Sector Director	:	Constance A. Bernard
Sector Manager	:	Gajanand Pathmanathan
Task Team Leader	:	Masood Ahmad

BANGLADESH
Water Management Improvement Project

CONTENTS

MAPS: IBRD 33267;
IBRD 33268;
IBRD 33269;
IBRD 33270;
IBRD 33271

BANGLADESH

WATER MANAGEMENT IMPROVEMENT PROJECT

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA
SASAR

Date: August 10, 2007	**Team Leader:** Masood Ahmad
Country Director: Xian Zhu	**Sectors:** General water, sanitation and flood protection sector (70%); Water Irrigation and drainage (30%)
Sector Manger/Director: Gajanand Pathmanathan/Constance A. Bernard	**Themes:** Water resource management (P); Natural disaster management (S); Rural Policies and institutions (S); Participation and civic engagement (S).
Project ID: P040712	**Environmental screening category:** Partial Assessment (B)
Lending Instrument: Specific Investment Loan	

Project Financing Data

[ ] Loan [X] Credit [ ] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total Bank financing (US$m.): 102.26
Proposed terms: 40 years including a grace period of 10 years

Financing Plan (US$m)

Source	Local	Foreign	Total
BORROWER/RECIPIENT	10.04		10.04
INTERNATIONAL DEVELOPMENT ASSOCIATION	83.26	19.0	102.26
LOCAL COMMUNITIES	4.40		4.40
NETHERLANDS: MIN. OF FOREIGN AFFAIRS / MIN. OF DEV. COOP.	14.00	6.00	20.00
Total:	**111.7**	**25.00**	**136.70**

Borrower: The People's Republic of Bangladesh
Responsible Agency:

Bangladesh Water Development Board
WAPDA Building
Motijheel C/A
Dhaka, Bangladesh, 1000
Tel: (880-2) 956-2293 and 955-0253
Fax: (880-2) 956-4763

Water Resources Planning Organization (WARPO)
House 103, Road 1
Banani, Dhaka, Bangladesh, 1213
Tel: (880-2) 988-0879 Fax: (880-2) 988-3456

Estimated disbursements (Bank FY/US$m)

FY	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15
Annual	2.00	5.0	11.0	18.0	20.0	20.0	20.0	6.26
Cumulative	2.00	7.0	18.0	36.0	56.0	76.0	96.0	102.26

Project implementation period: Start December 1, 2007 End: December 31, 2014
Expected effectiveness date: December 1, 2007
Expected closing date: June 30, 2015

Does the project depart from the CAS in content or other significant respects? ***Ref. PAD A.3***	[ ]Yes [X] No
Does the project require any exceptions from Bank policies? ***Ref. PAD D.7*** Have these been approved by Bank management? Is approval for any policy exception sought from the Board?	[ ]Yes [X] No [ ]Yes [ ] No [ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? ***Ref. PAD C.5*** Project's overall risk rating is "Substantial" primarily due to the concerns about transparency and accountability in procurement of contracts and their implementation that is rated as "high risk". A number of measures are introduced to address and minimize these risks including appointment of a Procurement Panel consisting of two international experts and three national experts for overseeing procurement process and monitoring the contract performance; a credible system of monitoring procurement actions and addressing complaints; establishment of a website to disseminate procurement actions; and training and capacity building of implementing agencies. **Ref PAD D.3 and Annex 8.**	[X]Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation? ***Ref. PAD D.7***	[X]Yes [ ] No

Project development objective ***Ref. PAD B.2, Technical Annex 3***

The primary Project Development Objective is to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management. The secondary objective is to enhance institutional performance of the Country's principal water institutions, particularly BWDB and WARPO. This is expected to result in reduced vulnerability and enhanced livelihood opportunities for the beneficiaries, and will also create a favorable environment for improved water resources management.

Project description *[one-sentence summary of each component]* ***Ref. PAD B.3.a, Technical Annex 4***

Component 1: System Improvement and Management Transfer would support rehabilitation and improvement of about 102 existing FCD/FCDI schemes and transfer their management to the local communities through WMOs.

Component 2: O&M Performance Improvement would support measures to improve O&M performance of about 98 existing FCD/FCDI schemes that do not require major rehabilitation and have functioning WMO's or similar organizations.

Component 3: Institutional Improvement would support institutional improvement of BWDB and WARPO, the two national Government institutions that deal with national water resources. This component will also support Program Coordination Unit for project implementation, as well as independent project monitoring and evaluation.

Which safeguard policies are triggered, if any? ***Ref. PAD D.6, Technical Annex 10***

1. Environmental Assessment (OP/BP/GP 4.01)
2. Natural Habitats (OP/BP 4.04)
3. Pest Management (OP 4.09)
4. Involuntary Resettlement (OP/BP 4.12)
5. Projects on International Waterways (OP/BP/GP7.50)

Significant, non-standard conditions, **if any**, for:

Board presentation: None

Loan/Credit effectiveness: All legal or administrative arrangements related to the Netherlands grant have been made.

Covenants applicable to project implementation: See Section C.6 of the PAD

A. STRATEGIC CONTEXT AND RATIONALE

A.1. Country and sector issues

1. **Country Assistance Strategy (CAS).** The World Bank strategy strongly focused on governance, is aligned with PRSP (poverty reduction strategy paper). The CAS' two pillars, *Improving the investment climate and Empowering poor*, reflect the focus of the World Bank's programs across sectors. The CAS puts Governance at center stage. Governance is the focus in the every sector the World Bank engages in, and sector governance reform will be the target of every World Bank supported project.

2. The proposed Water Management Improvement Project (WMIP) supports both pillars of the CAS and addresses the Governance issues in the sector. The project is designed to expand the role of communities in water resources management, empowering them to manage the water resources infrastructure and providing a framework for participation of beneficiaries and stakeholders in rehabilitation and operation of the water management systems. The project would also reform the Government institutions involved in the water sector, improving the governance, and transparency thereby enhancing their performance to better manage water systems.

3. **Sector Background.** Bangladesh is the terminal floodplain delta of three large rivers (Ganges, Brahmaputra and Meghna) with over 90% of their catchments' areas situated outside the country. These rivers combine within Bangladesh to form the world's third largest river, the Lower Meghna, before entering into the Bay of Bengal. More than fifty other rivers flow into Bangladesh. The combination of high rainfall during the monsoon season and full-flowing rivers results in extensive inundation of floodplains, compounded by slow, impeded drainage due to flat topography and often times coinciding with high tides of the sea.

4. Each year, about 20%-30% of the country is inundated, flooding over 6 million hectares to depths ranging from 30cm to 2m. Every 10 years up to 37% of the area is inundated. This situation creates both opportunities and risks; opportunity for highly productive farming and fishing systems, but considerable risks from deep flooding, erosion and drainage problems. By contrast, the availability of surface water during the dry season is significantly reduced and erratic pre-monsoon rainfall can cause serious soil-moisture deficits.

5. With a population of about 135 million within an area of 147,570 sq. km and the intensive river network, poverty is endemic and the country is prone to natural disasters like floods, erosion, cyclones and tidal surges which result in human casualties and economic loss. Poor households are relatively more vulnerable. The poor cannot afford disaster-proof housing and many of them settle on high-risk peripheral land, which makes them more susceptible to the vagaries of nature. Floods and cyclones aggravate poverty by destroying food stocks and scarce resources of poor households. Among poor households, women, children, elderly and the disabled are more vulnerable than the others. Approximately 50% of the population in Bangladesh lives below the poverty line and 9 out of every 10 poor people live in the rural areas.

6. Like floods, the drought also brings into focus the inherent discord among different uses of water. In the post-monsoon period, soil-moisture content declines rapidly and the water deficit needs to be compensated by irrigation. Agriculture gets the largest share of the available water and this in turn affects navigation, drinking water supply, environment, rural health and sanitation. Salinity intrusion, water logging and the contamination of the groundwater aquifer by arsenic are some of the more recent additions to the century-old problems caused by the water regime in Bangladesh.

Appropriate water resources management has thus played a major role in the growth of agriculture and consequent poverty alleviation in the country. Structural interventions in the coastal areas and the floodplains in the country have significantly reduced the vulnerability to natural disasters and have created economic opportunities for the poor by ensuring increased agricultural production. In total, about 9,000 km of embankments have been constructed by the government over time, incorporating more than 12,000 hydraulic structures, such as sluice gates. Publicly constructed over 510 flood control and drainage (FCD) and flood control, drainage and irrigation (FCDI) schemes cover about 6 million hectares of land, encompassing nearly all the area where flood protection is needed and possible.

7. This approach has been effective in reducing vulnerability by reducing the magnitude of flooding and substantially increasing rice production during the monsoon season. On the other hand, it tends to block the annual passage of spawning fish into the floodplains, decreases traditional water transport on the smaller interior streams, confines the very high sediment loads to within the river channels instead of allowing these to be deposited on the floodplains, and restricts the annual renewal and flushing of ponds and *beels* with less polluted water. Early monsoon rainfall, in conjunction with early inundation of floodplains, provides the most ideal conditions for fish movement, migration and spawning, but it is now under threat due to incursions in the water regime.

8. Since water touches almost every aspect of daily life, it has led to the evolution of a complex system of institutional arrangements for its management. On the basis of lessons learnt from previous interventions in the water sector, water has to be harnessed and used for the service of the communities, particularly the poor. In its strategies for economic growth, poverty reduction and social development, as articulated in the Poverty Reduction Strategy Paper (PRSP), Government policy is to: (i) promote rational management, optimal use and access to water for production, health and hygiene; and (ii) ensure availability of clean water in sufficient quantities for multipurpose use and preservation of the aquatic and water dependent eco-systems.

9. Since the late 1980s, there has been growing awareness of the need for a more integrated, multi-sector approach to surface water management. A new approach to planning, construction, operations and maintenance (O&M) and management of FCD/FCDI schemes is also required to address the above issues satisfactorily. But most importantly, participation of all stakeholders from the outset is crucial in order to promote sustainability and to ensure the long-term integration of social and environmental considerations. The emphasis, therefore, has now shifted from flood control to water management; from purely structural (engineering) solutions to combinations of structural and non-structural measures, designed to meet a broader range of water management needs; and from project development purely by technicians to stakeholder participation in all stages of the project development cycle (see Annex 1 for more details). The implementation of this new approach is the main focus of the proposed WMIP.

A.2. Rationale for Bank involvement

10. The Government has adopted a new approach to water management that takes into account lessons from the past experience. The main elements of this approach are to reform and strengthen key institutions, particularly Bangladesh Water Development Board (BWDB) and Water Resources Planning Organization (WARPO); ensure local user community participation at all stages of the cycle of water management projects; encourage private sector participation in water management; minimize adverse effects of water sector interventions on fisheries and the environment; ensure environmentally sustainable utilization of existing facilities through rehabilitation and effective O&M, including the transfer of FCD/FCDI schemes to Water Management Organizations (WMOs) and local governments; and the selective introduction of cost sharing policies to improve efficiency in water use.

11. The Bank has a comparative advantage in supporting such an approach since it has been playing an important role in assisting the Government in defining the long-term water management strategy for Bangladesh through coordination of the Flood Action Plan (FAP); and support for the development of the National Water Policy (NWP) and the National Water Management Plan (NWMP). The Bank has also assisted the Government take a comprehensive view and a strategic focus of water sector development and has shared the experience in implementing such projects through out the world. All the major donors in the water sector (Netherlands, ADB, CIDA, DANIDA and DFID) appreciate the Bank's role in providing leadership, particularly related to the policy and institutional reforms. Bank's support is therefore critical for redefining the role of the Government in the development and management of water resources, particularly with emphasis on decentralization and beneficiary participation (see Annex 2 for list of projects).

12. The proposed Water Management Improvement Project (WMIP) is expected to serve as an anchor for the Bank and other water operations in Bangladesh, focusing on key institutional reforms that would mainstream the best practices for water resources management in Bangladesh. The Government of the Netherlands (GON) has agreed to co-finance the project and other major donors supporting the water sector (such as ADB) are linking their operations to satisfactory progress on institutional reforms supported by the proposed Project.

A.3. Higher level objectives to which the project contributes

13. The project supports both pillars of the CAS and addresses the Governance issues in the sector. The project would help expand the role of communities in water resources management, empowering them to manage the water resources infrastructure and providing a framework for participation of beneficiaries and stakeholders in rehabilitation and operation of the water management systems. The project would also strengthen public institutions involved in the water sector, improving the governance, transparency and enhance their capacity to better manage the large water infrastructure.

14. The project is also consistent with the Bank's Rural Development Strategy, Government's I-PRSP for Bangladesh, and the Bank's Water Resources Sector Strategy. The project is consistent with the Bank's objectives of rural poverty reduction and rural development, in general, which identifies: (i) improving social well-being, managing and mitigating risk, and reducing vulnerability; and (ii) enhancing agricultural productivity; enhancing sustainability of natural resources management; and fostering an enabling environment for broad-based and sustainable rural growth. [Ref. Reaching the Rural Poor: Strategy and Business Plan, ARD, World Bank, October 31, 2002].

15. The Interim-PRSP for Bangladesh incorporates the measures to enhance the social impacts of FCD/FCDI schemes through rationalization of the existing schemes, and promoting stakeholder participation and multi-purpose use of the flood embankments. It recognizes that rehabilitation and improvement of FCD/FCDI schemes will enhance agricultural productivity as well as contribute to saving properties and lives by minimizing the impacts of monsoon flooding and cyclones. [Ref: Bangladesh: A National Strategy for Economic Growth, Poverty reduction and Social development, March 2003, paragraph 5.35].

16. The Bank's Water Resources Sector Strategy provides a framework for integrated water resources development and management, outlining four different types of interventions for assessing how water management affects poverty: Type 1 interventions are broad-based water resources interventions that provide national and regional economic benefits that extend to all, including the poor. Type 2 interventions improve water resources management in ways that directly benefit poor people. Type 3 interventions improve the performance of water services utilities, which benefit everyone, including the poor. Type 4 interventions provide targeted services to the poor. This project will cover Type 2 and type

3 interventions. [Ref: Water Resources Sector Strategy: Strategic Directions for World Bank Engagement, 2004]. The Project would also help to move towards a sector wide assistance operation by scaling up existing capacity building activities.

B. PROJECT DESCRIPTION

B.1. Lending instrument

17. After examining various options, Specific Investment Loan (Credit) was considered the most appropriate lending instrument. It is a framework-type project that will be implemented over a period of seven years, with two mid-term reviews during Project Years three and five (October 2010 and June 2013 respectively). An enabling social and political environment, along with water policy and institutional framework, to facilitate a new approach to water resource management, is now in place and provides the basis for the proposed WMIP. Out of approximately 510 FCD/FCDI schemes, the proposed project will cover only a portion of the medium and large schemes, which will be based on appropriate screening and selection criteria. The long-term objective of the project is to assist the Government to institutionalize a process of participatory management for improving the sustainability and performance of all feasible FCD/FCDI schemes under the control of BWDB and to improve water resources planning and management.

B.2. Project development objective and key indicators

18. The primary Project Development Objective (PDO) of the proposed project is to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management (PSM), from planning and design to operations and management. The secondary objective is to enhance institutional performance of the Country's principal water institutions, particularly BWDB and WARPO. This is expected to result in reduced vulnerability and enhanced livelihood opportunities for the beneficiaries, and will also create a favorable environment for improved water resources management by the core water institutions, in partnership with the beneficiaries. The PDO would be achieved by gradually changing a centralized top down approach to a more decentralized and participatory water sector management approach for efficient and sustainable operations and management of the existing FCD/FCDI schemes.

19. Since the proposed project is a framework-type project, the total number of schemes that may be covered by the project is not known at the time but the notional number is about 200 FCD/FCDI schemes. The project would be rated as satisfactory if the coverage is about 60% and highly satisfactory if the coverage is about 70% of the notional number of schemes at the end of the project. Furthermore, project would be rated as satisfactory if approximately 60% of the project schemes at the end of batch 1 (and cumulatively thereafter) are operational at an enhanced performance level with increased community participation; and highly satisfactory if the number of project schemes increases to about 70%. The conceptual framework of outcome and output indicators, for which specific measurable indicators have been developed in Annex 3, is outlined below.

Outcomes	Outputs
• *Improved water resources management* • *Increased community participation* • *Improved institutional performance* • *Increased agricultural (including fish) production* • *Reduced loss of life and property*	• *Institutionalizing participatory water management through a process of participatory scheme assessment and rehabilitation/ improvement of existing BWDB schemes* • *Satisfactory operations and maintenance to promote sustainability for flood management and cyclone mitigation of existing BWDB schemes* • *Institutional improvement of two key national water sector institutions*

B.3. Project components

20. The project deals with the new approach to water resource management with stakeholders' participation and is implemented through the following three components: (i) System Improvement and Management Transfer (SIMT); (ii) O&M Performance Improvement (OMPI); and (iii) Institutional Improvement (II). Project details are given in Annex 4 and project costs are summarized in Annex 5.

21. ***Component 1: System Improvement and Management Transfer (US$89.0 million).*** This component would support rehabilitation and improvement (R&I) of existing about 81 medium (average area 2,500 ha) and 21 large (average area 8,400 ha) FCD and FCDI schemes of BWDB, covering approximately 378,900 ha. The project schemes will be selected in batches from 7 BWDB zones by following a set of selection criteria to enhance the project impact and sustainability. The SIMT will follow a systematic approach of Participatory Scheme Cycle Management (PSM). Important design features of the component include: (i) the participatory process in scheme cycle management, which is based on the Guidelines for Participatory Water Management adopted by the Government; (ii) a resource database survey, Geographic Information Systems (GIS) and mathematical modeling tools that would be used in screening and auditing FCD/FCDI batches of schemes by hydrological unit; and (iii) an annual process of selecting eligible batches of medium and large FCD/FCDI schemes located in a particular hydrological unit.

22. The component would provide support for technical assistance for PSM and for screening, auditing and training; rehabilitation and improvement works; and incremental costs associated with implementing the System Improvement and Management Transfer of selected FCD/FCDI schemes. The component would also support the establishment and strengthening of WMOs and subsequent mainstreaming the PSM approach to BWDB. The component would support social mobilization and capacity building to assist WMOs to become fully functional and sustainable and to enable BWDB field offices to be able to implement PSM approach. The WMOs would be established under the Cooperative Societies Act. The WMOs will consist of, depending on the size of the FCD/FCDI scheme, Water Management Group (WMG), Water Management Association (WMA) or Water Management Federation (WMF). Based on the findings of February 2006 study under the Netherlands and ADB Co-financed project a streamlined approach to formation and registration of WMOs would be implemented under the Project with more clarified legal status of WMOs.

23. ***Component 2: O&M Performance Improvement (US$35.5 million).*** This component would support measures to improve O&M performance of about 98 medium and large BWDB schemes, covering approximately 410, 200 ha, which are "technically functional" and do not require major R&I. In order for medium and large FCD or FCDI schemes to be included in this component, the schemes should have functioning WMOs or similar community organizations. The component would also aim to improve culture and practice of O&M planning and execution cycle within BWDB. The project schemes for

O&M will be selected from Circle(s) or Division(s) of the BWDB's seven Zones by following a set of selection criteria to enhance the project impact and sustainability.

24. The objective of this component is to ensure the sustainability of those schemes that are currently functioning well and have already undergone major rehabilitation and improvement like under component 1 (or have gone through a similar process under projects funded by GOB or other development partners). The scheme performance will be monitored in the year following the introduction of the O&M performance improvement practices in the schemes. The component would also support technical assistance and training associated with O&M improvement. Further O&M funding will be discontinued for non-performing schemes or in case of a failure in management transfer to the WMOs. A program of new initiatives to foster improvements in O&M planning and financing would consist of mechanisms for prioritizing allocation of expenditure between types of activities and between schemes; improved O&M execution methods, including more innovative contract arrangements; and monitoring mechanisms to measure FCD/FCDI scheme performance and to judge O&M efficiency and effectiveness through annual assessments against agreed performance standards and by third-party audit.

25. ***Component 3: Institutional Improvement (US$12.2 million).*** This component would support the institutional improvement of BWDB and WARPO, which are the two major national institutions that deal with the nation's water resources. The project would also support activities related to program coordination, public relations, monitoring and evaluation, and strategic studies/fiduciary reviews. The component would finance technical assistance, including consultancy services for institutional improvement, change management, capacity building, training, and monitoring and evaluation; computers, office equipments, vehicles (including fuel and maintenance, exclusively for the implementation of this project), survey and monitoring equipments; and other required physical facilities.

26. ***(a) BWDB Institutional Improvement (US$6.0 million).*** The project would support implementation of BWDB reforms, focusing primarily on implementation of decisions already made by the Government to restructure and strengthen BWDB as a water resources management agency rather than just a development agency. It would therefore support initiatives to make the operations more effective, efficient and transparent, including human resource development. MOWR has already reviewed its staffing requirements and is implementing a policy decision to downsize its staffing from over 18,000 to about 8500 by 2006 through attrition. However, given the types of activities that BWDB would need to carry out now and in the future, there is an urgent need to determine the skill requirements of BWDB and staff the organization with appropriate skill mix of engineering, environmental, water management, drainage, community mobilization, agricultural extension and related skills. The analysis of gaps in skills, training, capacity building and reorientation and change management inputs to staff, along with recruitment of appropriately skilled staff, would also be strengthened. The project would also provide technical assistance and equipment, support minor renovation of existing training centers and strengthen the M&E as well as the fiduciary roles of the BWDB.

27. The specifics of the time-bound action program agreed with IDA include: (i) further rationalization of BWDB staffing and improvement of the staff skill-mix; (ii) design and implementation of need-based staff training programs; (iii) phased devolution of authority to Zonal Chief Engineers to foster the concept of integrated management of local water resources; (iv) improvement of transparency and accountability through improved procurement system and contract administration practices; better budgeting and financial management systems; enhanced monitoring and evaluation functions; and timely preparation and disclosure of financial and performance information; and (v) implementation of the initial phase of modernizing BWDB's operations through computerization/ information systems in functional areas.

28. ***(b) WARPO Institutional Improvement (US$2.6 million).*** The project would support two core activities: (i) organizational improvement and institutional development; and (ii) maintenance, updating and dissemination of the National Water Resources Database (NWRD). The item (i) includes TA consultancy for institutional support, local and foreign training, workshops and seminars on integrated water resources management, office equipment, and transport vehicles. The item (ii) includes a consultancy service of foreign and local consultants.

29. ***(c) Program Coordination and Monitoring (US$3.6 million).*** During the project period, the coordination and facilitation of the activities would be carried out by a Program Coordination Unit (PCU). This sub-component would support the establishment, operations and facilitation of the PCU by providing office equipment and transport facilities. The innovative PSM approach to the rehabilitation and improvement, operations and maintenance and integrated approach to water management within BWDB schemes will require public awareness, systematic Monitoring and Evaluation (M&E) as well as learning activities. For that a TA consultancy team of international and national experts would be provided under this sub-component. As per the new fiduciary requirements proposed under the Bangladesh Public Procurement Reform Project (BPPRP), all procurement activities executed in BWDB have to undergo annual ex-post reviews of 15-20 percent of its annual contracts. The project would therefore support public relations activities, selective strategic studies, reviews like annual ex-post procurement audit reviews and other thematic studies which may be needed from time to time. In addition, the Project would provide funds for preparation of future project in the water sector.

B.4. Lessons learned and reflected in the project design

30. The National Water Policy indicated that future interventions in FCD/FCDI schemes should involve integrated natural resources management within the system of a natural hydrological boundary. Lessons learnt from past water management efforts and those that have been factored into the project design include: focus of water resources management must go beyond just flood control, drainage and irrigation; more attention must also be given to social dimensions that promote participation of stakeholders and transfer of appropriate water management activities to local communities; environmental considerations must be integrated into water resources management; need for reforming water institutions to align with the new responsibilities has become even more pronounced; establishment of community organizations through a social engineering process is a very time consuming process and should be factored into project implementation planning; and flood embankment designs should be based on a study of the overall river basin development, rather than of merely the project area located within the river basin.

31. For implementation of participatory water management experience already gained for development of WMOs under the Integrated Planning for Sustainable Water management Project (IPSWAM) using GOB's guidelines and six step process is incorporated into the project design. Also the twinning arrangement between the MOWR and it partners in the Netherlands that has helped greatly in enhancing the capacity of BWBD and WARPO would be further reinforced under the Project.

B.5. Alternatives considered and reasons for rejection

32. A traditional approach of addressing the problem of O&M and sustainability of FCD/FCDI schemes by strengthening the Government agency (through technical assistance and equipments), enhancing O&M budgets, and increasing user charges was rejected since this approach has not worked satisfactorily in Bangladesh in the past. Such an approach only addresses the symptoms of a much deeper problem viz., domination by Government without any participation of the beneficiaries and other stakeholders in the management of the water systems, and inappropriate institutional structures and incentives. The proposed approach involves various stakeholders, redefines the role of the Government in

water management, addresses the fundamental institutional structural weaknesses, and takes into account the experience and lessons learned from implementation of several projects in Bangladesh and other countries, and is in line with both the National Water Policy of Bangladesh and the Bank's Water Resources Sector Strategy. Because of the sequential nature of BWDB institutional reforms and development of WMOs, a longer-term perspective was considered necessary. For this reason, a three-phase Adaptable Program Loan (APL) was initially considered. However, given the early stage of institutional reforms, it was considered premature to contemplate a long-term APL at this stage. Instead, a more appropriate lending instrument was considered to be a Specific Investment Loan.

C. IMPLEMENTATION

C.1. Partnership arrangements

33. The Government of the Netherlands (GON) has agreed to co-finance the proposed project that will also complement the Dutch-funded Integrated Planning for Sustainable Water Management (IPSWAM) project that is under implementation, and the on-going Twinning Arrangement between the Ministry of Water Resources in Bangladesh and the Dutch Ministry of Transport, Public Works and Water Management.

C.2. Institutional and implementation arrangements

34. WMIP would be implemented over a period of seven years. It has been designed as a framework-type project, with an overall framework of objectives, components and specific criteria to select schemes that will be included in project components 1 and 2. WMIP would be implemented by the main organizations of the water sector, i.e. BWDB and WARPO. In other words, the project will be implemented by the existing water agencies under the direct supervision and responsibility of MOWR. Past experience has shown that excessive reliance on TA has adversely affected the sustainability and did not really increase the capacity of the sector organizations to execute their mandated tasks. In this project, TA will be aimed at initiating the project activities and simultaneously focusing more on the capacity building towards mainstreaming the principles of participatory water management.

35. As discussed in Annex 6, the implementation arrangements are designed to use the existing set-up, to the extent possible, with only coordination arrangements proposed during implementation. Considerable attention will therefore be given to the planning, monitoring and evaluation procedures of WMIP. The project components 1, 2 and 3(a) will be implemented by BWDB, component 3(b) will be implemented by WARPO and component 3(c) will be implemented primarily by BWDB but with representation from WARPO. Two overarching policies have dominated the overall implementation framework i.e. building up a participatory water management system and strengthening the water sector institutions. Based on these principles, the implementation arrangements consist of the establishment of Program Steering Committee (PSC), Program Coordination Unit (PCU), zonal coordination committees, scheme coordination committees, and WMOs. The project would provide appropriate technical assistance to facilitate its implementation.

C.3. Monitoring and evaluation of outcomes/results

36. The Monitoring and Evaluation (M&E) for the project will be done by both the implementing agencies as well as by an independent M&E unit that would report directly to the PSC. Monitoring of WMIP includes several aspects: (a) process monitoring of PSM, including rehabilitation and improvement of the schemes, with clearly articulated role for WMOs; (b) monitoring of the performance of BWDB schemes, under component 1 and 2, including the outcomes; (c) monitoring the institutional improvement activities in BWDB and WARPO and their impact; (d) monitoring the status of

procurement and financial management; and (e) monitoring the overall project performance and its impact. For each of these components, a separate monitoring system has been developed (see Annex 3 for results framework and monitoring). The M&E framework will be participatory and integrated in the strengthened BWDB monitoring system. The M&E process will cover all components and sub-components which are measurable in terms of their outcomes during project implementation. The M&E data will be used to evaluate the project in three stages: (a) base line situation; (b) mid-term evaluations; and (c) at the end of project implementation.

37. Monitoring of the environmental and social indicators, outlined in the Environmental Management Framework (EMF) and the Resettlement Policy Framework (RPF), will be conducted by a monitoring team comprising of the select WMG/WMA members, officials from BWDB, Department of Agriculture Extension (DAE) and Department of Fisheries (DOF) representatives. Monitoring team will collect the required information annually by making field visits, consulting official sources, and interviewing key informants. Information thus collected will be further discussed and verified in open forums such as a Participatory Rural Appraisal (PRA) sessions. BWDB will train the members of the monitoring teams, as required. The EMF and RPF provide the list of indicators that will be monitored and assessed once every year. These indicators cover the most significant impact categories pertinent to the FCD/FCDI schemes in Bangladesh.

C.4. Sustainability

38. Experience world-wide has demonstrated that the most important requirement for sustainable water management is satisfactory institutional arrangements, stakeholder participation in all aspects of water management, and an O&M regime which has assured source of funding (including cost sharing) and efficient operating mechanisms. Stakeholder participation is even more important in Bangladesh given the multiple, and sometimes divergent, interests of the various stakeholders. The project is designed to establish these conditions for successful outcomes. The project will support change management and technical expertise to assist BWDB leadership to broaden and deepen the reforms, communicate the reforms, and build consensus and support for reforms.

39. The proposed project will further refine the PSM approach, that has been piloted in several water sector projects in Bangladesh, in order to improve its sustainability as follows: (a) timely provision of TA with a clearly articulated exit strategy; (b) involvement of NGOs for building capacity of community organizers/extension overseers and promoting development of partnership between BWDB and the WMOs but with a declining role of the NGOs over time through a carefully developed exit strategy; and (c) coordination with the GON-supported Integrated Planning for Sustainable Water Management Project (IPSWAM) project that is under implementation in order to incorporate lessons learned from the implementation of IPSWAM into the implementation plans for the proposed project.

C.5. Critical risks and possible controversial aspects

Risks	Risk Mitigation Measures	Risk Rating
To project development objective		
Unwillingness and inability of local stakeholders to form WMOs and participate in water management activities.	Ensuring representation of all user-groups in WMOs, a well-designed community mobilization and support program by local NGOs (where necessary), and complemented by the judicious use of technical assistance.	**N**
Limited cooperation by implementing partners.	Establishing effective working relationship through MOUs among the implementing partners and regular monitoring.	**N**

Risks	Risk Mitigation Measures	Risk Rating
Faltering of Government, BWDB and WARPO commitment to institutional reforms.	Supporting a gradual process to broaden and deepen reforms by Government, BWDB and WARPO, and allowing sufficient time for consultations and consensus-building for the reforms. Bank's sustained support/dialogue in the medium term.	**M**
To component results		
Lack of consensus among stakeholders towards participatory WRM and contributions for O&M	Participatory process in consensus-building, user rights in BWDB's assets to WMOs, and joint operation of the O&M funds.	**M**
Inability to change mindset and overcome internal resistance to reforms within BWDB/WARPO and weak capacity to implement the reforms.	Establishing an enabling environment for the change process, which and assist in reform process. Involvement of change management specialists located within BWDB. Positive incentives to BWDB staff, training and skill development.	**S**
Co-financing delays.	Improved coordination, harmonization of donors funding procedures and regular monitoring.	**N**
Lack of continued political support for the institutional reform program	Regular and pro-active communications and coordination by MOWR, BWDB and WARPO with other relevant Ministries and higher levels of Government	**M**
Implementation- related problems such as shortage of qualified staff at PCU, quick staff turnover, less experienced consultants and NGOs, procurement delays, coordination problems and inadequate supervision.	Close monitoring and continuous dialogue with implementing agencies on PCU staffing, consultants and NGOs; initial project activities would concentrate on institutional strengthening , including development of organizational structure and processes to improve BWDB financial management and make procurement more efficient and transparent; and introduce new operational procedures and innovative civil works contracting methods to overcome implementation problems identified in past projects implemented by BWDB.	**M**
Procurement. Concerns about transparency and accountability in procurement of contracts, and their implementation.	Project design has included several measures to protect it against bad governance and bring more accountability and transparency (Annex 8). A Procurement Panel would be responsible for bid evaluation and contract award, participation of water users and stakeholders will provide additional accountability, and an external M&E program (results accountability), indirect methods of evaluation will be adopted (e.g. water productivity metrics). A proper system of procurement planning and tracking various procurement actions, monitoring complaints would be implemented and a website would be maintained by the BWDB to show up-to-date status of procurement of various contracts under the project and their performance.	**H**
Financial Management There is a concern about weak adherence to FM procedures by BWDB and the limited experience of WARPO in implementing Bank funded projects and operating IDA funds. The delay in submission of timely reports between accounting locations and the	. A Govt. circular was issued by BWDB management to the field offices to strictly follow the procedures and this is expected to improve the situation. . FM staff will be trained by Bank sponsored courses on Financial Management and Disbursement . BWDB has started the process of recruitment to vacant accounting positions and assured IDA that no transfer/posting would be made in a manner that might affect the timely production of quality accounts in any accounting location	**S**

Risks	Risk Mitigation Measures	Risk Rating
long outstanding audit reports of BWDB and WARPO is another concern.	. BWDB moved forward in selecting an independent private auditor for the FY ...*(to be updated by FMS) after receiving clearance from C&AG*	
Overall risk rating		**S**

N: Negligible Risk; M: Modest Risk; S: Substantial Risk; H: High Risk

40. The most controversial aspect of the project is the implementation of the reform program and transfer of water schemes to water management organizations. These risks would be minimized through several measures described in the sections below. The overall project risk is rated *"Substantial"* primarily because of perceived issues in the procurement and contract management that is rated "high risk". There have been substantial problems in the past in procurement and management of the contracts under previous projects. As explained earlier, in order to ensure better response under the Project a panel consisting of national and international experts would be appointed for procurement of major contracts. Several other measures proposed to ensure transparency and accountability in implementation of the Project are described in more detail in Annex 8 on Procurement.

41. There might be difficulties in forming effective WMO and handing over responsibility for selected water management activities to them because of conflicts among users or user-groups and/or lack of basic management skills - or it might take longer to do it than planned. Ensuring equity within WMOs could be challenging. This risk would be addressed by refining procedures, and ensuring representation of all user-groups in WMOs, a well-designed community mobilization and support program by local NGOs, complemented by the judicious use of technical assistance. There is a risk that the project activities may be delayed due to implementation related issues such as less than qualified and experienced staff, consultants and NGOs, procurement delays, coordination problems, and inadequate supervision. This risk would be mitigated through institutional improvements and putting in place necessary arrangements for staffing, coordination, implementation, procurement and financial management as soon as possible. Targeted technical assistance will also be provided to mitigate these risks.

42. As is inherent in any major institutional reform program, the institutional reforms supported by the project carry significant risks. The BWDB improvements may not in practice take place to the extent proposed, because of lack of government commitment and/or because of internal resistance within the organization and/or the lack of capacity to implement the reforms. The project would mitigate this risk by supporting a gradual process in which reforms are progressively broadened and deepened by Government and BWDB and allowing for sufficient time for consultations and consensus-building for the reforms. The project would also provide support to BWDB staff in the form of training and skill development, better office equipment and communication facilities, which would both help the BWDB improvement process and build support for proposed improvements.

C.6. Credit conditions and covenants

Board Presentation: None.

Credit effectiveness conditions: None.

Covenants for project implementation: The covenants for project implementation are:

(i) Appointment of Procurement Panel by not later than January 31, 2008, with terms of reference satisfactory to the Association for duration of the Project;

(ii) Appoint, no later than August 31, 2008, implementation support consultants for BWDB, with terms of reference satisfactory to the Association;
(iii) By March 31, 2008 for the first year and no later than March 31 each year, prepare and furnish to the Association for review and comment, an annual program and budget requirements for the Project;
(iv) The Borrower shall include only those FCD/FCDI schemes in components 1 and 2 of the project that have been selected by following the "selection criteria" agreed with the Association;
(v) The Borrower shall cause to make available necessary counterpart funds on a timely basis. Funding under componnet1 (expenditure category 1 (b) shall be discontinued for non-performing schemes or in case of a failure in management transfer to the WMOs;
(vi) The Borrower shall ensure that the WMOs shall become self-sustaining during the O&M period, and that BWDB shall hand over user rights over BWDB assets (rehabilitated system, associated land and water bodies) to the WMOs through periodic lease agreements for the WMOs to generate income from managing these assets for sustainable management of the schemes handed over to them;
(vii) The Borrower shall ensure clear, expedited and streamlined procedures for environmental clearance under the Environmental Conservation Rules, 1997 for FCD/FCDI schemes up to 5000 ha that are included in component 1 of the project; and initiate action to seek appropriate amendments to the Environmental Conservation Act, 1995 for rehabilitation work related to all FCD/FCDI schemes; and
(viii) The Borrower shall ensure to complete the PSM cycle and proper management transfer of FCD/FCDI schemes to WMOs using its own resources in case the cycle is not completed within the project period (e.g. for the last batch of FCD/FCDI schemes to be included in components 1 and 2 of the project).

D. APPRAISAL SUMMARY

D.1. Economic and financial analysis

43. The primary benefit of improved water resources management under the project would be to reduce the vulnerability and enhance livelihood opportunities for the rural households living in FCD and FCDI scheme areas to floods and cyclones. Project benefits are likely to be realized from rehabilitation and improvements of FCD/FCDI structures and their improved mode of operations and maintenance. This is likely to reduce crop damages/losses during the pre-monsoon and monsoon periods; increase agricultural production due to improved drainage and flood control and expansion of irrigation (in FCDI schemes); increase fish production in capture fisheries due to the introduction of measures to mitigate adverse effects on fish migration patterns; reduce the loss of lives and property; increase employment opportunities for agricultural laborers due to increases in agricultural production and reductions in crop damage; increase safety and reduce disruption of economic and social activities for the population; and improve communication and expansion of transport. Further details related to economic analysis and the likely economic benefits from the project are provided in Annex 9.

44. As this is a framework-type project, the exact location, number and type of FCD/FCDI schemes that will be included in the project and the extent of rehabilitation required for the project schemes are unknown at this stage. Schemes will only be selected during project implementation. Therefore, the quantification of benefits and costs for the economic analysis is based on four sample schemes in different hydrological regions of Bangladesh. The economic analysis extrapolates the benefits and costs from the four sample schemes to quantify the overall project benefits and costs. Furthermore, all project benefits cannot be quantified.

45. The main benefits that have been quantified for the four sample schemes in this analysis are: (i) increased agricultural production arising from a reduction in a loss of crop damage, increased cropping intensity, shifts in cropping patterns; and (ii) increases in shrimp and salt production (in the coastal polder schemes). Due to lack of adequate historical data on loss of lives and damage to/loss of property, these benefits are not quantified. However, these benefits are likely to be fairly substantial, particularly in the coastal polders which are susceptible to cyclones and storm surges. Hence it is likely that the estimated economic rates of return (ERR) are biased downward, particularly for the coastal polders. Based on the list of schemes that could potentially be taken up under this project, it is estimated that the project will serve an approximate population of 10 million. A summary of the sample schemes selected for the analysis is provided below.

Hydro-Regions	Schemes	Type	BWDB Division	Below 1000 ha (small)	1000 – 5000 ha (medium)	Above 5000 ha (large)
NW	Toker Danra	FCD	Chapai Nawabganj	-	1,650 ha	-
NC	Pathakhali-Konai	FCD	Tangail	-	5,000 ha	-
NE	Zilker Haor	FCDI	Sylhet	-	-	5,263 ha
SE	Chokoria (Polder 65)	CFCD	Cox's Bazar	-	-	6,649 ha

FCD = Flood Control and Drainage; CFCD = Coastal FCD, FCDI = Flood Control, Drainage and Irrigation Areas.

46. The economic rates of return (ERR) for the sample schemes to be taken up under component 1 and for whole of component 1 and 2 are well above the opportunity costs of capital of 12%. The ERR for all schemes to be covered under component 1 is 29.5%, generating net benefits amounting to Taka 2.6 billion (2003 Taka). The ERR for the different schemes range from 14.8% to 32.2%. The ERR for all schemes to be covered under component 2 is 48.0%. While component 3 (institutional improvement of key water sector institutions) is expected to yield many positive externalities, these are not quantified in the economic analysis. The benefits of institutional improvement will however be reflected in the improved performance of FCD/FCDI schemes and, in fact, institutional improvement is a necessary condition for realization of the rates of return in components 1 and 2.

47. The sensitivity analysis indicates that the economic rates of return of components 1 and 2 are robust to wide-ranging deviations from the base case assumptions. Sensitivity analysis carried out for a scenario with a 25% rise in investment costs together with a 25% reduction in benefits indicates that the ERR is still above the opportunity cost of capital for both components i.e. 15% for component 1 and 29% for component 2.

48. The poverty impact of the project would be substantial. It is estimated that 2 million households will benefit from the project. Assuming that the incidence of poverty in the areas served by the project is similar to the incidence of poverty in rural areas of Bangladesh, approximately 47% of households in the potential project area fell below the upper poverty line and 31% of households fell below the lower poverty line in the year 2000. Assuming that on average the agricultural benefits are equivalent to 5,000 taka/ha and annual daily agricultural wage income increases by 2%, the incremental income due to project interventions will result in 7.1% fewer households under the upper poverty line and 6.7% fewer households under the lower poverty line in the project areas. The annual incomes of landless farmers will

increase by 837 taka. Annual incremental income for marginal, small, very small, medium and large farmers will be equivalent to 1,620 taka, 3,078 taka, 3,586 taka, 6,317 taka and 17,420 taka, respectively.

49. On the other hand, if the benefits per hectare are doubled to 10,000 taka and annual daily agricultural wage incomes increase by 2%, it is likely that there will be 9.1% fewer households under the upper poverty line and 8.8% fewer households under the lower poverty line. On the other hand, if per hectare benefits are only 1,000 taka and annual daily agricultural wage income increases by 2%, the poverty impact will be smaller but not insignificant, with 4.3% fewer households under the upper poverty line and 4.7% fewer households under the lower poverty line in the project area. As daily agricultural wage income accounts for 13-14% of the incomes of landless households and marginal farmers, compared to less than 1% for large and very large farmers, these farmers stand to gain significantly from increases in agricultural employment in the project areas.

D.2. Technical

50. The project would support the rehabilitation and improvement of existing water infrastructure i.e. the FCD and FCDI schemes. The major works involved are: (i) re-excavation of channels and rehabilitation/improvement/restoration of embankments to mitigate drainage and flooding problems; (ii) fish-passes; (iii) navigation locks and boat-passes for navigation mitigation; (iv) repair/replacement or addition of regulators or drainage structures; and (v) foreshore mangrove plantation in coastal areas.

51. The major technical issues are: (i) preparation of a land-use plan for each scheme in a participatory manner; (ii) choice of design of appropriate structure to be used on flood protection embankments by taking into account the local conditions, and water management needs and priorities agreed with stakeholders; (iii) integration of vegetation/plantation in the embankment design; (iv) strategic re-alignment of the existing embankments, which are either on the active floodplain or under constant erosion threat; (v) development of new low-cost technique to control embankment erosion and toe erosion for sea facing embankments; (vi) appropriate piloting of "beach development" technique as non-structural approach to dissipate coastal storm waves; (vii) review and, if necessary, upgrading of the Early Flood/Cyclone Warning System and evacuation system; and (vii) development of appropriate O&M standards and constant monitoring for these facilities. The technology used for rehabilitation/improvement is well tested and suitable for local conditions.

D.3. Fiduciary

52. **Procurement Environment and Reform Actions.** Bangladesh has undertaken procurement reforms which is a major step forward in improving the public procurement environment. However, this is just a beginning challenges of implementation of reformed procurement still remain. Considering all these factors the procurement under the project remains a challenge requiring special measures to address associated risks including lack of enforcement of regulations and procedures, ineffective contract administration, and political interference.

53. **Procurement (See Annex 8 for more details).** As mentioned in the risks section the project is considered as a "high risk" operation from public procurement point of view. The assessment is based on general environment for public procurement in the country as well as capacity assessment of the BWDB and WARPO. A number of special measures are underway in the country and also specifically introduced in this project to minimize procurement risks to acceptable standards. At the country level procurement reforms are underway that are described below in more detail. At the project level measures taken are: (a) **a Procurement Panel** , for large value contracts subject to prior review, consisting of five members, at least two international recruited using Bank guidelines and three national nominated by respective agencies (one from BWDB, and two representing other Ministries / Agencies with experience

in construction) would be responsible for review the bidding documents/request for proposals; receive bids, evaluate bids, and prepare bid evaluation reports for approval and award of contracts, and clear the notification of award. This panel will be selected by and reporting to the Ministry of Water Resources. The Procurement Panel will also carryout ex-post review of smaller contracts (below threshold level for prior review that are procured by the implementing agency) and check the performance of contractors randomly on a six monthly basis; (b) the project implementation consultants recruited through a rigorous process of selection would be responsible of preparing designs and bidding documents, they will act as the "Engineer" for major civil works contract (or as project manager) ensuring that Bank Procurement Guidelines are following in bidding, award, and supervision of these contracts; (c) quarterly monitoring of procurement reports for the project by the Procurement Committee of BWDB based on actions steps outlined in detail in the Annex 8; (d) enhanced community participation in planning and management of the construction works bringing higher level of accountability; and a large number of construction contracts would be awarded to the WMOs following community based contracting procedures; (e) a credible system of handling complaints would put in place; (f) a website would be established providing latest information on procurement of contracts, invitations to bids, status of evaluation award and performance under the contracts; (g) additional procurement training would be carried out of procurement staff and capacity of BWDB and WARPO would be strengthened; and (h) e-procurement piloting will be introduced to make system more transparent. Further details on this are provided in the Annex 8.

Financial Management: Details are provided in Annex 7.

54. The Financial Management system proposed and agreed for the project is adequate to meet Government of Bangladesh, Water Resources Planning Organization and Bangladesh Water Distribution Board & its regional accounting centers as well as IDA's fiduciary requirements as per OP/BP 10.02. The financial management framework envisages that the project financial management system for BWDB components will be a subset of BWDB's mainstream financial management system that has been evaluated to be adequate by IDA. The PCU and all concerned units and offices will follow the BWDB's financial, accounting and internal control procedures and manuals, along with the project specific financial management arrangements as reflected in the project documents. The project will follow the Fixed Assets Recording Arrangement that has been separately developed for the project.

55. The project will be implemented through BWDB and WARPO. BWDB has the experience of implementing a number of Bank and other donor-financed projects, but WARPO has limited experience of implementing Bank funded projects and operating project funds. However BWDB needs to reinforce strict adherence to its financial management system including filling the vacant accounting staff posts in several of its regional accounting centers and providing training in Financial Management and Disbursement to its staff. In the case of WARPO, one key FM staff received a week long training of the Bank sponsored courses on Financial Management and Disbursement to effectively manage the project and the project funds. The fiscal year end audits of the financial statements for BWDB and WARPO is long outstanding. Action has been taken by BWDB and WARPO to get all the audits updated. In addition to this BWDB and WARPO will take necessary steps to see that the project audits are timely conducted by the Foreign Aided Project Audit Directorate (FAPAD) of Comptroller and Auditor General (G&AG). Over all the financial management risk rating for the project is **Substantial** (S)

56. **Funds Flow:** Funds from IDA and GON will be kept in Convertible Taka **Special Accounts** that will be opened for BWDB and WARPO with such branches of any commercial bank as having adequate experience (in maintaining such accounts), acceptable to IDA. Both the agencies will be responsible for managing their respective Special Accounts. Centralized payments for all project expenditures from the PCU would be continued for the first two years of the project. When the scheme rehabilitations and other decentralized activities commence, decentralized payments will be arranged by

transfer of funds from the SA to bank accounts of various RACs following 90 Day Advance Procedure as detailed in the fund flow section of Annex 7.

57. **Governance and Fiduciary Assurance:** Financial Management arrangements are provided in detail in Annex 7. The key additions are: a) BWDB and WARPO should ensure that adequately qualified and experienced financial management staff is available on a full time basis and through-out the entire project implementation period, for overseeing the financial management and disbursement of the project and strengthening its financial management unit; and b) annual operational audit by an independent private auditor in addition to the Supreme Audit on the basis of TOR and selection process acceptable to the World Bank. Such audit would cover, in addition to performance audit of the project, an assessment of efficacy of the internal control framework and identification of additional control framework to reduce opportunities for misuse and mis-directing of project funds.

D.4. Social (Annex 10)

58. **Key Social Issues.** The major social issue is stakeholder participation in water management, and the project's objectives and activities are designed to achieve this. The framework for stakeholder participation has been established through: (i) the National Water Policy which places significant emphasis on consultation with and participation by stakeholders in the entire water management cycle; and (ii) the *Guidelines for Participatory Water Management*, which provide the detailed operational modalities and procedures to involve stakeholders in water management, including transfer of appropriate water management activities to stakeholder groups. Given that most interventions would be on existing schemes, a key challenge is selecting project schemes in a way that responds to community demand. This is critical for quality and effectiveness of the social mobilization process and the quality of partnership between BWDB and the community organizations created as part of the project.

59. The other major social issue is balancing interests of the various user groups (such as fisheries, highland and lowland agriculture, navigation, salt and shrimp production and housing). The key challenge is formation of WMOs, which represent all stakeholder groups, ensuring fair participation of all members in the working of the WMO, including determining rehabilitation/improvement needs, and minimizing domination of WMOs by rural elites. While the *Guidelines for Participatory Water Management* provide for representation of all user groups in WMOs, it would be necessary to closely monitor the early implementation experience of the working of WMOs and refine the formation and capacity building process, as needed. The project builds on experiences of organizing communities and undertaking community-based, participatory project planning and implementation by other similar projects in the water sector in Bangladesh.

60. **Planned Social Outcomes.** Planned social outcomes include (i) enhanced stakeholder participation, community ownership and empowerment in managing water resources; (ii) enhanced equity and social capital; and (iii) promotion of accountable and transparent local-level institutions. As indicated earlier, a thorough scheme assessment on various parameters would be done prior to scheme rehabilitation/improvement, and social and institutional aspects would be key criteria/parameters in this assessment. For each scheme, a systematic social analysis/assessment would be done as part of the PSM, addressing, inter alia, the following issues: (a) basic needs, values and expectations among key stakeholders and beneficiaries; (b) conflicting values or expectations among different stakeholders, including those outside the vicinity of the schemes; (c) important differences in how goods and services are distributed among different stakeholders; (d) any marginalized or excluded groups in the development process, and how these groups can be included; and (e) clear and transparent local-level decision-making mechanisms. The PSM approach incorporates social, environmental, engineering, economic, institutional and financial aspects.

61. **Land Acquisition and Resettlement.** Although the physical works will largely be carried out on the existing facilities, such as embankments and regulators, it is possible that some of the FCD/FCDI schemes may require modest amounts of additional land. To meet this land need and mitigate the associated adverse impacts, BWDB has drafted a *Resettlement Policy Framework (RPF)* by following the Bank's OP 4.12 on Involuntary Resettlement. As the specific FCD/FCDI schemes will be selected only after the WMOs are organized/strengthened, the Resettlement Action Plans (RAPs) for phased physical works packages will be prepared as the batches of schemes are selected for rehabilitation/improvement. These RAPs will be subjected to Bank review and approval before the civil works packages are accepted for financing by IDA.

62. **Participatory Approach.** One of the key project objectives is to enhance stakeholder participation in water resources management, including transfer of selected water management functions to local communities. The *Guidelines for Participatory Water Management* (GPWM) provides the operational framework to include local stakeholders through social mobilization and organization into WMOs. The PSM approach has also been designed to ensure direct involvement of WMOs in the selection of FCD/FCDI schemes and planning, design and implementation of the rehabilitation works, as well as O&M. The WMOs will also be directly involved in land acquisition and planning and implementation of all required resettlement activities.

63. **Role of NGOs.** An NGO (Association for Social Advancement - ASA) was part of the project preparation team. Another NGO (The World Conservation Union – IUCN) was engaged by BWDB to prepare the environmental aspects (EA/EMP). NGO services, as part of the Implementation Support Consultants, will also be used to assist BWDB implement the participatory water management activities, which may include social mobilization, group formation of water users and strengthening of WMOs at the scheme level and environmental mitigation and monitoring. NGOs, especially the local ones, will also be encouraged to plan and implement socioeconomic development activities in association with the communities and WMOs, as parts of their own development programs supported by their own resources.

64. **Monitoring and Measuring Project Performance.** Performance indicators and measures with regard to enhanced and sustained stakeholder participation -- the primary social development outcome -- relate specifically to two major aspects: (a) the involvement of WMOs in selection, planning, implementation and O&M of the FCD/FCDI schemes; and (b) satisfactory functioning and sustainability of WMOs. Monitoring relates to: (i) social mobilization; and (ii) strengthening the management structure of WMOs. The indicators for functioning and sustainability of WMOs may include, inter alia, registration under the Cooperative Society Act, frequency of committee and general meetings and attendance, preparation of minutes for review, establishment of transparent accounting practices, and frequency of visits of WMOs by BWDB officials. Selected measures will also be used to assess other aspects of community and WMO participation in terms of their pro-activeness with BWDB for rehabilitation of the existing FCD/FCDI schemes. These indicators and measures would be further refined during project implementation.

D.5. Environment (Annex 10)

65. The environmental objective of the project is to ensure the integration of environmental assessment and impact mitigation activities into the integrated water management system, including the rehabilitation and O&M of FCD/FCDI schemes at the levels of MOWR, BWDB, WARPO and community organizations. This objective will be achieved through the institutionalization and implementation of the PSM process.

66. **Key Environmental Issues.** Key environmental issues in this project arise from the rehabilitation of the embankments or polders and the impact it has on the water flow. However, since it does not

include any new construction, there are no major environmental impacts foreseen. The longer-term, but highly unlikely, impacts may be the disruption of fish migration and habitat, loss of floodplain habitat for other aquatic species, water logging in polder areas, and increased sedimentation or erosion. The increased agricultural productivity may also bring about greater pesticide use and the mismanagement of the irrigation canals may disrupt water flow and create polluted pools of water.

67. **Relevant Actions to Mitigate these Risks.** Relevant concerns and actions to mitigate these risks are considered as an integral part of the PSM framework which includes both an overall screening process and an environmental assessment mechanism for each individual schemes that will be rehabilitated. The detailed methodology in which the management will take place is outlined in the overall Environmental Management Framework (EMF) for the overall project and the cumulative impacts of numerous schemes to the hydrological regime; and the Environmental Management Plan (EMP), manual and assessment guidelines for individual scheme management.

68. **EA Categorization.** EA categorization for this project is considered **category B** since the purpose of this project is to assist the MOWR, BWDB, WARPO and the community organizations to improve their institutional and technical skills in the integrated management of water resources. The other factors that were taken into account are: (i) the project activities are not expected to have any significant adverse environmental impacts; (ii) the physical works supported by the project are all rehabilitation/improvement works (as contrasted with new construction) of existing flood control, drainage and irrigation infrastructure; and (iii) the rehabilitation/improvement program would specifically mitigate any negative impact of past water sector investments, and would improve fisheries, bio-diversity, in-stream ecology, wetlands management, navigation, and degradation due to saline water intrusion.

69. **Environmental Safeguards -- Environmental Management Framework:** The implementation arrangements for the EMF will follow the process described in System Improvement and Management Transfer and Operations & Maintenance Performance Improvement components (components 1 and 2). The details of the responsibilities are outlined in the EMF. The BWDB O&M unit with TA will be responsible for the overall screening, mitigation activities and monitoring the environmental impacts of each of the schemes. The field baseline data collection, mitigation and monitoring activities will be carried out by the BWDB field officers and the representatives from the WMOs responsible for monitoring, in consultation with the communities. The monitoring data will be recorded in a database in the BWDB O&M office and the Environment Cell of WARPO. The baseline data collection and monitoring of impacts will be documented in a uniform format provided in the EMF. A Bangla Mitigation Manual will be prepared during project implementation and provided to the WMOs to carry out the impact mitigation activities. Based upon the management level, appropriate training manuals and trainings for environmental management will be developed and provided to the BWDB senior engineers, field engineers and the WMO environmental representatives.

D.6. Safeguard policies (Annex 10)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[x]	[ ]
Natural Habitats (OP/BP 4.04)	[x]	[ ]
Pest Management (OP 4.09)	[x]	[ ]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[ ]	[x]
Involuntary Resettlement (OP/BP 4.12)	[x]	[ ]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[ ]	[x]
Forests (OP/BP 4.36)	[ ]	[x]
Safety of Dams (OP/BP 4.37)	[ ]	[x]
Projects in Disputed Areas (OP/BP/GP 7.60)	[ ]	[x]

Projects on International Waterways (OP/BP/GP 7.50)	[x]	[ ]

D.7. Policy exceptions and readiness

70. Since the proposed project deals with rehabilitation of existing FCD/FCDI schemes in a downstream riparian country, it falls under the exception of OP7.50 (Projects on International Waterways) as it would not adversely change the quality or quantity of water in the upper riparian countries. Therefore, in accordance with the Bank Procedures, the Regional Vice President approved a waiver to notification to the riparian countries. There is no other exception to Bank policies.

71. The project is expected to be ready for implementation by the time it is presented to the Board. The financial management and procurement arrangements are in place. The Project staff is in place and the process has been initiated to mobilize Implementation Support Consultants. The Government approval of Development Project Proposal for the project implies that budgeted counterpart funds shall be ensured (Re. DCA,Schedule 4, Paragraphs 6 and 7). The EMF and the RPF have been disclosed. Administration Arrangement related to co-financing grant by the Government of the Netherlands has already been signed on May 8, 2004. First year of work program would consists of establishment, development, strengthening of WMOs, training and strengthening so that they can effectively participate in the project planning, design, supervision and transfer of schemes. Similarly, BWDB and WARPO's work program would be on planning and design and working with the WMO and consultants. The project is thus ready for starting first year's activities.

Annex 1: Country and Sector Background

Bangladesh Water Management Improvement Project

Country Setting

72. Bangladesh is one of the least developed nations in the world. With the dense population of about 135 million within an area of 147,570 sq. km and a per capita income below $500, poverty is endemic and wide spread. It is exacerbated by the physical setting of the country, which is prone to recurring natural disasters like floods, erosion, cyclones and tidal surges that result in human casualties and economic loss at regular intervals[1]. The Household Income and Expenditures Survey of 2000 found that, in the country as a whole, almost 50% of the population was poor (as expressed by the upper poverty line) and about 34% was very poor (as measured by the lower poverty line). Approximately, 90% of those who are poor live in the rural areas. People living in coastal and riverine areas in general are specially exposed to the dangers of natural disasters. Floods and cyclones aggravate poverty by destroying food stocks and scarce resources of poor households. Poor households are more vulnerable and suffer more from them than the non-poor. Among poor households, women, children, the elderly and the disabled are known to be more vulnerable than the other age-groups.

73. Bangladesh is the terminal flat floodplain delta of three combined large river system, Ganges-Brahmaputra-Meghna. These rivers combine within Bangladesh to form the world's third largest river, the Lower Meghna, before entering into the Bay of Bengal. More than fifty other rivers flow into Bangladesh, with greater than 90% of their catchments' areas situated outside the country. The combination of high and intense rainfall during the monsoon season, and the full-flowing rivers, results in extensive inundation of the floodplains, compounded by slow, impeded drainage due to flat topography and often time coinciding with high tides from the sea[2]. Each year, about 20%-30% of the country is inundated, flooding about 6 million hectares to depths ranging from 30cm to 2m, and in every 10 years recurrence up to 37% of the area. This situation creates both opportunities and risks; opportunity for highly productive farming and fishing systems, but considerable risks from deep flooding, erosion and drainage problems.

74. By contrast, the net availability of surface water during the dry season is significantly reduced and erratic pre-monsoon rainfall can cause serious soil-moisture deficits[3]. Also during dry seasons, on the other hand, the high rate of sedimentation and low flow cause difficulty for navigation and other river water uses. Like flood management, the phenomenon of drought also brings into focus the inherent discord among different uses of water. In the post-monsoon period, soil-moisture content declines rapidly and the deficit needs to be compensated by irrigation. Agriculture therefore gets the largest share of the available water in both seasons and this in turn affects navigation, drinking water supply, environment, rural health and sanitation. Salinity intrusion, water logging and the contamination of the groundwater aquifer by arsenic are some of the more recent additions to the century-old problems caused by the water regime in Bangladesh.

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1 During the five-year period 1996-2000, national disasters claimed, on average, 530 lives and Taka 23.6 billion (about US$400 million at current exchange rate) in economic loss per year.

2 The average annual rainfall in Bangladesh is 2500 mm, but this hides wide regional variations, Ganges/Padma (1400 mm) to Meghna (5000 mm).

3 The average net precipitation deficit in Bangladesh has been calculated at 320mm. The maximum river flow in Bangladesh is recorded at 198,000 cumec while the minimum is 5,000 cumec. This is an extreme situation showing a variation of peak season river flow 40 times higher than the minimum flow.

National Water Policy

75. Water resources management has thus played a major role in the growth of agriculture and employment (about 65%) in the rural area and consequent poverty alleviation in the country. Structural interventions in the coastal areas and the floodplains have significantly reduced the vulnerability to natural disasters of the poor and have created economic opportunities for them by ensuring increased agricultural production. In total, about 9,000 km of embankments have been constructed by the government over the years, incorporating more than 12,000 hydraulic structures, such as sluice gates. Publicly constructed more than 510 flood control and drainage (FCD) and flood control, drainage and irrigation (FCDI) schemes cover about 6 million hectares of land, encompassing nearly all the area where flood protection is considered needed or possible. The total investment on these FCD/FCDI schemes amounts to more than US$ 3 billion. While this approach of scheme development has been effective in reducing vulnerability by reducing the magnitude of flooding from the rivers and substantially increasing rice production during the monsoon season, it tends to block the annual passage of spawning fish into the floodplains, decreases traditional water transport on the smaller interior streams due to closure under polderization, confines the very high sediment loads to within the river channels instead of allowing these to be deposited on the flood plains, and restricts the annual renewal and flushing of ponds and *beels* with less polluted water.

76 In this context, water resources management has played a major role in the growth and consequent poverty alleviation in the country. In the history of the country's water sector various governments had tried to prepare water policies and strategies successively to match with the prevailing conditions. Agricultural development was the central goal. The past policies also did not cope with the increasing population, diversified demands and needs nor the changing environment and reforms necessary in the public water sector. The needs of other water users were peripheral to water resources management. The preferred method of achieving this goal was to control the water regime through a network of physical infrastructures. There was very little concern about the adverse impact these were creating on other uses of water. This kind of orientation engendered a highly fragmented view of an immensely complex natural resources system. In such a situation, there was very limited scope for an integrated and harmonious development of water resources.

77. There was thus an urgent need for a broadening of the approach to water resources planning to respond to the changing socio-economic conditions. Continued agricultural growth is essential for the overall development of the country but this growth will not be sustainable at the cost of the environment. A degraded environment will negate what intensive agriculture seeks to achieve. The broad goal of water resources management has to focus on an integrated development of the resource to maximize human welfare without compromising the sustainability of the eco-system. This called for the development of a sound and pragmatic national water policy, a plan of action to implement those policies and restructured and reoriented institutions to carry forward the challenging agenda for the water sector.

78. Since the late 1980s, there has been growing awareness of the need for a more integrated, multi-sector approach to surface water management. A new approach to planning, construction, operation and maintenance (O&M) and management of FCD/FCDI schemes is also required, if the above issues are to be addressed. But most importantly, participation of all stakeholders from the outset is crucial in order to ensure the long-term integration of social and environmental considerations. The emphasis, therefore, has now shifted from flood control to water management; from purely structural (engineering) solutions to combinations of structural and non-structural measures, designed to meet a broader range of water management needs than just preventing rivers from spilling over; and from project development purely by technicians to stakeholder participation in all stages of the project development cycle.

79. The Government has adopted a new approach to water management that takes into account lessons from past experience and Flood Action Plan (FAP) studies which were prepared after the

disastrous 1987/88 floods. The main elements of this approach, as outlined in the Five Year Plan (1997-2002) document, are to reform and strengthen key institutions, particularly the Bangladesh Water Development Board (BWDB) and the Water Resources Planning Organization (WARPO); ensure local user community participation at all stages of the cycle of water management projects, including planning, construction and O&M; encourage private sector participation in water management; minimize adverse effects of water sector interventions on fisheries and the environment; ensure environmentally sustainable utilization of existing facilities through rehabilitation and effective O&M, including the transfer of small-scale schemes to WMOs and local governments; and the selective introduction of cost sharing policies to improve efficiency in water use.

80. The National Water Policy (NWP), approved by the Government in 1999, provided the directives and the guidelines for fundamental and wide-ranging reforms of the most important sector of the country, namely water sector, and its two principal organizations, BWDB and WARPO. As a start, the Government promulgated the new *BWDB Act of 2000* that seeks to give legal cover to many of the policy directives of the NWP. It is complemented by *Guidelines for Participatory Water Management*, which was formulated by an inter-ministerial Task Force to facilitate the process of participatory water management at all levels of water management in the country. Many departmental procedures of the BWDB have been reviewed and revised to bring them up to date with the current needs and new ones have been issued to cover new grounds. The National Water Management Plan (NWMP) was approved by the Government on March 31, 2004. All these reform initiatives of the Government have created an enabling environment for taking concrete action for carrying forward the momentum already generated to consolidate and build on the achievements in introducing participatory approaches for improvement of water management, strengthening operations and maintenance of the water infrastructure, and institutionalizing these changes in the main organizations in the water sector.

Water Sector Institutions

81. A large number of public sector agencies are involved in the management of water, either regulating it or using it for a variety of purposes. However, it is the Ministry of Water Resources (MOWR) that enjoys the most comprehensive mandate for water resources management and is assisted in the discharge of its responsibilities by the two principal institutions in the water sector, namely, the Bangladesh Water Development Board (BWDB) and the Water Resources Planning Organization (WARPO). The successful implementation of the new approaches to water management would depend, to a large extent, on the capacity of the MOWR to steer the new policy directives through the socio-political milieu of Bangladesh administration and the willingness and capacity of the two institutions to implement the reform agenda.

82. ***MOWR:*** The core functions of the MOWR, like any other Ministry under the Government of Bangladesh, consist of policy formulation, planning, monitoring and evaluation of projects/programs, legislative matters. Personnel management is centrally controlled by the Ministry of Establishment and allocation of funds by the Ministry of Finance. Similarly, all legal matters must be cleared by the Ministry of Law, Justice and Parliamentary Affairs. The Planning Commission has to clear every aspect of a project from conceptualization to implementation. The Rules of Business make it mandatory to consult the service Ministries before matters are put up to higher authorities for decision. Lack of capacity and lack of inter-ministerial co-ordination have been noted as the two main constraints towards achieving efficiency and economy.

83. ***BWDB***: The BWDB was created for the specific purpose of carrying out flood control, drainage and irrigation activities after the devastating floods of 1954 and 1955. The significance of the role of the BWDB in water management can be appreciated from the fact that more than two-thirds of the estimated US$3 billion invested by the donors till 2003 in the sector were spent by the Board alone. The original mandate of the BWDB was formulated in terms of the perceived needs of the 1950s. Flood control,

drainage and irrigation were the urgent needs of the day and the Board was mandated to accomplish those tasks. In these years, the Board was heavily engaged in constructing various types of infrastructure all over the country and by all accounts accomplished many engineering tasks effectively. The imperatives of integrated water management, conservation of the eco-systems, equitable access to water for different uses and ensuring the quality of water, among others, were the emerging issues to be addressed. BWDB could not keep pace with the changing demands that were put to it. Its intensive activities in the decades after Independence left it over-extended and centralized. Between 1980 and 1995, a number of studies identified the need for organizational change and the introduction of new approaches. The *Guidelines for Participatory Water Management* was expression of these new approaches. The redefinition of its mandate and a strategy of decentralization formulated in the National Water Policy (NWP) followed.

84. ***WARPO***: WARPO was established in 1992, under the Water Resources Planning Act, as the exclusive public sector agency responsible for macro-level water resources planning. Integrated water resources management in Bangladesh needs a strong WARPO, which implies that it has sufficient and capable staff, is well equipped and organized and has an operational communication with decision-makers, implementing line agencies, participating stakeholders and the scientific community. A few important conditions for a strong WARPO are already in place: its mandate is defined in the National Water Policy, while integration at ministerial level is assured by the National Water Resources Council and its Executive Committee. However, the operational establishment of a strong WARPO still meets several constraints. Though WARPO's mandate is defined (which may require amendments now that the NWMP has been approved), it is not adequately covered under the existing law to allow it the required authority for dealing with other agencies. Staff capacity and capabilities in terms of number, disciplinary composition and experience are inadequate. Moreover, the organization lacks a coherent framework of analysis accentuated by a lack of reliable information and access to data. The organization has been excessively dependent on TA support for even performing its routine core functions.

85. **Twinning Arrangements.** The Twinning Arrangement between the Ministry of Water Resources and its Netherlands counterpart has, since its inception in 2002, also made great strides towards building the capacity of the water management institutions (BWDB and WARPO) in Bangladesh. Similar to IPSWAM, this activity is seen as preparing the ground for WMIP. The Twinning Arrangement is drafting the way forward but, by its nature, is not in the business of implementing these proposals. In a concerted effort, a Five Year Strategic Plan for BWDB was developed, as was Organisational Development Plan for WARPO. Upon their formal endorsement, WMIP will be the vehicle for their full implementation.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

Bangladesh Water Management Improvement Project

Sector Issue	Project	OED/Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		IP	DO
1. Preparation of a long-term National Water Management Plan (NWMP), using an integrated multi-sectoral approach; Institutional Development of WARPO	NWMP component of River Bank Protection Project (RBPP) (closed on December 31, 2001)	S	S
2. Rehabilitation and improvement of coastal embankments. Improved O&M of these embankments. Community participation for afforestation and routine maintenance	Coastal Embankment Rehabilitation Project (CERP) (closed on December 31, 2002, co-financed by EU)	S	S
3. Rehabilitation of works and improved O&M. Improved stakeholder participation in water management	Systems Rehabilitation Project (SRP) (closed on December 31, 1997, co-financed by Netherlands and EU)	S	S
4. Increase fisheries production in a sustainable manner.	Fourth Fisheries Project (closed on June 30, 2006, co-financed by DFID and GEF)	MS	MS
Other development agencies			
5 Strengthening institutional capacity at different levels with BWDB towards participatory water management.	Integrated Planning for Sustainable Water Management (ongoing, Netherlands-funded)		
6. Development of newly accreted landmasses in the Meghna estuary and transfer of land to the poorer communities.	Char Development and Settlement Project, Phase III (ongoing, Netherlands funded)		
7. Better understanding about erosion, accretion processes in the Meghna estuary and undertake pilot schemes.	Estuary Development Program (ongoing, Netherlands funded)		
8. On-farm development thorough participatory water management	Command Area Development Project covering two major irrigation projects (completed, ADB-financed and PPTA for Phase II)		
9. Community driven small scale surface water development and mgt. (<1000 ha)	Small Scale Water Resources Sector Project, Phase II (ongoing, ADB-Netherlands, co-financed, ongoing and PPTA for Phase III)		
10. Participatory WRM including rehabilitation of existing schemes and improved O&M.	South-West Area Integrated WRM Project (ongoing, ADB- and Netherlands funded)		
11. Preparation of a strategy for integrated development of Bangladesh coastal areas	Integrated Coastal Zone management Program (completed on June 30, 2006, Netherlands and DFID-cofinanced)		
12. Improved agriculture, fishery and poverty alleviation.	Dampara Water Management Project (completed on Dec 31, 2001,CIDA-financed.)		
13. Flood Forecasting	Flood Forecasting and Warning Services (DANIDA-funded); Early Warning Systems Study, Netherlands funded.		
14. Flood rehabilitation	Emergency Flood Damage Rehabilitation Project, co-financed by ADB and the Netherlands		

IP/DO Ratings: HS (Highly Satisfactory); S (Satisfactory); MS (Moderately satisfactory), MU (Moderately Unsatisfactory), U (Unsatisfactory); HU (Highly Unsatisfactory).

Annex 3: Results Framework and Monitoring

Bangladesh Water Management Improvement Project

(a) Results Framework

PDO	Outcome Indicators	Use of Outcome Information
Improved national water resources management by involving and expanding the role of local communities in all stages of the participatory scheme cycle management, from planning and design to operations and management.	At the end of the project, 60% of project schemes are operational at an enhanced performance level with increased community participation. **Indicators of enhanced performance**: (a) A reduction in the level of damage to property and assets that is to the satisfaction of the communities in 60% of project schemes. (b) About 60% reduction in crop area damaged by floods/cyclones in 60% of project schemes from YR 5. (c) An increase in agricultural production that is to the satisfaction of the communities in 60% of project schemes. **Indicators of increased community participation:** (d) About 60% of project schemes have WMOs functioning in accordance with their roles and responsibilities agreed upon in the management plan.	YR1-YR3 : Assess achievements with respect to participatory scheme cycle management (PSM) as part of SIMT and OMPI (including the establishment of WMOs in project schemes, their participation in developing the management plan and carrying out their operations and maintenance responsibilities). Determine if the PSM approach is effective or needs to be modified. YR3: During the first MTR, assess progress in project implementation and, if necessary, recommend adjustments to ensure that the PDOs are met. YR4-YR5: Gauge achievements, following first MTR, and make adjustments where necessary to achieve the PDOs. YR5: During the second MTR, assess progress in project implementation and, if necessary, recommend adjustments to ensure that the PDOs are met. YR6-YR7: Consolidate the gains and feed into the strategy for mainstreaming program and evaluation.

Annex 3 (Cont'd.)

Intermediate Results One per Component	Results Indicators for Each Component	Use of Results Monitoring
Component One: **System Improvement and Management Transfer**: Improved water resources management capacity of the local communities, to participate actively in the planning and management of flood control, drainage and irrigation schemes.	**Component One:** (a) Successful completion of rehabilitation and improvements in x% of project schemes. (b) Scheme O&M satisfactorily completed as per management plan with WMO contribution in x% of project schemes. (c) x% of project schemes in which management is transferred to WMOs.	**Component One:** YR1-YR3: Based on the annual M&E reports, realign the PSM approach to make it more effective. YR3: First MTR to assess progress and recommend adjustments, if necessary. YR4-YR5: Following the first MTR, adjust the PSM approach to make it more effective. YR5: Second MTR to assess progress and recommend adjustments, if necessary. YR6-YR7: Based on the annual M&E reports, adjust/modify the PSM approach and consolidate the gains.
Component Two: **O&M Performance Improvement**: Improved culture and practice of O&M planning and execution within BWDB and improved capacity of the local communities to participate actively in operations and maintenance of flood control, drainage and irrigation schemes.	**Component Two:** (a) Timely completion of need-based O&M assessment and allocation of BWDB's O&M budget for project schemes in each zone. (b) Scheme O&M satisfactorily completed as per management plan with WMO contribution in x% of project schemes. (c) x% of project schemes in which management is transferred to WMOs.	**Component Two:** YR1 –YR3: Based on the annual M&E report, adjust/modify the approach, if necessary. YR3: First MTR to assess progress and recommend adjustments, if necessary. YR4-YR5: Following MTR, continue adjustment, if necessary, on the basis of M&E reports. YR5: Second MTR to assess progress and recommend adjustments, if necessary, for mainstreaming. YR6-YR7: Based on the annual M&E reports, adjust/modify the approach and consolidate the gains.

Annex 3 (Cont'd.)

Component Three: Institutional Improvements: (a) BWDB provides responsive, effective and efficient services to its clients for water resources management.	**Component Three:** (a) BWDB's reform plan prepared by June 2008, and approved by December 2008. (b) Following the approved reform plan, new staffing plan prepared and approved by June 2009. (c) BWDB's interim Human Resources Development (HRD) plan prepared by March 2008 and implementation commenced by September 2009 (d) Following (a) and (b), HRD plan prepared by December 2009 (e) x% of WMOs satisfied with the services provided by BWDB. (f) x% of BWDB project staff trained in the PSM approach. (g) x% increase in computer literate staff in BWDB.	**Component Three:** (a) Based on the M&E survey, assess BWDB performance and adjust/modify the action plan for BWDB reform accordingly.
(b) WARPO provides responsive, effective and efficient support to Government policy and macro-level water resources planning	(a) Updated NWRD database with enhanced data layers and effective dissemination of data. (b) WARPO's reform plan prepared by December 2007, and approved by June 2008. (c) x% of professional staff trained in various subjects related to integrated water resources management.	(b) Based on the M&E survey, assess WARPO performance and adjust/modify the action plan for WARPO reform accordingly.

Annex 3 (Cont'd.)

(b) Arrangements for results monitoring

Outcome Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
At the end of the project, 60% of project schemes are operational at an enhanced performance level with increased community participation.	To be taken as schemes enter project: the level of damage to property and assets, the level of crop area damaged, and the level of agricultural production will be determined and agreed upon by the community during PRA exercises in the planning stage of the PSM.					60%	60%	60%	Half-yearly/ yearly cumulative reports	Performance based operation status report for each of the project schemes, following an M&E framework.	• Independent M&E Consultants • BWDB • WARPO

(b) Arrangements for results monitoring

Results Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component One: (a) Successful completion of rehabilitation and improve-ments in x% of project schemes.	Scheme data base, operational status, staffing, budget allocation and WMO status				70%	80%	90%	100%	Quarterly and yearly cumulative reports on implementation status	Progress reports, any special reports and performance based operation status report for each of the project schemes, following an M&E framework.	• Implementation Support Consultants. • BWDB
(b) Scheme O&M satisfactorily completed as per manage-ment plan with WMO contribution in x% of project schemes.					70%	80%	90%	100%			
(c) % of project schemes in which management is transferred to WMOs.					60%	60%	60%	60%			

(b) Arrangements for results monitoring

Results Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component Two:											
(a) Timely completion of need-based O&M assess-ment and allocation of BWDB's O&M budget for project schemes in each zone.	Scheme database, operational status, staffing, budget allocation and WMO status			100%	100%	100%	100%	100%	Quarterly and yearly cumulative reports on implementation status	Progress reports, any special reports and performance based operation status report for each of the BWDB project scheme, following an M&E framework.	• Implementation Support Consultants • BWDB
(b) Scheme O&M satisfactorily completed as per manage-ment plan with WMO contribution in x% of project schemes.				50%	60%	70%	80%	100%			
(c) x% of project schemes in which management is transferred to WMOs				60%	60%	60%	60%	60%			

Annex 3 (Cont'd.)

(b) Arrangements for results monitoring

Results Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component 3 (a) (a) BWDB's reform plan prepared by June 2005, and approved by December 2005.	Status of BWDB organization, staffing, skills, budget, office equipment, communication, and transport at all levels.	50%	100%						• Quarterly/yearly reports on implementation status. • Overall Annual Report of BWDB • Annual Audit Report • Annual client satisfaction survey report	• Quarterly Progress Reports and Annual Evaluation Report • Records in BWDB • Accounts Records in BWDB • Sample Client/ Media Survey	• Consultants • BWDB • Government's Auditor Office • Independent M&E Consultants
(b) Following BWDB's approved reform plan, new staffing plan prepared and approved by June 2006.			100%								
(c) BWDB's interim Human Resources Development (HRD) plan prepared by March 2005 and implementation commenced by September 2005		100%									

Annex 3 (Cont'd.)

(b) Arrangements for results monitoring

Results Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
(d) Following (a) and (b), BWDB's HRD plan prepared by December 2006			50%	100%							
(e) x% of WMOs satisfied with the services provided by BWDB.			25%	40%	50%	60%	60%	60%			
(f) x% of BWDB project staff trained in the PSM approach.		10%	25%	45%	65%	85%	100%	100%			
(g) x% increase in computer literate staff in BWDB.		10%	25%	30%	35%	40%	45%	50%			

Annex 3 (Cont'd.)

(b) **Arrangements for results monitoring**

Results Indicators	Baseline	Target Values							Data Collection and Reporting		
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Component 3 (b) (a) Updated NWRD database with enhanced data layers and effective dissemination of data. (2 Cycles)	Status of database, staffing, partnership arrangements, logistics, and users.		50%	100%			50%	100%	Quarterly and yearly cumulative reports on the implementation status	Progress reports, and special reports and annual reports	• Consultants • WARPO • Implement M&E Consultants
(b) WARPO's reform plan prepared by December 2005, and approved by June 2006.	Legal status of WARPO and its ability to carryout the NWMP functions, organizations, staffing, skills, budget and logistics.		50%	100%							
(c) x% of professional staff trained in various subjects related to integrated water resources management.			25%	50%	100%						

Annex 4: Detailed Project Description

Bangladesh Water Management Improvement Project

Lending instrument

86. After examining various options, Specific Investment Loan (Credit) was considered the most appropriate lending instrument. It will be framework-type project that will be implemented over a period of seven years, with two mid-term review during the Project Years 3 and 5. An enabling social and political environment, along with water policy and institutional framework, to facilitate a new approach to water resource management, is now in place and provides the basis for the proposed WMIP. Out of approximately 510 FCD/FCDI schemes, the proposed project will cover only a portion of the medium and large schemes, which will be based on appropriate screening and selection criteria. The long-term objective of the project would be to assist the Government to institutionalize a participatory management process for improving the sustainability and performance of all feasible FCD/FCDI schemes under the control of BWDB and to improve water resources planning and management.

Project development objective and key indicators

87. The overall sector related CAS goal is improved integrated water resources management that will accelerate agriculture and rural development (specifically increased agriculture and fish production, and improved environmental protection) and reduce rural poverty (specifically reduced vulnerability and enhanced livelihood) in the flood and cyclone-prone areas of Bangladesh [Ref. Para 31, CASPR].

88. The primary project development objective (PDO) of the proposed project is to improve national water resources management by involving the local communities to play an expanded role in all stages of the participatory scheme cycle management (PSM), from planning and design to operations and management. This is expected to make a fundamental departure from the past approaches by reorienting the role of the public sector and the community organizations towards decentralized management of such schemes. The secondary objective is to enhance institutional performance of the Country's principal water institutions, particularly BWDB and WARPO by changing a bureaucratic culture of centralized and top down approach to a more decentralized and people-oriented one for better performance and sustainability of the existing flood management and cyclone mitigation systems. This is likely to promote efficient services delivery to the target communities. The project is expected to result in reduced vulnerability and enhanced livelihood opportunities for the beneficiaries and will also create a favorable environment for improved water resources management by the core water institutions, in partnership with the beneficiaries.

89. The conceptual framework of outcome and output indicators, as part of the project's monitoring and evaluation system is summarized Table 1.

Project components

90. The project deals with the new approach to water resource management and promotes stakeholders' participation. The proposed project consists of three components: (i) System Improvement and Management Transfer (SIMT); (ii) O&M Performance Improvement (OMPI); and (iii) Institutional Improvement (II). Since this is a framework-type project, the number of schemes included in component 1 and 2 is notional and will be continuously reviewed during project implementation. The details of project components are briefly described below.

91. ***Component 1: System Improvement and Management Transfer-SIMT (US$89.0 million):*** This component would support rehabilitation and improvement (R&I) of about 81 existing medium (average

area 2500 ha) and 21 large (average area 8400 ha) FCD and FCDI schemes of BWDB, covering approximately 378,900 ha in the country. The project schemes will be selected in batches from 7 BWDB zones by following a set of selection criteria that include prioritization of community demand and willingness to contribute to the O&M costs as a key selection criterion to enhance the project impact and sustainability.

Table 1: Conceptual Framework of Outcome and Output Indicators

Outcomes	Outputs
• ***Improved water resources management:*** Improved operational performance of FCD/FCDI schemes with increased community participation. • **Increased community participation:** Stakeholders, including local communities, participate actively in planning and management of flood control, drainage and irrigation systems. • ***Improved institutional performance***: BWDB provides responsive, effective and efficient services to their clients for integrated water resources management; and WARPO provides better support to Government in formulating water policy and in macro-level water resources planning. • ***Increased agricultural production***: Poor, landless, fisherman and small farmers have enhanced employment opportunities, increased agriculture and fish production. • ***Reduced loss of life and property:*** Improved and sustainable flood and cyclone-management lead to reduced vulnerability of lives and properties against floods and cyclones.	• ***Institutionalizing participatory water management through a process of participatory scheme assessment and rehabilitation/ improvement of existing BWDB schemes.*** Activities under this component will include the development of an operational approach to participatory scheme cycle management (PSM), applying this approach in selected FCD and FCDI schemes, including the strengthening of WMOs and institutionalizing the approach in all units of the BWDB. • ***Satisfactory operations and maintenance to promote sustainability for flood management and cyclone mitigation of existing BWDB schemes*** by the beneficiary-based WMOs such that water infrastructure is adequate, operates to required standards, and takes into account the needs of the relevant stakeholders; and satisfactory institutional and financial arrangements are in place for operations and maintenance of these systems. • ***Institutional improvement of two key national water sector institutions*** i.e. BWDB and WARPO. Project activities will contribute to improved, staff skill-mix; improved fiduciary process and procedures; computerized data base and monitoring and evaluation facilities; improved on-the-job and advance training; enhanced partnership with beneficiary communities for satisfactory functioning and sustainability of water management systems.

92. The SIMT procedure will follow a systematic approach of Participatory Scheme Cycle Management (PSM). The WMIP is the first project for BWDB using PSM approach on a wider scale. It is therefore suggested that no scheme larger than 15000 ha will be selected under the SIMT. Moreover, schemes selected for implementation during first two years should not be too large. In other words, no scheme should be selected that is larger than 4000 ha for medium size category and 8400 ha for large size category. This limit would be relaxed only after a satisfactory outcome of implementation witnessed at the semi-annual reviews and first MTR. In selecting the batches, emphasis would be given to completion of a full participatory scheme cycle, that is, for medium schemes, one scheme cycle would take 4 years to complete, and for large schemes, that duration would be up to 5 years.

93. Important design features of the component include: (i) the participatory process in scheme cycle management (enlisting community demand and willingness to contribute to the O&M cost and participate in planning, organization, implementation, O&M training & management transfer), which is based on the Guidelines for Participatory Water Resources Management adopted by the Government; (ii) a resource

database survey, GIS and mathematical modeling tools that would be used in screening and auditing[3] the FCD/FCDI batches of schemes by hydrological unit at the inception; and (iii) an annual process of selecting eligible batches of medium and large FCD/FCDI schemes located in a particular hydrological unit[4]. It was agreed that two BWDB circles, one each from the North East and Central zone, would be chosen for the first batch of schemes for SIMT. In case the PSM cycle is not completed for the selected schemes (as in the case of last batches) within the project period, Government has assured the Bank to complete the proper management transfer using its own resources.

94. The component would provide support for three technical consultancies; first for screening and technical and environmental auditing of the batches of schemes by hydrological unit at the entry, the second consultancy for comprehensive implementation support for SIMT (as well as for the O&M Performance Improvement Component), and the third consultancy for inventory data base for FCD/FCDI schemes. The component would also provide incremental O&M funding during the project period for systematic pre- and post- R&I operation and maintenance so that the accrued benefits under SIMT would be sustained. The component would also support the establishment and strengthening of water management organizations (WMOs) and social mobilization and capacity building to assist WMOs to become fully functional, capable of managing the schemes or part of the schemes transferred to them and making them sustainable, and to enable BWDB field offices to implement the PSM approach. At the beginning, the project may start working with non-registered WMOs prior to actual scheme rehabilitations and improvement. However, WMOs must be registered as soon as possible under the Co-operative Society's Act before the Memorandum of Understanding (MOU) is signed. To ensure that the WMOs become self-sustaining during the O&M period, BWDB would hand over user rights over BWDB assets (rehabilitated system, associated land and water bodies) to the WMOs through periodic lease agreements for the WMOs to generate income from managing these assets for sustainable management of the schemes handed over to them. The WMOs at the suitable hierarchy would be established under the Cooperative Societies Act. The WMO hierarchy will consist of, depending on the size of the FCD/FCDI scheme, Water Management Group (WMG), Water Management Association (WMA) and Water Management Federation (WMF).

95. Taking into account the Government proposal, the required lengths of PSM durations and the agreement by BWDB to fund the transfer of the last batch of the schemes in both groups (medium and large) to WMOs with its own resources after the project is closed, five batches of schemes for medium size and four batches of schemes for large size are likely to be completed (the number of schemes is notional) during the project time-frame of seven years, as shown below:

Year	1	2	3	4	5	6	7	Total
Medium Schemes (av. Size 2500 ha)	6	15	21	21	18	0	0	81
Large Schemes (av. size 8400 ha)	2	5	7	7	0	0	0	21
Total	8	20	28	28	18	0	0	102

[3] Two levels of screening will be conducted. First, before any rehabilitation activities are initiated, the overall cumulative impact on water flow of the batch of schemes proposed to be rehabilitated will be determined through mapping and modeling of the potential impacts. The modeling will use the "regional environmental profiles" prepared by WARPO. If any negative impact is found, those schemes will not be included in the project. Environmental Assessment (EA) for the large schemes will be conducted according to WARPO EA guidelines for FCD/FCDI schemes. (Ref. EMF)

[4] The definition of FCD/FCDI schemes is as follows: small scheme: < 1000 ha; medium scheme: over 1000 ha but < 5000 ha; large scheme: over 5000 but <15000 ha; and very large scheme: > 15000 ha. As per GOB regulations, all small schemes of <1000 ha are to be implemented by the Local Government Engineering Department (LGED). According to BWDB, the average size of medium schemes is about 2500 ha and of large schemes is about 8400 ha.

96. Once all FCD/FCDI schemes become operational after R&I (component 1) and improved O&M (component 2), the project would support the provision of basic agriculture support services for crops, and fisheries. This would include dissemination of information and training with respect to the appropriate agriculture technology and practices. Prerequisite for the provision of such services would be that the WMOs prepare the land use plan and are registered under the Cooperative Societies Act. The BWDB will sign a Memorandum of Understanding (MOU) with the Department of Agriculture Extension (DAE) of the Ministry of Agriculture (MOA) as well as with Department of Fisheries (DOF) of the Ministry of Fisheries and Livestock (MOFL). These two departments would assist the WMOs and communities in the preparation of land use plans as well as agriculture/fishery development plans. They would also be responsible for the provision of critical agriculture support services. In addition to the above, proposed Bangladesh National Agriculture Technology Project (NATP) in its first phase would provide decentralized extension services for crops, fisheries and livestock in 120 Upazilas/sub-districts of the country. The proposed NATP, cofinanced by IDA and IFAD, is expected to be operational during FY08.

97. The project would also provide information related to micro-credit organizations which are active in the scheme areas. The provision of agriculture support services is expected to enhance livelihood opportunities, increase agriculture productivity and improve income for farmers, fishermen and landless households. The project will also facilitate and encourage WMOs to prepare poverty reduction action plans for the poor population in the respective FCD/FCDI areas.

98. ***Component 2: Operations and Maintenance Performance Improvement-OMPI (US$35.52 million)***: The objective of this component is to ensure the sustainability of those schemes that are currently functioning well and have already undergone major rehabilitation and improvement like for schemes under component 1 (or have gone through a similar process under projects funded by GOB or other development partners). The component would support measures to improve the culture of the overall planning and execution of the O&M cycle under BWDB. As part of this component, the BWDB will also develop more innovative contract arrangements like annual maintenance contract (AMC) or performance based contract (PBC) to undertake and finance annual O&M that would provide assured and timely service and is also cost effective.

99. The O&M cycle includes: (i) the need-based assessment of O&M by the BWDB's field offices, in association with WMOs, at the end of every monsoon season; (ii) timely preparation of initial need-based assessment of O&M budget by the concerned field offices and cleared by the zonal superintending and chief engineers, as per the requirements under the BWDB Code of Practice; (iii) timely compilation and submission to the head office and MOWR of the need-based budget estimates with the supporting evidences (electronic database and surveyed data); (iv) timely allocation of required O&M budget, after prioritization of the allocation; (v) planning of O&M contracting and required cash flow sequence; (vi) award and execution of O&M, followed by monitoring and approvals by the field office authorities, and, in the case of jointly managed schemes, endorsement by concerned WMOs on the completed O&M; (vii) the electronic recording of completed O&M in the given format of scheme's history inventory; and (viii) impact assessment survey in the following season in the scheme area due to the timely maintenance. Even though it falls under the normal practice of BWDB, viability for timely completion of each and every segment of the O&M cycle has been a question in the past practice due to constraints in the O&M budget, non-matching of allotted cash flow to the seasonal nature of the physical O&M period, lack of interest for the preventive and periodic O&M by the stakeholders, and lack of prioritization of O&M in case of budget shortfall. Consequently, most of the schemes have been involved in the "vicious cycle" of "construction-destruction-and rehabilitation" that now needs to be transformed to a "virtuous cycle".

100. The O&M performance improvement would cover selected BWDB schemes, which are "technically functional" and do not require major R&I. In order for medium and large FCD or FCDI schemes to be included in this component, the schemes should have functioning WMOs or similar

beneficiary organizations. The component would also aim to improve culture and practice of O&M planning and execution cycle within BWDB. The project schemes for O&M will be selected from BWDB Circle(s) or Division(s) of the BWDB's seven Zones[5]. Among others, for the scheme to be eligible for project funding, the community should be willing to contribute its share for first year's O&M costs. The proposed O&M performance improvement will need the initial inventory database of the eligible candidate schemes, and since the schemes are currently performing well, the features of the schemes are as per the original design or improved and modified in the case of recent rehabilitation and improvement. As part of preparation activities for this project, the inventory of all the BWDB schemes is being electronically recorded. This would become the baseline data to implement this component. The project would support the systematization of this TA consultancy of electronic database inventory creation of the BWDB schemes with further refinement and institutionalization of the electronic inventory in all zonal offices. The O&M performance improvement implementation support consultancy would be combined with the SIMT component, as they are similar in nature.

101. The MOF has increased the O&M budget starting from the current fiscal year, and is willing to provide need-based O&M budget requirements to the extent possible in the future. The MOWR and BWDB are requested to have a systematic recording for the annual determinations of need-based O&M requirements and, in case of budgetary shortfall, to practice the budgetary prioritization effectively. The schemes performance will be monitored in the year following the introduction of the O&M performance improvement practices in the schemes. An improvement in the schemes performance must be seen on the ground. Further funding will be discontinued for non-performing schemes or in case of a failure in management transfer to the WMOs. The preliminarily numbers of schemes in batches, selected under this component of the Project, are given below.

Year	1	2	3	4	5	6	7	Total
Medium Schemes (av.size 2500 ha)	4	10	16	19	21	0	0	70
Large Schemes (av.size 8400 ha)	2	5	7	7	7	0	0	28
Total	6	15	23	26	28	0	0	98

102. ***Component 3: Institutional Improvement-II (US$12.2 million):*** This component would support the institutional improvement of BWDB and WARPO, which are the two major national institutions that deal with the nation's water resources. The project would also support activities related to program coordination, monitoring and evaluation and strategic studies/fiduciary reviews. The component would finance technical assistance, including a TA consultancy services for institutional improvement, change management, capacity building and training, and monitoring and evaluation; computers, office equipments, vehicles (including fuel and maintenance, exclusively for the implementation of this project), survey and monitoring equipments; and other required physical facilities. This component will have three sub-components: (a) BWDB institutional improvements; (b) WARPO institutional improvement; and (c) program coordination and monitoring.

***(a) BWDB Institutional Improvement (US$6.0 million)*:** The component under BWDB would support implementation of BWDB reforms, focusing primarily on implementation of decisions already made by the Government under the National Water Policy and BWDB Act (2000) to restructure and strengthen BWDB as a water resources management agency rather than just a development agency. It would therefore support initiatives to make the operations more effective, efficient and transparent, including human resource development. MOWR has already reviewed its staffing requirements and is implementing a policy decision to downsize its staffing from 18,032 to about 8,860 by 2006 through attrition. In the institutional reform, though "down sizing" may be a part of the process, the major need of the reform is "right sizing" and "right skills" for the transformed role and mandates of BWDB. Given the

[5] BWDB has 7 zones and each zone under one chief engineer jurisdiction; and 21 circles and each circle under one superintending engineer.

types of activities that BWDB would need to carry out now and in future, there is an urgent need to determine the skill requirements of BWDB and staff the organization with appropriately skilled staff with a mix of engineering, environmental, water management, drainage, community mobilization, and related skills. The analysis of gaps in skills, training, capacity building and reorientation and change management inputs to staff, along with recruitment of appropriately skilled staff, would be the part of this component. BWDB has initiated the process of transformation with the periodic technical inputs of the Dutch Twinning arrangement under a bi-lateral agreement. The project would support TA consultancy of international and local experts for institutional improvement. The project would also provide equipment and support renovation of existing BWDB training centers for their enhanced role. In the right sizing exercise, the M&E as well as fiduciary roles of the BWDB (accounting, procurement, and administration) would also be strengthened.

(b) WARPO Institutional Improvement (US$2.6 million): The project activities under this sub-component would support: (i) core organization improvement and development activities; and (ii) maintenance, updating and dissemination of the National Water Resources Database (NWRD). It was agreed that project activities related to WARPO will be limited to the "core" function only. The funding for the WARPO building complex is premature to consider at this time. However, it may be considered after WARPO's enhanced role is mandated (including adequate budget and appropriate staff) by the Government during the implementation of the National Water Management Plan. Therefore, under the WARPO component, the project would support two core activities, namely, (i) limited strengthening of WARPO organizational and institutional development and (ii) maintenance, updating and dissemination of National Water Resources Database (NWRD). The item (i) includes TA consultancy for institutional support, local and foreign training, workshops and seminars on integrated water resources management, office equipment and facilities, and transport vehicles. The item (ii) would include a consultancy service of foreign and local consultants.

(c) Program Coordination and Monitoring (US$3.6 million): During the project period, the coordination and facilitation of the activities would be carried out by a Program Coordination Unit (PCU). This sub-component would support the establishment, operation and facilitation of the PCU by providing office equipment and transport facilities. The innovative PSM approach to the rehabilitation and improvement, operations and maintenance and integrated approach to water management within BWDB schemes will require a systematic Monitoring and Evaluation (M&E) as well as learning activities. For that a TA consultancy team of international and national experts would be provided under this sub-component. As per the new fiduciary requirements proposed under the Bangladesh Public Procurement Reform Project (BPPRP), all procurement activities executed in BWDB have to undergo annual ex-post reviews of at least 20 percent of its annual contracts. The project would therefore support selective strategic studies, fiduciary reviews like annual ex-post procurement audit reviews and other thematic studies which may be needed from time to time.

Lessons learned and reflected in the project design

103. The National Water Policy indicated that future interventions in FCD/FCDI schemes operations would involve consideration of natural resources in an integrated nature within the system of a natural hydrologic boundary, including its hydrology and land erosion/accretion, and the effect on agriculture, fisheries, shrimp culture, salt production, other economic activities, as well as local navigation, and water pollution. Future development would therefore be based on four tenets: (i) establish a sound information base, with procedures for continuous updating; (ii) use studies, information gathering and trials to develop an enhanced basis for the planning, design, implementation, management, operation and maintenance; with innovative techniques for cost-effectiveness and sustainability; (iii) include all stakeholders in planning, operation and maintenance of FCD/FCDI schemes; and (iv) demonstrate in the field that sustainability can be achieved - covering routine maintenance and rehabilitation by BWDB; community management of foreshore afforestation and embankment maintenance; and beneficiary involvement in

FCD/FCDI scheme planning design and development. Lessons learnt from past water management efforts and those that have been factored into the proposed project include:

(i) Focus of integrated water resources management must go beyond just flood control, drainage and irrigation. There has been growing awareness about the need for integrated, multi-sectoral approach to water resource management. Flood control and drainage schemes should take into account impact on fisheries and transport, in addition to agricultural impact;

(ii) More attention must also be given to social dimensions. It is recognized that water management is not just building infrastructures but participation of stakeholders and transfer of appropriate water management activities to local communities or local government and integration of environmental considerations are equally important. The emphasis has shifted from flood control to flood management, from purely structural solution to integration of structural and non-structural measures to mitigate flood damage, and from project development purely by technicians to stakeholder participation in all stages of project development;

(iii) Environmental considerations must be integrated into water resources management;

(iv) Need for reforming water institutions to align with the new responsibilities has become even more pronounced. Institutional reforms should be a central theme of projects which address major institutional issues. Better O&M planning and resources allocation, prioritization for allocation of funds, willingness to pay or participate by beneficiaries, and sustainability to be achieved through appropriate institutional structures, including operational and financial autonomy, than through merely increasing user-charges;

(v) Establishment of community organizations through a social engineering process is a very time consuming process and should be factored into project implementation planning; and

(vi) Flood embankment designs should be based on a study of the overall river basin development, rather than of merely the project area located within the river basin.

Alternatives considered and reasons for rejection

104. A traditional approach of addressing the problem of O&M and sustainability of FCD/FCDI schemes by strengthening the Government agency (through technical assistance and equipments), enhancing O&M budgets, and increasing user charges was rejected since this approach has not worked satisfactorily in Bangladesh and other countries over the past decade. Such an approach only addresses the symptoms of a much deeper problem viz., domination by Government without any participation of the beneficiaries and other stakeholders in the management of the water systems, and inappropriate institutional structures and incentives.

105. The proposed approach involves various stakeholders, redefines the role of the Government in water management, addresses the fundamental institutional structural weaknesses, and takes into account the experience and lessons learned from implementation of several projects in Bangladesh and other countries, and is in line with both the National Water Policy of Bangladesh and the Bank's Water Resources Sector Strategy. Because of the sequential nature of BWDB institutional reforms and development of water management organizations (WMOs), a longer-term perspective and a phased approach was considered necessary. For this reason, a three-phase Adaptable Program Loan (APL) was initially considered. However, given the early stage of BWDB reforms, it was considered premature to

contemplate a long-term APL at this stage. Instead, a more appropriate lending instrument was considered to be a Specific Investment Loan.

Scheme Selection Criteria

Criteria	Component 1 (SIMT)	Component 2 (OMPI)
Fit in hydrological region/sub-region	Yes	Yes
Size	>1000 ha, but < 15,000 ha	>1000ha but < 15,000 ha
Type of project	FCD or FCDI	FCD or FCDI
Scheme Database	Ready or under preparation	Ready
Operational Status	Operational, requires rehabilitation	Operational, does not require rehabilitation
Social	• Local community puts in a request for WMIP project support and, as an indicator of its interest, is ready to contribute 2.0-3.0 percent of the R&I costs which will be used as seed money for O&M and will be managed by the WMO after management transfer. WMO also have to mobilize its share of resources to cover O&M costs, post R&I. • Absence of major conflicts in the communities and between occupational groups. • Requiring no or minimal displacement of people and land acquisition, and not involving sensitive areas.	• Local community puts in a request for WMIP project support and, as an indicator of its interest, is ready to contribute its share of the O&M costs. • Absence of major conflicts in the communities and between occupational groups. • Requiring no or minimal displacement of people and land acquisition, and not involving sensitive areas.
	• Schemes with larger population of poor people (in terms of head count) will be given preference. • Schemes located in areas that are more vulnerable to floods, cyclones and erosion will be given preference.	• Schemes with larger population of poor people (in terms of head count) will be given preference. • Schemes located in areas that are more vulnerable to floods, cyclones and erosion will be given preference.
Institutional/Status of WMO	• Already existing WMOs (formal/ informal) or willingness of people to organize themselves. • Broad participation by different occupational groups (including women) in existing or emerging WMOs.	• A WMO or similar organization is present), or willingness of people to organize themselves • Well-attended general meetings, good records and minutes. • Positive attitude towards leaders. • No disruptive factionalism or politics.

Criteria	Component 1 (SIMT)	Component 2 (OMPI)
		• Initiatives taken to mobilize human resources for operations and maintenance.
Environmental	• The IEE/EIA prepared as part of the feasibility study • **Inclusion:** Scheme(s) will be included in the WMIP if it either meets the acceptable environmental criteria as outlined in the EMF and/or the impacts can be mitigated by appropriate design or management. • **Exclusion:** Scheme(s) may cause major environmental damage of irreversible nature or violates an existing environmental rule or regulation i.e. a scheme may encroach into an ecologically critical area or a national / global heritage site. Such encroachments are prohibited by law as per the Environmental Conservation Rules of 1997.	• The IEE/EIA prepared as part of PRA • **Inclusion:** Scheme(s) will be included in the WMIP if it either meets the acceptable environmental criteria as outlined in the EMF and/or the impacts can be mitigated by appropriate design or management. • **Exclusion:** Scheme(s) may cause major environmental damage of irreversible nature or violates an existing environmental rule or regulation i.e. a scheme may encroach into an ecologically critical area or a national/global heritage site. Such encroachments are prohibited by law as per the Environmental Conservation Rules of 1997.
	• Exclusion: Scheme(s) may pose a direct threat to one or more endemic species listed as endangered or threatened in the Red Book of IUCN. This would violate both the national policy of biodiversity conservation and international treaties signed by Bangladesh such as the Ramsar Convention and the Convention on Biodiversity.	• Exclusion: Scheme(s) may pose a direct threat to one or more endemic species listed as endangered or threatened in the Red Book of IUCN. This would violate both the national policy of biodiversity conservation and international treaties signed by Bangladesh such as the Ramsar Convention and the Convention on Biodiversity.
Economic	• EIRR of scheme is above 12%. • The average R&I cost is Tk 7000/ha for medium and Tk 6000/ha for large schemes. However, no more than 10% of the schemes should exceed Tk12000/ha.	• EIRR of scheme is above 12%. • Maintenance cost is below Taka 900 per ha, including engineering and administration (E&A) cost of Tk 300/ha.
BWDB Staffing	• BWDB establishes Zonal Support Pool.	• Zonal Support Pool established and operational.
Support services for agriculture and fisheries	• BWDB has initiated steps to establish MOU with relevant GOB agencies [i.e. DAE and DOF] for their support services.	• BWDB has established MOU with relevant GOB agencies [i.e. DAE and DOF] for their support services.
Complimentary Services	• Scheme area covered by rural	• Scheme area covered by rural

Criteria	Component 1 (SIMT)	Component 2 (OMPI)
	road/electrification program. • Scheme area covered by a credit program.	road/electrification program. • Scheme area covered by a credit program.

IEE : Initial Environmental Examination
EIA : Environmental Impact Assessment
PRA : Participatory Rural Appraisal
EIRR : Economic Internal Rate of Return
DAE : Department of Agricultural Extension
DOF : Department of Fisheries

Annex 5: Project Costs

Bangladesh Water Management Improvement Project

106. Project cost estimates are summarized in Attachments 1 to this Annex. The underlying assumptions for estimating project costs are summarized below.

107. **For component 1** - SIMT of the project, rehabilitation and improvement (R&I) costs are estimated at 7000 Tk/ha for medium schemes and 6000 Tk/ha for large schemes. For R&I works, medium schemes are assumed to be completed in Project Year 2 after a year of field organization and preparatory works. As for the large scheme, the R&I works are split over two years (Project Years 2 and 3) following the preparatory work in Project Year 1. It is also assumed that the costs of implementation are evenly divided between the two construction years (i.e. 3000 Tk/ha for each of the two construction years). For both cases in the first year, a start-up cost of Tk300/ha is included for the preparatory works including some essential patch O&M and community mobilization related activities. The same rate of Tk300/ha has been used for annual O&M after implementation of R&I. Care and maintenance during construction is included in the construction cost.

108. **For component 2** - OMPI of the project, the annual O&M cost under normal operating conditions are assumed. An annual O&M cost of Tk 600/ha has been adopted throughout for these schemes. Though they do not need any major R&I, the effect of some deferred maintenance may need to be addressed for the effectiveness of improved O&M. An emergency/special maintenance requirement at every 10 years with one time costs of 3,000 Tk/ha for that year is also accounted for in the economic analysis, but as the project period is less than that it is not considered in the investment costs.

109. The average engineering and administration (E&A) costs, as estimated by BWDB, are Tk300/ha, including XOs salaries. The project has accounted for only prorated rate of Tk 30/ha for all BWDB staff (E&A) costs involved in component 1 and 2, except salaries for XOs which are considered incremental operating costs. The E&A staff costs will not be funded by the Bank. However, the project will finance salaries & overhead cost of XOs.

110. The recurrent cost in the project also includes annual incremental operating costs, which are taken as 20% of the investment costs of equipment and vehicles.

111. The average rate of land acquisition, required for the R&I work, is assumed as 0.05% of the developed area as they are mostly rehabilitation schemes. The acquisition price is assumed to be Tk700,000/ha. No land acquisition is anticipated in most of the O&M work. This item will not be funded by the Bank.

112. BWDB components would require five consultancy services, namely, (i) Screening and Technical and Environmental Auditing; (ii) Implementation Support; (iii) Scheme Inventory Database; (iv) Institutional Improvement; and (v) Monitoring and Evaluation. WARPO component would require two consultancy services, namely, (i) Institutional Improvement and (ii) National Water Resources Database Updating. All costs are taken as consolidated for each consultancy services as proposed in their respective PIPs. A detailed itemized cost estimate should be presented in the PIP.

113. Estimated costs of goods and equipment are also taken as agreed during the appraisal and the detailed breakdowns are to be shown in the respective sections of the PIP.

BANGLADESH
WATER MANAGEMENT IMPROVEMENT PROJECT
Components Project Cost Summary

	(US$ Million)		
	Local	Foreign	Total
YSTEM IMPROVEMENT AND MANAGEMENT TRANSFER			
Participatory Scheme Management			
Rehabilitation and Improvement of Medium Schemes	29.7	3.0	32.6
Rehabilitation and Improvement of Large Schemes	21.8	2.2	24.0
ıbtotal Participatory Scheme Management	51.5	5.1	56.6
Staff and Beneficiaries' Training	0.5	-	0.5
Land Acquisition	3.0	0.3	3.3
TA consultancies for Component 1&2	3.4	3.4	6.7
TA Consultany for Scheme Screening and Audit	0.9	0.2	1.1
Agriculture Support Services Material & Machinery	0.6	0.6	1.3
ɪotal SYSTEM IMPROVEMENT AND MANAGEMENT TRANSFER	59.9	9.6	69.5
IP O&M PERFORMANCE IMPROVEMENT			
Implementation of Medium Schemes	9.3	0.5	9.8
Implementation of Large Schemes	11.6	0.6	12.2
Schemes Database	0.5	0.1	0.7
Transport Vehicles-O&M	1.9	0.9	2.7
Office Equipment-O&M	0.1	0.3	0.4
Agriculture Support Services Training	1.8	0.8	2.5
ɪotal IMP O&M PERFORMANCE IMPROVEMENT	25.1	3.2	28.3
ISTITUTIONAL IMPROVEMENT			
BANGLADESH WATER DEVELOPMENT BOARD			
Upgrading Existing Training Centers	0.3	0.1	0.4
TA BWDBInstitutional Improvement Consultants	0.6	0.6	1.1
Staff Training and Development BWDB	1.2	1.3	2.5
Office Equipment - BWDB	0.2	0.5	0.7
Transport Vehicles-BWDB	0.2	0.1	0.4
ıbtotal BANGLADESH WATER DEVELOPMENT BOARD	2.5	2.6	5.1
WATER RESOURCES PLANNING ORGANIZATION			
TA WARPO NWRDUpdate Consultants	0.6	0.1	0.7
TA WARPOHuman Resources Development Consultants	0.3	0.4	0.7
Office Equipment of WARPO	0.2	0.5	0.7
Transport Vehicles of WARPO	0.1	0.0	0.1
ıbtotal WATER RESOURCES PLANNING ORGANIZATION	1.2	1.0	2.2
COORDINATION AND MONITORING			
Program Coordination Unit - PCU	1.1	0.1	1.2
Monitoring and Evaluation	0.2	0.2	0.4
Strategic Studies, Audit and Reviews	0.3	0.8	1.1
Office Equipment-PCU	0.0	0.1	0.1
Transport Vehicles-PCU	0.2	0.1	0.3
ıbtotal COORDINATION AND MONITORING	1.8	1.3	3.1
ɪotal INSTITUTIONAL IMPROVEMENT	5.4	4.9	10.3
BASELINE COSTS	90.4	17.7	108.2
ıysical Contingencies	10.8	1.6	12.5
·ice Contingencies	13.8	2.3	16.1
PROJECT COSTS	115.1	21.7	136.7

ADESH

WATER MANAGEMENT IMPROVEMENT PROJECT

Project Components by Year -- Totals Including Contingencies

	Totals Including Contingencies (US$ Million)							
	07/08	08/09	09/10	10/11	11/12	12/13	13/14	Total
A. SYSTEM IMPROVEMENT AND MANAGEMENT TRANSFER								
1. Participatory Scheme Management								
Rehabilitation and Improvement of Medium Schemes	0.1	2.9	7.1	10.3	11.1	8.7	2.1	42.3
Rehabilitation and Improvement of Large Schemes	0.1	1.5	4.9	8.4	9.9	4.7	1.5	31.1
Subtotal Participatory Scheme Management	0.3	4.4	12.0	18.7	21.0	13.4	3.6	73.4
2. Staff and Beneficiaries' Training	0.1	0.1	0.1	0.1	0.1	0.1	-	0.6
3. Land Acquisition	-	0.3	0.7	1.2	1.3	0.9	-	4.3
4. TA consultancies for Component 1&2	0.9	1.2	1.5	1.4	1.1	1.1	0.7	7.9
5. TA Consultany for Scheme Screening and Audit	0.3	0.6	0.2	-	-	-	-	1.2
6. Agriculture Support Services Material & Machinery	-	0.0	0.1	0.2	0.3	0.4	0.5	1.6
Subtotal SYSTEM IMPROVEMENT AND MANAGEMENT TRANSFER	1.6	6.5	14.6	21.7	23.8	15.9	4.8	89.0
B. IMP O&M PERFORMANCE IMPROVEMENT								
1. Implementation of Medium Schemes	0.1	0.6	1.2	2.0	2.7	2.9	3.0	12.5
2. Implementation of Large Schemes	0.2	0.8	1.7	2.5	3.3	3.4	3.5	15.4
3. Schemes Database	-	-	0.3	0.3	0.3	-	-	0.8
5. Transport Vehicles-O&M	1.0	1.0	0.6	0.1	0.1	0.2	0.2	3.2
6. Office Equipment-O&M	0.4	-	-	-	-	-	-	0.4
7. Agriculture Support Services Training	0.0	0.2	0.3	0.5	0.7	0.7	0.7	3.2
Subtotal IMP O&M PERFORMANCE IMPROVEMENT	1.8	2.6	4.0	5.4	7.2	7.2	7.4	35.5
C. INSTITUTIONAL IMPROVEMENT								
1. BANGLADESH WATER DEVELOPMENT BOARD								
Upgrading Existing Training Centers	0.2	0.2	0.2	-	-	-	-	0.5
TA BWDBInstitutional Improvement Consultants	0.2	0.3	0.2	0.2	0.1	0.1	0.1	1.3
Staff Training and Development BWDB	0.5	0.5	0.5	0.5	0.5	0.3	0.3	3.0
Office Equipment - BWDB	0.4	0.4	-	-	-	-	-	0.8
Transport Vehicles-BWDB	0.3	0.1	-	-	-	-	-	0.4
Subtotal BANGLADESH WATER DEVELOPMENT BOARD	1.6	1.4	0.9	0.7	0.6	0.4	0.4	6.0
2. WATER RESOURCES PLANNING ORGANIZATION								
TA WARPO NWRDUpdate Consultants	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8
TA WARPOHuman Resources Development Consultants	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.9
Office Equipment of WARPO	0.2	0.3	0.3	-	-	-	-	0.8
Transport Vehicles of WARPO	0.1	-	-	-	-	-	-	0.1
Subtotal WATER RESOURCES PLANNING ORGANIZATION	0.6	0.5	0.5	0.3	0.3	0.3	0.2	2.5
3. COORDINATION AND MONITORING								
Program Coordination Unit - PCU	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.4
Monitoring and Evaluation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Strategic Studies, Audit and Reviews	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.3
Office Equipment-PCU	0.1	0.0	-	-	-	-	-	0.1
Transport Vehicles-PCU	0.2	0.1	-	-	-	-	-	0.3
Subtotal COORDINATION AND MONITORING	0.7	0.6	0.5	0.5	0.5	0.5	0.5	3.6
Subtotal INSTITUTIONAL IMPROVEMENT	2.9	2.5	1.8	1.4	1.4	1.2	1.1	12.2
Total PROJECT COSTS	6.2	11.6	20.5	28.5	32.4	24.2	13.3	136.7

Annex 6: Implementation Arrangements

Bangladesh Water Management Improvement Project

Partnership arrangements

114. The Government of the Netherlands (GON) has agreed to co-finance the proposed project that will complement the Dutch-funded Integrated Planning for Sustainable Water Management (IPSWAM) project that is under implementation, and the on-going Twinning Arrangement between the MOWR in Bangladesh and the Dutch Ministry of Transport, Public Works and Water Management.

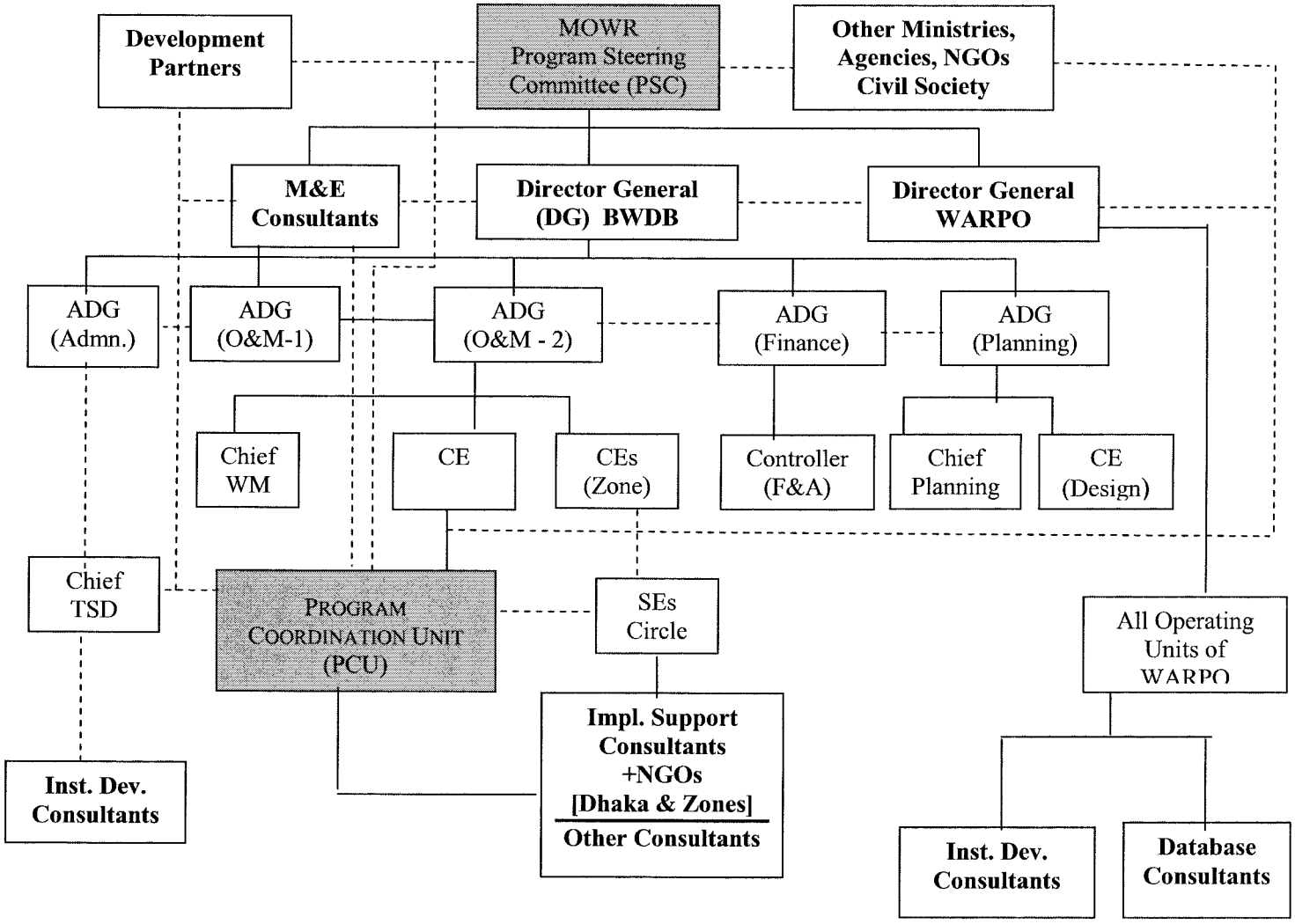
Institutional and implementation arrangements

115. WMIP would be implemented over a period of 7 years. It has been designed as a framework-type project, with an overall framework of objectives, components and specific criteria to select schemes that will be included in project components 1 and 2. WMIP would be implemented by the main organizations of the water sector, i.e. BWDB and WARPO. In other words, the project will be implemented by the existing water agencies under the direct supervision and responsibility of MOWR (see Figure 1). Past experience has shown that excessive reliance on TA to implement the project has adversely affected the sustainability and did not really increase the capacity of the sector organizations to execute their mandated tasks. In this project, TA will be aimed at initiating the project activities, and simultaneously focusing more on the capacity building towards mainstreaming the principles of participatory water management. An appropriate exit strategy is built-in so that BWDB can take over the responsibility during the implementation period. Clear articulation of technical assistance requirements in the TORs and an early selection of consultancy services to coincide with project inception would be very critical. The implementation arrangements are designed to use the existing set-up, to the extent possible, with only the coordination arrangements proposed during implementation. Considerable attention will therefore be given to the planning, monitoring and evaluation procedures of WMIP. Two overarching policies have dominated the overall framework i.e. building and mainstreaming a participatory water management system and strengthening the principal water sector institutions. Finally, the overall institutional framework for coordination involves four levels i.e. national, programs, zonal and scheme (see Figure 2).

116. ***Program Steering Committee (PSC)***: A Program Steering Committee, chaired by the Secretary, MOWR, will be established. The Committee will be composed of representatives of the concerned Ministries and Agencies and will be responsible for overall guidance during project implementation and monitoring of the project. Specifically, the Committee would include members from allied ministries, such as Water Resources, Fisheries, Agriculture, Environment, Local Government, Finance, Planning Commission, Economic Relations Division (ERD) of the Ministry of Finance, and the Implementation Monitoring and Evaluation Division (IMED) of the Ministry of Planning. The PSC may also want to invite representatives of WMOs and other relevant line agencies (such as BWDB, WARPO, LGED, DAE, DOF and DOE) to its meetings, depending upon the agenda for discussions. The PSC must meet quarterly to review the implementation progress and future plans as well as to resolve implementation issues.

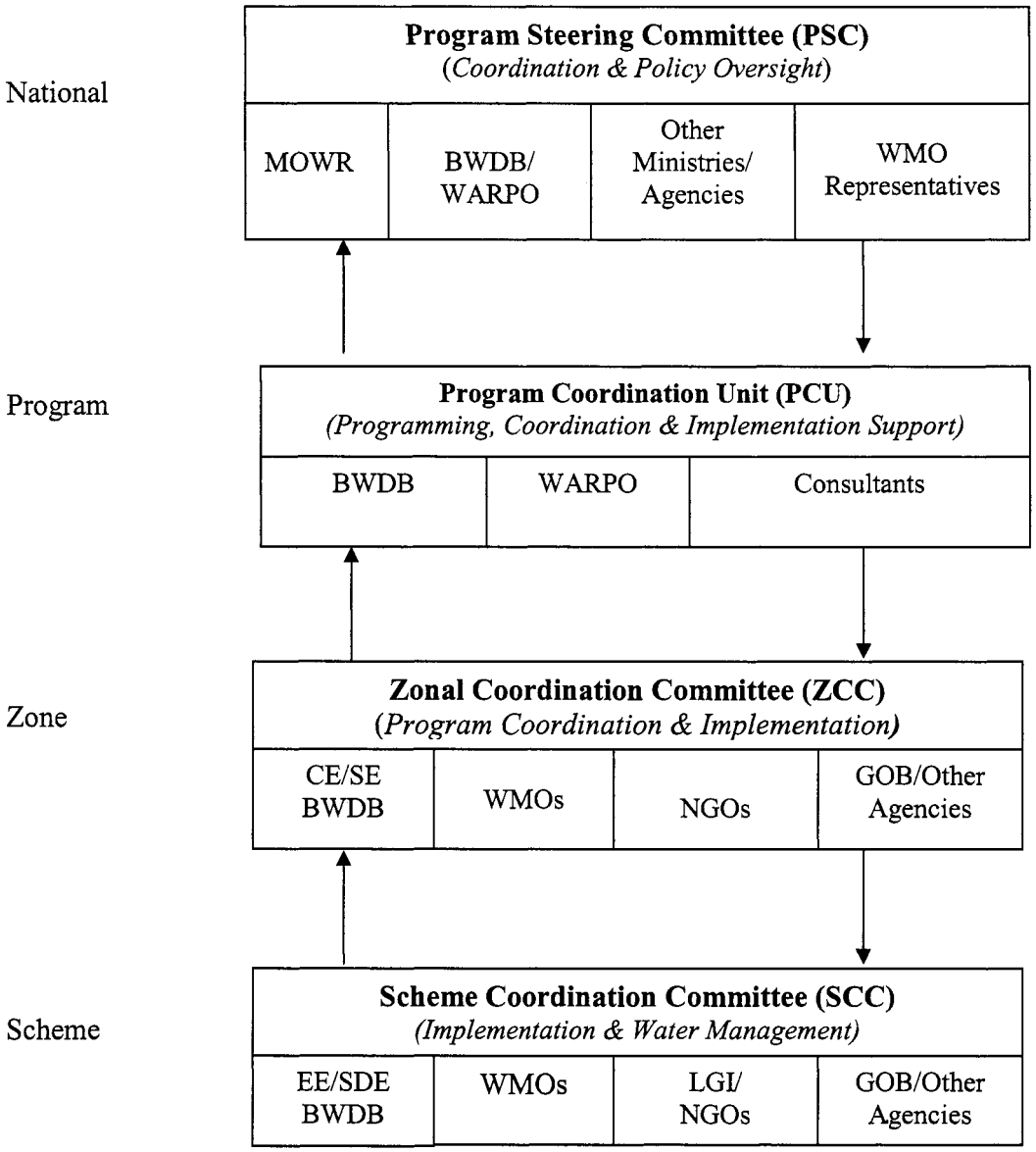
117. ***Program Coordination Unit (PCU).*** Program Coordination Unit (PCU) will be responsible for coordinating all the project activities (including program planning, monitoring, financial management and reporting) during implementation. PCU will have representations from all the project components/sub-components. PCU will also serve as the Secretariat to the PSC. BWDB will be responsible for components 1 (SIMT) and 2 (O&M), while components 3 will be implemented by BWDB and WARPO, as relevant. BWDB program will be implemented by its line units and coordinated by the Director of PCU. In the case of WARPO, Director General, WARPO, or one of its Directors, will coordinate program activities.

Figure 1 : WMIP - Organization for Implementation



Legend: Normal: Permanent Units within BWDB/WARPO; Shaded: Temporary unit/committee; **Bold:** Consultants/community or support organizations; ADG: Additional Director General; CE: Chief Engineer; F&A: Finance and Accounting; SE: Superintendent Engineer; TSD: Training and Staff Development; WM: Water management

Fig. 2: WMIP – Overall Institutional Framework for Coordination



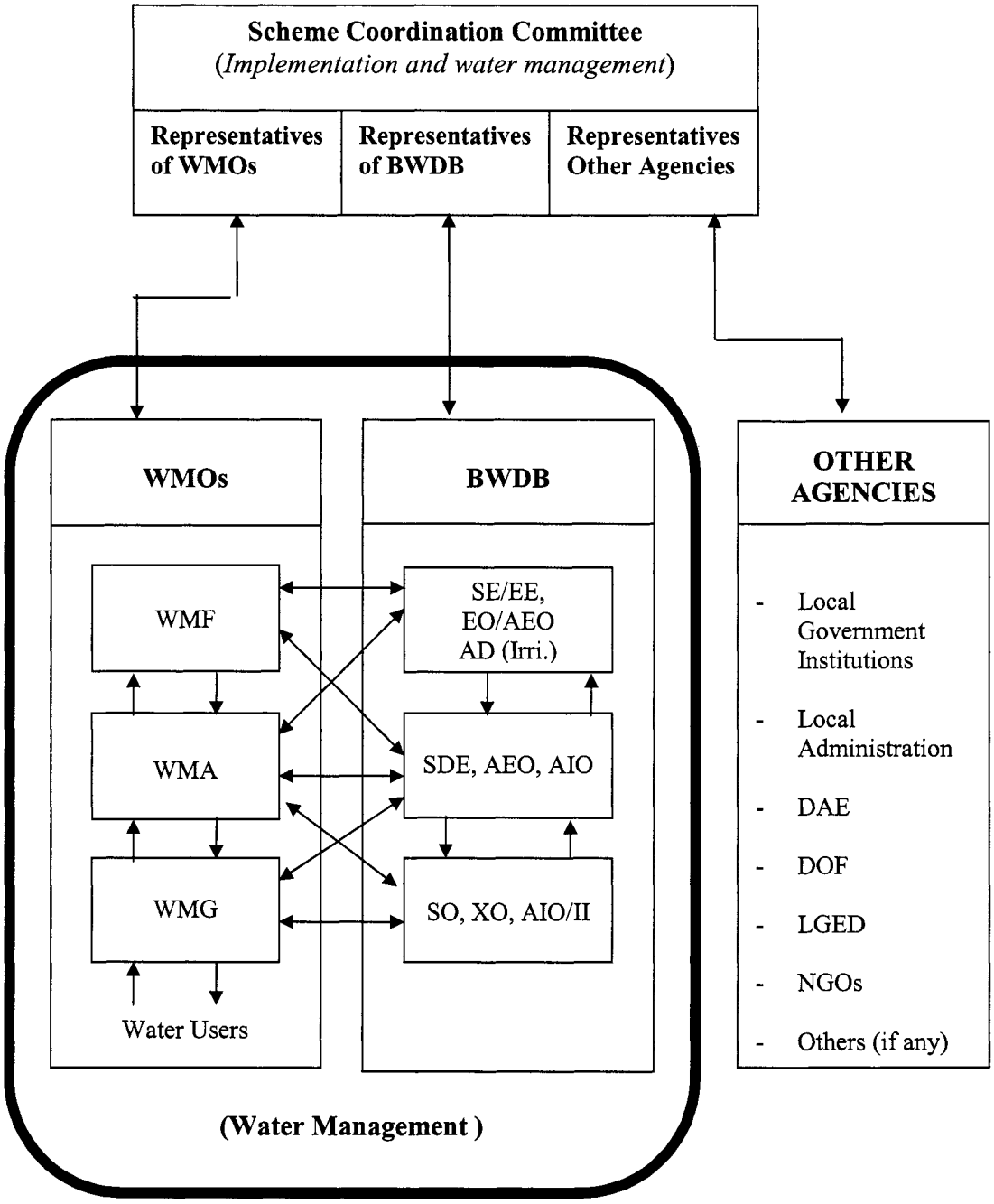
Legend: CE: Chief Engineer; EE: Executive Engineer; LGI: Local Government Institutions; SDE: Sub-Divisional Engineer; SE: Superintendent Engineer; WMO: Water Management Organization.

118. **Implementation Period.** The Project would be implemented over a period of seven years starting from expected effectiveness date of January 1, 2008. Thus the target would be to complete all project works by December 31, 2014 and the Credit Closing date would be June 30, 2015.

119. ***System Improvement and Management Transfer and Operation & Maintenance Performance Improvement (components 1 and 2):*** These two components would be implemented by BWDB through its respective Zonal Chief Engineers and coordinated by the Chief Engineer for O&M under the Additional Director Generals for O&M, who will head the proposed Program Coordination Unit (PCU). A technical unit, attached with PCU, would be established at BWDB headquarters to facilitate planning, budgeting, and implementation of these two components, in association with Directorates of Water Management and O&M. BWDB's existing field divisions, headed by Executive Engineers, would be responsible, with TA support, for implementation of the component activities that are consistent with the PSM approach. A support pool, consisting of multi-disciplinary staff from BWDB and TA, will be progressively established in all BWDB zones, which will receive guidance on technical issues from central Technical Unit. Technical assistance would also be made available to assist with the design, implementation and evaluation of the O&M training program, with a particular focus on WMOs. In order to develop long-term capacity and sustainability, the staff of BWDB, NGOs and LGIs would also be included. The zone level coordination of program activities will be handled by Zonal Coordination Committees (ZCCs). The scheme level coordination of program implementation activities will be handled by the Scheme Coordination Committees (SCCs) that will consist of representatives from BWDB, DAE, DOF and WMOs (Figure 3).

120. ***Water Management Organizations*:** In order to ensure the expanded role of WMOs in all stages of project planning, construction and O&M, appropriate WMOs at the scheme level would be established, soon after community mobilization for the selected schemes. As outlined earlier, demonstration of community demand for WMIP support through contribution of community share (2.0-3.0%) of the R&I cost (in order to support O&M after management transfer) would be a key selection criterion. The project would help BWDB use this criterion as an incentive for communities to demonstrate the extent of their demand for WMIP support. Systems and processes, to periodically ascertain the genuineness of this mechanism, would be put in place. The composition of the WMOs would follow the Guidelines for Participatory Water Resources Management. The main functions of the WMOs would be to actively participate in identifying the rehabilitation measures to be undertaken through joint walk through with BWDB officials, ensure that the plans and estimates prepared for undertaking the R&I measures are in accordance with their requirements, actively supervise the R&I works being undertaken by the contractor and give clearance to release of payments based on satisfactory completion of activities, disseminate information on planning, implementation, operations and maintenance of the scheme and to seek beneficiaries' feedback, consent and active participation; assist in the process of land acquisition, if required by the schemes; and undertake other actions in support of the scheme objectives and resolve problems/conflicts among various stakeholders such as farmers and fishermen that may arise during planning, implementation and subsequent O&M. An upfront agreement that clearly spells out BWDB and GOB responsibilities will be signed with WMOs to the effect that they agree to the R&I plan, agree to contribute towards the O&M costs and are willing to take over the management responsibility for full or part of the system at the end of one-year trial operation, prior to R&I of any scheme. During one-year trial operation, the defects (if any) in the rehabilitated works, identified through a joint walk-through by WMO and Consultant's representatives and BWDB, will have to be rectified by the contractor to the satisfaction of the WMO and only then the management transfer will take place and the final payment will be released to the contractor. In order to enhance sustainability, BWDB would formally transfer user rights of its assets, such as land and water bodies, to WMOs for generating income.

Fig. 3: WMIP – Scheme Coordination Committee and Water Management



Legend: AEO: Assistant Extension Officer; AD: Assistant Director; AIO: Assistant Irrigation Officer; EO: Extension Officer; CE: Chief Engineer; EE: Executive Engineer; II : Irrigation Inspector; LGI: Local Government Institutions; SDE: Sub-Divisional Engineer; SE: Superintendent Engineer; SO: Sectional Officer; WMOs: Water Management Organizations; XO: Extension Overseer.

Under the Netherlands and ADB cofinanced Small Scale Water Resources Development Project, a study was prepared in February 2006 looking at the issue of the legal status of Water Management Organisations. It included a comparison of the methodologies used by LGED and BWDB respectively in organising local water user groups. The study made a number of recommendations on how the various organisations at different levels could be registered. To date, there seems to be no uniform practice, which results in confusion and weakening of these crucial institutions. BWDB and LGED need to issue unambiguous instructions to the field to clarify the legal status of WMOs.

121. ***BWDB Institutional Improvement (Component 3A):*** This component would be implemented primarily by the existing Chief, Training and Staff Development (TSD) Unit, with the rank of Chief Engineer equivalent under the Additional Director General for Administration. The TSD Unit consists of existing Directorates of Training and Staff Development. Technical assistance for institutional improvement of BWDB will be coordinated by the Chief, Training and Staff Development (TSD). A Consultants' team would assist the Chief, TSD, with staff planning and development operations and related studies.

122. ***WARPO Institutional Improvement (Component 3B):*** DG WARPO or one of its Directors will coordinate the project activities. WARPO uses the services of existing institutions for specialized assistance (e.g. Institute of Water Modelling, Center for Environment and Geographical Information Services). WARPO's institutional capacity in carrying out its responsibilities is inadequate. Consultants, provided under this project component, will assist WARPO to undertake project activities and provide training and technology transfer to make it a sustainable water planning organization. For component 3B, WARPO may need one team for activities related to its institutional improvement and another team for updating of NWRD.

123. ***Program Coordination and Monitoring (Component 3C):*** Activities under this component would be implemented by the Director of Program Coordination Unit, who will also be responsible for the overall coordination of the project related activities. A consultant team for an independent M&E unit for the project will be appointed and this team, will report directly to the Program Steering Committee and the Development Partners on a periodic basis.

Co-operation with other organizations

124. WMIP will closely liaise with the Department of Agricultural Extension (DAE), to provide assistance, training, and inputs to make WMIP economically successful. BWDB has already signed, in June 1994, a Memorandum of Understanding (MoU) with DAE for cooperation in providing agricultural extension services in the areas served by BWDB schemes. BWDB has also signed an agreement with the Department of Fisheries (DOF) in 1990 for fishery development and management extension services.

Stakeholder mobilization

125. Stakeholder mobilization is a critical aspect of the activities of WMIP in the fields of rehabilitation/improvement and operation and maintenance and one in which the BWDB has limited experience. NGOs have a long tradition in this respect and have contributed substantially to the development of "civil society". NGOs will play a substantial role in social mobilization, organization, training and capacity-building of local communities. Involvement of local NGOs throughout the participatory project-cycle would be ensured and built-in the project through technical assistance. The basic tenet of project design is that rehabilitation under component 1 will take place after initial community mobilization is completed and the WMOs are functional. This implies that early involvement of NGOs in the community mobilization process is critical. Past experience, however, indicates that: (i) few NGOs have technical knowledge and experience with water resources management, and especially

with management of FCD/FCDI schemes; (ii) NGOs see their mission as focusing on specific target population, rather than entire population in hydrologically-defined areas; and (iii) NGOs are not the right type of organizations to mobilize and guide elected LG office-holders. Wherever capable NGOs exist that are willing to support WMIP's efforts to establish and strengthen WMOs, these may be contracted. Where this is not the case, TA personnel will be deployed. In either case, the early contracting of community mobilization support would be critical to ensure active stakeholder participation in the PSM cycle.

126. The initial activities of the project would concentrate in a few batches of schemes on developing and field testing approaches for mobilization of local stakeholder participation, introducing a participatory scheme planning and design process with mitigation framework for the environmental and social impacts, developing and testing key O&M planning and process reforms, testing the transfer of selected water management activities to user groups; developing BWDB's scheme inventory and putting in place a rolling planning process to phase future infrastructure rehabilitation of selected FCD/FCDI schemes.

Monitoring and evaluation of outcomes/results

127. The Monitoring & Evaluation for the whole project will be done by both the implementing agencies as well as by an independent M&E Unit housed under PCU that would report directly to the Program Steering Committee (PSC). Given the pivotal role to be played by WMOs in PSM, it is critical that WMOs also get actively involved in the monitoring process. Participatory approaches to monitoring and learning would be an integral part of the Monitoring and Evaluation component of the project. Monitoring of WMIP inputs, outputs and outcomes includes several aspects: (a) participatory approaches to monitoring of PSM, including rehabilitation and improvement of the schemes, with clearly articulated role for WMOs; (b) monitoring of the performance of BWDB schemes, under component 1 and 2, including the outcomes; (c) monitoring the institutional improvement activities in WARPO and BWDB and their impact and (d) monitoring related to procurement, financial management and safeguard policies, including EMF and RPF implementation.

128. For each of these components, a separate monitoring system using standard MIS software will be developed under the respective project implementing consultancies. These systems will be fully integrated in an overall MIS framework and Monitoring and Evaluation (M&E) process, covering input, process, output and outcome monitoring system, to be developed by the M&E Consultant for use by the implementing agencies. Coordination among TA consultants, responsible for each component of the project, would be necessary for the development of common MIS format for reporting. Project evaluation, including benefit monitoring, would be carried out by the M&E Consultants as follows: (i) at project start-up for the base-line situation; (b) at the two mid-term reviews (third and fifth years of the project); and (c) at the end of the project implementation. The M&E framework will be integrated in the strengthened BWDB and WARPO monitoring system.

129. Monitoring of the environmental indicators, outlined in the EMF, will be conducted by a "monitoring team" comprising of the select WMG/WMA members, officials from BWDB, DAE and DOF representatives. Monitoring team will collect the required information annually by making field visits, consulting official sources, and interviewing key informants. Information thus collected will be further discussed and verified in open forums such as a PRA sessions. BWDB will train the members of the monitoring teams, as required. The EMF provides the list of indicators that will be monitored and assessed once every year. These indicators cover the most significant impact categories pertinent to the FCD/FCDI schemes in Bangladesh.

130. It is a framework-type project and will be implemented with two mid-term reviews (MTRs). The achievements prior to the first MTR (Project Year 3) would be used as a decision criteria for the scope

and sizing of the next phase before the second MTR (Project Year 5). The number of schemes under SIMT and OMPI components should therefore be considered as notional numbers for the purpose of project sizing and budgeting. The achievement of the project would depend upon two factors namely: (i) adherence to the PSM process and procedures, and (ii) successful implementation of the SIMT schemes. The process of PSM in the course of implementation would therefore be closely monitored by the M&E team and the outcome of the monitoring will be used as inputs for decisions. The ideal case of success for implementation would be that all the schemes under implementation adhere to the PSM principles.

131. Finally, the primary development objective of "improved national water resources management" will be measured by monitoring three outcome indicators. These are (i) reduction in losses due to floods (loss of life, animals and property); (ii) reduction in crops area damaged by floods/cyclones; and (iii) increase in agricultural production. This is likely to result in increased household income and reduced rural poverty. Any additional indicators that emerge from the active involvement of WMOs through the participatory monitoring and learning approaches would also be added to this list of indicators.

Participatory Scheme Cycle Management (PSM) Approach:

132. The Participatory Scheme Cycle Management (PSM) approach constitutes the core of the WMIP to promote national water resources management. Basic principles of the PSM approach are the following:

(a) The process will be based on the Guidelines for Participatory Water Resources Management (GPWM) prepared by the Government and approved by the National Water Resources Council (NWRC) in 2001.

(b) A resource database (physical/environment/economic), GIS and mathematical Modeling tools will be used to screen schemes (e.g., the scheme inventory database and regional water resources database developed under the National Water Management Plan, initial preparation work for the proposed project and BWDB's existing scheme inventory). At hydrological unit level, analysis of the performance of various schemes will be carried out, as individual units within an integrated system. The aim is to assess environmental/economic impact, including drainage congestion, on navigation and fisheries habitat, and knock-on effect of flooding in surrounding areas.

(c) The proposed project will further refine the PSM approach that has been successfully piloted in several water sector projects in Bangladesh, in order to improve its sustainability and impact, as follows:

(i) Timely provision of TA with a clearly articulated support and exit strategy right from the beginning.

(ii) Involvement of carefully selected NGOs to provide technical assistance for building capacity of community organizers/extension overseers and promoting development of partnership between BWDB and the WMOs but with a declining role of the NGOs over time through a carefully articulated support and exit strategy.

(iii) Appointment of capable, experienced, well trained and competent extension overseers (XOs), who are the key personnel in BWDB, expected to be involved in the social mobilization and WMO formation activities of the project. Based on requirement of approximately one XO per 2000 ha of area covered by subprojects and the proposed schedule, the number of XOs, who would be expected to be in position as per the implementation schedule, is given below:

Year	1	2	3	4	5	6	7
No. of XOs	20	40	60	60	70	0	0
Cumulative	20	60	120	180	250	250	250

It was agreed that the required number of carefully selected, experienced, well trained and capable XOs would be in place at the designated zones, circles and divisions by July 1 of every year as per the schedule provided above starting July 1, 2004. Thus 20 carefully selected XOs have been placed (orders have been issued) in the selected circles of the North Eastern and Central zones, that have been identified as the zones to be taken up under the project in year 1. BWDB has agreed to provide adequate staff to supervise the XOs during project implementation.

(iv) Learning from the implementation experience of the ADB-supported Small Scale Water Resources Development Project, that covers mainly small flood control and drainage schemes implemented by LGED, and other similar projects, there is a need to give high priority to community demand for WMIP support as indicated by interested communities through their willingness to contribute 2 to 3 percent of the R&I cost (to cover O&M cost after management transfer) as a determining criterion for selecting a scheme for support under the project. At the scheme level, the WMO contribution is expected to be about Taka 160-175 per ha that is to be collected over a period of about three to four years during project implementation. This contribution will become the seed money for the WMO to cover O&M costs after the scheme management transfer. Without clear demonstration of such commitment, there is no assurance of genuine demand which is absolutely critical for effective community driven project implementation and scheme sustainability. The collected funds will be deposited in the WMO/BWDB joint bank account and will be used solely for financing O&M after management transfer.

(v) Learning from the implementation experience of the ADB - supported Khulna Jessore Drainage and Rehabilitation Project, to confirm upfront agreement of GOB and BWDB to provide user rights on the rehabilitated and improved system and associated land and water bodies under BWDB ownership through periodic leases to the WMOs so that they can use the income earned from effective management of these resources to meet part of the O& M costs of the schemes transferred to them.

(vi) Coordination with the GON-supported Integrated Planning for Sustainable Water Management Project (IPSWAM) project and the ADB-supported Southwest Integrated Water Resources Management Project in order to incorporate lessons learned from these projects into the implementation plans for the proposed project. IPSWAM was designed and is widely seen as a 'pathfinder' project for WMIP. It is therefore of the utmost importance that WMIP takes on board the lessons learned by IPSWAM. The latter has in the past 2.5 years developed and applied a clear methodology for participatory planning, based on GoB's Guidelines for Participatory Water Management. The methodology includes six steps: (i) Identification/selection of sub-projects (schemes); (ii) Participatory, multi-disciplinary data collection/analysis and option development; (iii) Formation of Water Management Organisations; (iv) Plan formulation and finalisation; (v) Rehabilitation work; (vi) long-term O&M with monitoring

IPSWAM is active in 9 polders in the Patuakhali and Khulna regions. Benefits include:

- Increased local employment (partly through Landless Contracting Societies) and poverty reduction (as income is invested in other income generating activities);
- Improved water management, leading to higher crop intensities, crop diversification, higher yields and reduced environmental problems (water logging);
- Village-level organisation, providing a platform for accommodation of a wider set of issues, including savings, micro-credit and income generating activities.

One of the ongoing challenges of IPSWAM is to fully integrate this methodology into the BWDB as a whole. This requires capacity building at all levels. The Director General of the BWDB has publicly stated that "IPSWAM-type projects should be implemented in each Zone", which is in itself encouraging. WMIP can be the vehicle to realise this aspiration.

133. The activities of this component will be integrated into BWDB's normal operations, rather than as a separate project activity. PSM will thus become the standard mode of operation for the BWDB. The PSM approach addresses the following issues:

(a) The experience with past projects, implemented under participatory water management approach (with funding support from ADB, GON, CIDA and other development partners), shows that excessive reliance on Technical Assistance (TA) and NGOs for community mobilization and implementation of participatory approaches can be detrimental for long-term sustainability. Since none of these projects had a clearly articulated TA/NGO exit strategy, sudden withdrawal of TA and NGO support at project closure resulted in BWDB and the WMOs being left to manage the process on their own. The lack of adequate preparation and required capacity building for BWDB and the WMOs made it even more difficult for them to sustain a partnership.

(b) To ensure that we learn from this past experience, the staffing requirements of BWDB should be an important focus of the PSM approach. What type of staffing, both in terms of skills and quality of staff, as well as number of staff required to sustain a participatory approach to water management that has BWDB and the WMOs as the primary partners?

(c) Current policy decision by MOWR is to downsize the BWDB in terms of total number of staff that would be retained in the organization. However, the skill mix of these staff must be in tune with the responsibilities that BWDB would need to execute in view of the increasing emphasis on participatory approaches, as outlined in the GOB Guidelines for Participatory Water Resources Management.

(d) BWDB would need to ensure that the additional staff requirements, in terms of additional XOs (Extension Overseers), does not overshoot the overall staffing mandated by the MOWR policy. This is where the linkage between the SIMT component and the O&M component of the project with the Institutional Improvement component of the project becomes important. It is critical that activities undertaken under the Institutional Improvement component under WMIP are in tune with the staffing skill mix requirements of BWDB in light of the overall change in its approach to participatory water management with increased decentralization and devolution to WMOs and the need for staff that are able to work in partnership with the WMOs.

(e) Following the detailed steps (briefly outlined in the PSM flow chart --- Attachment 1 to this Annex), there is a need for a close interaction between BWDB staff and the WMOs towards gaining the confidence of the Water Management Directorate of BWDB (WMD) and other beneficiaries of the project. In this process, the most critical field staffs are WMD Community Organizers or Extension Overseers (XOs). BWDB currently has 250 XOs, who are being assigned all over the country. According to the staffing requirement list of WMD, for a medium scheme of 1000-5000 ha range (average is taken in the project as 2500 ha), the PSM needs 1 XO with a complete logistic support to work 250 man-days for a medium scheme and 800 man-days for a large scheme. BWDB has yet to plan to get these staff on a critical path. Therefore, a realistic assessment is required to ascertain the number of Extension Overseers required for implementing and sustaining PSM approaches in sub-projects to be taken up under WMIP. As per their proposed scheme numbers, the component 1 alone needs about 50 XOs assigned in the field for the entire project period. If they are new recruits, who need training, the recruitment must be started before the start of the project. Equally important is the BWDB Zonal Support Pool, comprising of Planning Unit, Community Development Unit, and TA team, who will be involved from the beginning of the project. It was agreed that a sound staffing plan and a training plan for the initiation of the project will be a part of the Project Implementation Plan (PIP).

(f) Assuming that all required skills and staff are properly in place, it is estimated that for a medium (average 2500 ha) scheme, duration is 4 years (1 year planning and social mobilization; 1 year institution building and construction; 1 year joint trial operation and commissioning; and 1 year training and management transfer). For a large scheme (average 8400 ha), PSM may be five years, as two years may be needed for construction. Taking into account the PSM duration and the agreement that the management transfer during last year will be funded by the GOB resources so that it can be taken up after the project closure, there can be 5 cycles of scheme batches for the medium schemes and 4 cycles of scheme batches for the large schemes over a period of 7 years.

(g) Community mobilization for the formation of WMOs requires the involvement of community organizers which, in projects such as the ADB-supported and LGED-led Small Scale Water Resources Development Project (SSWRDP), the Khulna-Jessore Drainage and Rehabilitation Project (KJDRP) and the CIDA-supported Dampara Water Management Project (DWMP), have been done with extensive involvement of Technical Assistance (TA) and NGOs. One of the shortcomings of the manner in which TA and NGOs have been involved in these projects has been the lack of agreement on an effective exit strategy which has been addressed in this project with a clearly articulated support and exit strategy.

134. Unless adequate staffing provision, in terms of Extension Overseers (community mobilizers), is made by BWDB, it would be difficult for BWDB to undertake the intensive community mobilization and participatory process-led approach under the project. It is imperative therefore that MOWR ensures adequate staffing for these activities under the project, as per the overall staffing norms outlined in MOWR policy. This realignment of skills and staffing at BWDB would be one of the key focus areas of the Institutional Improvement component (component 3) of the project.

135. It is clear that without some TA and NGO involvement at the inception of the project, WMIP is unlikely to proceed at the envisaged pace. What is critical, however, is that concerned directorates of BWDB, including the Chief Water Management, are in charge of the process right from the beginning and clear output and outcome indicators are developed to measure the progress of implementation of the PSM approach of the project. For instance, it is unrealistic to expect Extension Overseers to undertake a participatory approach to WMO formation with involvement of all stakeholders and implement the

sequence of activities in Participatory Scheme Cycle Management (as outlined in the PSM flow chart) without any TA or NGO support. WMIP would support TA and NGO involvement till such time that BWDB itself is fully equipped in terms of required staff skill mix, capacity and numbers to undertake the overall change in approach, as mandated by the Guidelines for Participatory Water Resources Management.

136. The corresponding EMF activities to be implemented during the PSM process: The following table indicates the environmental management activities necessary at every step of the Participatory Scheme Cycle Management process (see Attachment 1). The environmental activities should not be carried out in isolation of the project, but to be implemented as an integral part of the PSM process:

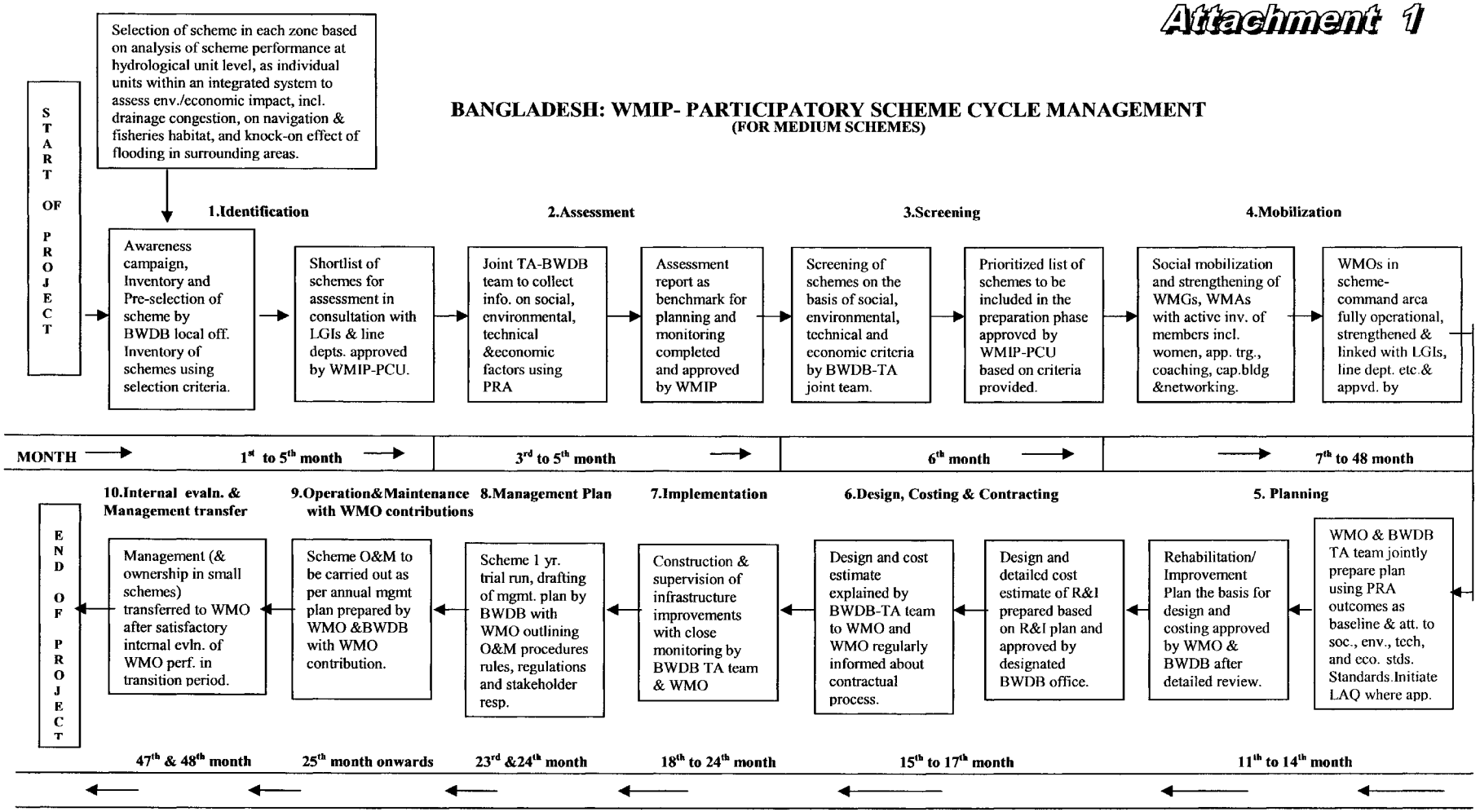
Scheme Cycle Phase	Tasks	Modality	Responsibility
0. Pre-identification	Screening of schemes by hydrological unit/sub-unit	a. Selection of schemes in each zone based on analysis of scheme performance at hydrological unit level, as individual units within an integrated system to assess anv/economic impact, incl. drainage congestion, on navigation & fisheries habitat, and knock-on effect of flooding in surrounding areas. b. Establish hydrological connectivity for cumulative impact assessment c. Modeling for cumulative impact assessment	BWDB
1. Identification	a. Identify zones and prepare list of possible schemes b. Prepare inventories of stakeholder interest c. Pre-select schemes	a. Prepare map of possible schemes with surrounding water development schemes, b. Preparing Environmental Training Manual c. Environment consultant will draw training plans, need-based modules and arrange training programs for senior, mid-level and junior officials of BWDB, and for WMOs.	a. BWDB's O&M Wing, Environment consultant and stakeholders on a participatory basis. b. Water modeling consultant will perform modeling tasks
2. Assessment of Schemes	a. Collection of social, institutional, environmental, technical and economic data through PRA b. Vulnerability Assessment	a. Collect Environmental Baseline Data as per Environmental guidelines prepared by IUCN and prepare database b. Develop data layers from secondary sources c. Collection of primary data through PRA d. Conduct Public Consultation to assess rehabilitation requirement e. Preparation of Mitigation Manual	a. BWDB, Designated staff from Environment consultant and stakeholders on a participatory basis b. BWDB and designated social consultants

Scheme Cycle Phase	Tasks	Modality	Responsibility
		f. Preliminary assessment of land acquisition needs	
3. Screening	a. Screen schemes on the basis of social, environmental, technical and economic criteria. b. Prepare prioritized short list of schemes c. Finalize land acquisition requirements and prepare land acquisition proposals (LAPs)	a. Finalize the maps prepared under cycle-1 b. Select IECs for Environmental Impact Assessment c. Apply screening criteria outlined in the EMF d. Minimize acquisition and displacement from private lands	a. BWDB divisions concerned, local stakeholders, environmental staff of BWDB's O&M wing and environment and social consultant
4. Mobilization	a. Establish/reorganize WMOs b. Strengthen WMOs c. Train BWDB field staff, such as XOs and sociologists in tasks involved in RAP preparation and implementation	a. Share maps with WMOs b. Apprise WMOs about relevance of surrounding projects c. LAPs to be approved by MOWR and submitted to DCs to start the acquisition process	a. BWDB Divisions concerned, WMOs, Environmental staff of BWDB's O&M wing and environment and social consultant.
5. Planning	a. Formulate scheme improvement plan in consultation with WMOs b. Analyze feasibility of the plan c. Prepare outline management plan d. Sign agreement between BWDB, WMO and LGI e. Prepare RAP for phased civil works	a. Assess impacts of interventions proposed jointly with WMOs b. Assess cumulative impacts c. Prepare plans for mitigation, enhancement, compensation, contingency and monitoring d. RAP inputs to be drawn from impacts data collected through PAP census and market price surveys e. Phased RAPs are to be reviewed and approved by IDA	(a) BWDB' planning wing, designated staff from environment consultant and stakeholders on a participatory basis (b) BWDB and designated social consultants
6. Design	a. Prepare detailed design for rehabilitation and improvement	a. Incorporate plans, as outlined at scheme cycle-5 into designs of the scheme b. Prepare cost estimates and incorporate it in project implementation costs	a. BWDB Design wings, concerned Divisions, WMOs, Environmental staff of BWDB's O&M wing and environment consultant.
7. Implementation	a. Prepare estimates and tender documents, with provisions for mitigation, improvement and enhancement b. Tendering and award of contract	a. Monitor implementation of environmental management outline plan and contingency plans in the pre-construction and construction stages Monitoring progress in land acquisition, implementation of the mitigation measures,	a. BWDB's wing responsible for implementation of the scheme, Design wings, Divisions concerned, WMOs, professionals of Environmental staff

Scheme Cycle Phase	Tasks	Modality	Responsibility
	c. Construction and supervision of work d. RAP implementation	including compensation payment	of BWDB's O&M wing and Environment and social consultant.
8. Management Plan	a. Finalize Environmental Management Plan for the O&M stage and agree on transition period	a. Integrate plans for mitigation, enhancement, compensation, contingency and monitoring into the post-construction management plan with required financial provision	a. BWDB's wing responsible for implementation of the scheme, concerned Field Divisions, WMOs, Environment consultant
9. Operation and Maintenance	a. To conduct a trial operation to observe efficiency of environmental mitigation aspects as planned.	a. Implement O&M plan in full pursuance of environmental management plan, as finalized	a. BWDB's O&M wing, Concerned divisions, and WMOs.
10. Evaluation and Management Transfer	a. Joint evaluation of scheme operation b. Training of WMO/LGI for monitoring environmental impacts c. Handing over of responsibilities to WMO/LGI for sustainable O&M along with management of important environmental components, as per guidelines. d. Evaluation of social development aspects and resettlement policies	a. WMO/LGI/WDB takes respective responsibilities, as per agreement b. Each party regularly and jointly pursues environmental mitigation plans.	a. Evaluation by BWDB's O&M wing, WMOs. b. Training will be imparted by Environment consultant and BWDB's Training Wing.

Attachment 1

BANGLADESH: WMIP- PARTICIPATORY SCHEME CYCLE MANAGEMENT
(FOR MEDIUM SCHEMES)



LEGEND

PCU-PROGRAM COORDINATION UNIT
WMO-WATER MANAGEMENT ORGANISATION
WMIP-WATER MANAGEMENT IMPROVEMENT PROJECT
WMG-WATER MANAGEMENT GROUP
WMA-WATER MANAGEMENT ASSOCIATION
R&I-REHABILITATION AND IMPROVEMENT
PRA-PARTICIPATORY RURAL APPRAISAL
BWDB-BANGLADESH WATER DEVELOPMENT BOARD
TA-TECHNICAL ASSISTANCE
LGI- LOCAL GOVERNMENT INSTITUTION.

NOTE: STEPS 1 to 10 of PSM cycle would be followed for the System Improvement and Management Transfer component (Project Component 1). For Component 2-Operations and Maintenance Performance Improvement, steps 8 to 10 of PSM cycle would be followed.

Annex 7: Financial Management and Disbursement Arrangements

Bangladesh Water Management Improvement Project

Financial Management Arrangements

137. ***Introduction.*** The financial management assessment was carried out to examine existing financial management system which will ensure i) that funds are used only for the intended purposes in a efficient and economical way, ii) the preparation of accurate, reliable and timely periodic financial reports, and iii) to safeguard the entities' assets and recommend appropriate intervention to mitigate the risk and improve the overall system. The Bangladesh CFAA of 2001 and the review of Institutional Arrangements for Public Expenditure, Financial Management and Procurement completed in June 2005 using PEFA Indicators, have been taken into account in performing the assessment for this project

Country issues

138. The CFAA carried out jointly by the government, Bank and donors indicated issues related to budgeting process, accounting, reporting and auditing. The CFAA report highlighted a development action plan that should be implemented in order to improve the public financial management systems. Over the last several years, GOB has been addressing key weaknesses in financial management through a series of reform programs supported by DFID, World Bank and the IMF. The government, in collaboration with the development partners took measures to sustain the progress achieved and looked ahead to identify the gaps and address those on a priority basis.

139. A joint World Bank, DFID and GOB review of Institutional Arrangements for Public Expenditure, Financial Management and Procurement completed in June 2005 revealed that Bangladesh's public expenditure institutions need to be significantly strengthened. The review also confirmed that links in the public financial accountability chain in Bangladesh continue to be weak. Internal and external controls remain weak, as reflected in the lack of accounting information in line ministries, delays in the publication of audited reports, unsatisfactory quality of the external audit function, and ineffective Parliamentary oversight of the whole budget process. Though GOB has taken several steps to improve its public financial management and procurement systems and the overall trajectory of change has been positive, the pace of progress has been slower than anticipated. The key challenges that remain are: (a) greater flexibility to ministries in the management of budget implementation; (b) strengthening the internal control system, (c) strengthening the accounting and reporting mechanisms to obtain timely, regular, adequate and reliable information; (d) improving the quality of audit and its impact; (e) developing relevant knowledge, aptitude, competence and skills of civil servants; and (f) enhancing implementation capacity of PFM institutions.

140. The Bank has been working with the government to develop a detailed action plan to improve the ratings on the Public Financial Management (PFM) indicators, as well as to improve transparency and financial accountability in the execution of public service delivery. Satisfactory progress in implementing the agreed financial management and accountability action plan to improve PFM will drive the Bank's support to Bangladesh.

141. Achievements towards improved PFM performance will be tracked through periodic assessment of progress on the action plan.

Strength and Weaknesses

Strengths:

i) BWDB has a robust FM organization and well documented financial regulations and procedures and internal control measures in financial management (FM).

ii) ii) BWDB has the experience of implementing a number of Bank and other donor-financed projects.

iii) BWDB has adequate internal control arrangements in place, putting financial management responsibilities independent of operating function.

iv) BWDB Accounting System has been modernized under two CIDA-assisted projects. It has been operating a computerized accounting system for the last seven years in recording, processing and report generating and submitting computerized monthly accounts to the line ministry by the 7th day of the following month

v) WARPO has been using a computerized accounting system for last one and a half years and has been submitting computerized monthly accounts to the line ministry by the 7th day of the following month

vi) Having a System Management Unit (SMU) for the MOWR, located in BWDB to provide continuous technical support on computerized accounting systems in BWDB, WARPO and all other entities under the ministry will facilitate preparation of a consolidated or entity wise project financial statements from the SMU server that holds accounting data from the computerized systems of all constituent entities.

vii) MOWR's access through LAN to the computerized accounting systems of BWDB, WARPO and its other entities facilitating updated information flow for effective monitoring.

Weaknesses:

- A tendency in some of the BWDB field offices to skip FM procedures in the name of urgency of work.
- Staff transfers and posting in BWDB may affect continuous deployment of competent accounts and finance staff. across all the RACs.
- Need for improved interaction between BWDB's RAC and concerned divisions/offices
- Computerized Accounting System not implemented in BWDB Project Monitoring offices affecting accuracy and sometimes timeliness in producing monthly, interim and annual financial statements.
- Delay in completion of annual audit of BWDB central accounts by independent private auditors due to delay in getting "No Objection" from the C&AG that has the legal mandate to perform the audit of BWDB Entity Financial Statement but do not have the capacity.
- Relatively low exposure of WARPO staff in implementing Bank financed projects
- Shortage of manpower and lack of appropriate training and Manual in the audit directorate of BWDB, affecting internal audit performance
- Tendency to delay the entity audit of WARPO
- WARPO financial statements do not reflect whatever revenues it earns, its liability to staff and its deposits and saving instruments held for the staff. WARPO prepares a separate manual statement annually to reflect the status on these items.

Risk Analysis and mitigation measures:

142. Lack of adequate accounting staff in the managing or implementing offices will affect the timeliness and quality of project financial reports and statements. Safeguard measures need to be identified against potential fall back by some RACs due to Employees Union dictated staff transfers and continued constraint on staff recruitment and possible staff exodus in absence of any incentive for good performance. Failure of the BWDB management to bring the Project Monitoring Offices under financial discipline and to report through the computerized accounting system in a timely manner would be another

risk in the timely and reliable financial reporting. BWDB responded proactively to IDA concerns and have taken some steps. BWDB has started the process of recruitment to vacant accounting positions and assured IDA that no transfer/posting would be made in a manner that might affect the timely production of quality accounts in any accounting location. BWDB issued an office order in March 2004 ensuring posting of appropriate accounting personnel with each Project Monitoring Offices (PMOs) and enforcing submission of PMO's monthly accounts to consolidation unit within the stipulated time PMOs have been submitting on time their monthly manual accounts that are posted to the computerized accounting system by the BWDB consolidation unit. Although this practice has not significantly affected the timeliness of BWDB global monthly accounts, the risk of potential fall back and concern on accuracy remain to be addressed.

Summary Risk Assessment)					
	Risk Assessment				
	H	***S***	***M***	***N***	
Inherent Risk					***Risk Mitigating Measures***
Overall Inherent Risk		***S***			
Control Risk					
1. Implementing Entities			***M***		
2. Funds flow		***S***			
3. Staffing			***M***		
4. Accounting Policies and procedures				***N***	
5. Internal Audit			***M***		
6. External Audit			***M***		***Entity audit risk S, Project Audit Risk N***
7. Reporting and Monitoring				***N***	
Overall Control Risk			***M***		

Financial Management Environment: and Project Financial Management

143. BWDB has a robust financial management organization and its financial management regulations, procedures and the internal control mechanisms are well documented. In addition to this BWDB has prior experience in implementing Bank and other donor funded projects. However the WARPO accounting is done on a single entry basis and its financial statements include an expenditure statement only, showing comparison against budget. Financial statements do not reflect whatever revenues it earns, its liability to staff and its deposits and saving instruments held for the staff. In addition to this WARPO has limited experience in implementing Bank-financed projects.

144. There has been a tendency in the BWDB field offices to skip the financial discipline in the name of urgency of work. A circular that was issued early in 2003 by BWDB management to the field offices to strictly follow the procedures has resulted in some improvement in adhering to its regulations and procedures already in place. During the Bank supervision this will be monitored on a regular basis and the results will be reported and if any recommendations required that will be provided during the supervision.

145. The project financial management system has been agreed to be a subset of BWDB mainstream financial management system that has been evaluated to be adequate by IDA. The PCU and all other concerned units and offices will follow the BWDB's financial, accounting and internal control procedures and manuals, along with the project-specific financial management arrangements, as reflected in the project documents. However, BWDB and IDA recognized that comprehensive computerized fixed assets recording is yet to be functional in BWDB and agreed that for the fixed assets management, the project will follow the Fixed Assets Recording Arrangement that has been separately developed for the project. Since project expenditures will be disbursed and recorded in the PCU office and a number of RACs, the consolidated project financial statement and other reports will be generated from the BWDB central consolidation unit. BWDB has achieved significant improvement in sending on timely basis the monthly accounts by RACs for consolidation within 5 days from the end of a month and consolidation and preparation of reports within next 2 days. E-mail connections at most of the RACs and the consolidation unit facilitated the improved communications. The arrangement for generating quarterly Interim Financial Reports (IFRs), following IDA's indicative models, has been built into BWDB Chart of Accounts, which is flexible enough to produce the IFRs that are consistent with Bank requirements.

146. ***BWDB Accounting & Reporting System:*** Its finance wing is headed by an Additional Director General (Finance) and is supported by a Controller (Finance & Accounts) who oversees the three core financial management functions – finance, accounts and audit. Preparation of budgets, budgetary control and fund management are carried out by Director (Finance). Director (Accounts) performs the disbursement and accounting functions through the headquarter units and 25 Regional Accounting Centers (RACs). Director (Audit) takes care of internal audit functions through head office based audit staff. Since last three years the accounting system has been modernized under a CIDA-assisted project. It has been operating a computerized accounting system for the last six years in recording, processing and report generating. The ongoing system contains 5 modules, which are general ledger, bank reconciliation, payable management, payroll and fixed assets management in all accounting locations. 25 RACs and 5 to 6 project monitoring offices send their monthly statements of accounts through email or floppy discs to the consolidation unit in the headquarters for preparation of consolidated BWDB monthly accounts and related statements within ten days from the close of a month. The chart of accounts is well designed and flexible enough to facilitate recording of all present and prospective BWDB operations and development projects and generating necessary reports, as would be required. Out of the 16 planned actions for the modernization in BWDB, , a few of them were materialized wholly or partially, some are progressing slowly, while majority of the planned actions remained constrained or made little progress, even long after the expiry of the deadlines. These are (a) Computerizing and archiving the inventory of the completed projects (b) preparation of computerized O&M plan of BWDB completed projects (c) improved funds release and delivery to the end users (by eliminating intermediary bank and BWDB office); (d) deployment of competent accounts and finance staff; (e) strengthening of RACs; (f) improved interaction between RACs and concerned divisions/offices; (g) timely submission of monthly accounts by Project Monitoring Offices (PMOs); (h) timely completion of annual audit of BWDB central accounts by independent private auditor (FY 2000 completed); (i) introducing performance audit; and (j) preparation of a data base for all fixed assets. BWDB has recently revisited the financial management issues, reset the priorities and came up with a dated revised plan for 8 actions identifying the responsible officials. IDA would like BWDB to achieve the desired results within the target date and keep IDA informed of the progress at the end of each of quarter. BWDB however informed IDA that some of the actions are constrained by lack of funds and requested IDA to explore the possibilities of funding those reform activities under the project. **The pace and status of achievements on the planned actions would not impact on the adequacy of the project FM system.**

147. ***WARPO Accounting & Reporting system:*** WARPO accounting unit is headed by an Accounts Officer who is assisted by an Accountant and a Cashier. Monthly and annual accounting statements used to be prepared for its operational and development project activities, in spreadsheet from the manually

maintained books. WARPO accounting system has been computerized and modernized through a recently completed CIDA- assisted project. This is supposed to enhance the financial management system of WARPO which is an advantage for the accounting functions of the project. Having in view, WARPO's limited experience in implementing Bank funded projects; its Accounts Officer was provided, a week long training on Bank's financial management and disbursement procedures. Capacity of the WARPO's FM staff and the accounting system is now adequate to meet the project financial management needs including operation of Designated Account and submission of IFRs.

148. However, WARPO financial statements do not reflect whatever revenues it earns, its liability to staff and its deposits and saving instruments held for the staff WARPO prepares a separate manual statement annually to reflect the status on these items. WARPO should immediately move to double entry book keeping with full coverage of its assets and liabilities in the computerized accounting system.

149. ***Staffing:*** An accounts officer and two other accounting personnel, trained in computerized accounting system and experienced in Bank financed projects, will be assigned to PCU by BWDB from amongst its existing staff to ensure efficient performance of financial management functions of the project. **BWDB would place such staff at the PCU by project effectiveness.** Borrower's Development Project Performa (DPP) would include these positions as additional staff requirements if BWDB thinks that its existing staff strength would not allow such placement.. This group will, inter alia, perform all special account related functions such as payments from the central locations, transfer of funds to various RACs, claiming replenishments for disbursements including those in decentralized locations, reconciliations with banks and other BWDB offices and submission of PCU's monthly accounts to BWDB's consolidation unit within the same timeframe, as applicable to RACs. Both BWDB and WARPO finance staff has the experience of utilizing IDA funds through Special Accounts.

150. ***Flow of funds & Budgeting:*** GOB will allocate the counterpart funds for the project through the annual development plan (ADP) on the basis of work plan prepared by the PCU. BWDB Directorate of Finance will be responsible for getting the funds allocated for BWDB, released in each quarter following GOB procedures, depositing it in a separate bank account and transferring funds to various RACs, as advised by the PCU. Counterpart funds allocated for WARPO components will be released by DG, WARPO, and deposited in a separate account in a commercial bank for disbursing to the providers of goods and services as and when required. As an alternative to making all payments from IDA funds centrally from PCU, IDA requested GOB to first pre-finance the IDA's share of project expenditures in scattered locations and then claim to IDA for reimbursements but GOB expressed its inability. So, in line with the Bank policy on relying on country systems, it has been arranged that all IDA funds would flow to the various RACs on the basis of quarterly or monthly realistic fund requirement forecast received from the RACs/Divisions. The PCU will review the forecasts and will transfer the appropriate amounts from the Special Account (CONTASA) to the respective bank accounts of the RACs, following 90 Day Advance Procedure.IDA's assessment confirms the existence of adequate staffing and systemic capacity and the enabling environment in the RACs and adequate monitoring capacity and commitment at the PCU and the BWDB central financial management for the Bank to permit such Advance ProcedureCredit. BWDB assured IDA of close monitoring of use of funds transferred as advance, including 100% audit of all SOEs by its Internal Audit Directorate.

151. BWDB has well organized units to look after its planning and budgeting aspects comprehensively on timely basis. When the total budget received from the Ministry of Finance fall short of demand, some rationing takes place across various units of BWDB, in case of recurrent budget. For the development budget, Parliamentary approval is project-based, leaving no risk of distortion affecting IDA project. However, to ensure that parliamentary approval does not fall short of project's requirements for counter part funding in any financial year, **the GOB Delegation at the re-Negotiations assured adequate measures to make available necessary counterpart funds on a timely basis.**

Audit Arrangements

152. Project Audit: BWDB and WARPO would be responsible for preparing project financial statements for their respective components to be audited by the Foreign Aided Project Audit Directorate (FAPAD) of C&AG, using INTOSAI auditing standards. Audited project financial statements would be submitted to the Bank within six months from the close of the fiscal year. BWDB's accounting system would permit inclusion and identification of the project's financial transactions in its consolidated financial statements. The Bank would not require a separate audited project financial statement, if the audited consolidated BWDB financial statements, adequately reflecting the project transactions, could be submitted within 6 months from the end of a fiscal year.

153. ***Entity Audit- BWDB*:** Like all other public corporate bodies, BWDB central accounts (entity) used to be audited by an independent private auditor until FY2000, in addition to government auditing of various operational activities by the concerned directorate of the C&AG. The Bangladesh Water Development Board Act-2000 does not have any specific provision for auditing of its financial statements by a private auditor but requires that the Board's accounts would be audited by the auditors engaged by C&AG within four months from the close of the financial year. But due to inadequate capacity, C&AG did not take over the audit which has been pending for four financial years. Having obtained No Objection from C&AG, BWDB cleared the back log and completed audit for the FYs 2001 through 2004 by private auditors. Audit of two FYs 2005 and 2006 are again overdue and MWR is taking long time in processing the request for No Objection from C&AG. To mitigate the risk emanating from this issue, C&AG's blanket approval for five years, could be a **condition for negotiation** allowing BWDB to engage its private auditor for five years following Public Procurement Regulations (PPR) and Delegation of Financial Powers requiring no more intervention in the process by C&AG and MWR.

154. ***Entity Audit- WARPO:*** Directorate of works audit of the C&AG was locked in an unusual backlog of six years in the audit of WARPO as an entity, C&AG of late completed the audit up to the FYs 2004 but audit of FYs 2005 and 2006 are overdue and the backlog may likely to continue and expand to 5 / 6 years again. Agreements need to be reached **before negotiation** with GOB ensuring C&AG's audit of WARPO on a timely basis.

155. WARPO (as well as BWDB), not being revenue earning entities , the submission of entity audit reports would not be a requirement under Bank's audit policy. However, bottlenecks to obtaining assurance of accountability and credibility to entity financial statements is highlighted, having regard to the evolving role of the entities in water management and their potential capacity as continuing entity for mainstreaming the FM system.

Executing Agency	Audit Report	Auditor Type
BWDB	Project Financial Statement	C&AG
WARPO	Project Financial Statement	C&AG

156. ***Internal Audit:*** BWDB has an internal audit directorate with 28 auditors of different levels and 15 support staff. In view of the inadequate staff strength, internal audit activities are undertaken on selective basis on those operational units as are identified in the annual audit plan for each year. Thus, all the office or units involved in WMIP are unlikely to be covered by internal audit mechanism in a single year. Internal auditing has been taken up for reforms and strengthening under the recently started CIDA-assisted Modernization of Ministry of Water Resources Financial Management Capability Project and a Computerized Audit Objection Tracking and Monitoring System has been put in place. Internal Audit acts as a facilitator in settling government audit objections and initiates the formation of task forces and set up of tripartite meetings in the process of settlement. The Bank has highlighted the importance of Computerized Assisted Auditing Technique (CAAT) for inclusion in the CIDA-assisted reforms but due

to fund constrain, this activity was dropped from the project. BWDB requested the Bank to explore the possibility of funding under the project the enhancement of Internal Audit Effectiveness by financing CAAT and Training of auditors and preparing an Audit Manual The Internal Audit Directorate has recently taken up a plan to undertake procurement audits after providing procurement training to its auditors. As part of BWDB's extended assurance on proper use of proposed 90 Day Advance Procedure , BWDB confirmed that in addition to pre-audit of all payments from IDA funds by RACs at decentralized location, BWDB's Internal Audit will carry out 100% audit of all SOEs within six months from the end of a fiscal year.

Supervision Arrangements:

157. From a financial management perspective, the project will need regular supervision. This will be through a combination of periodic desk reviews and field visits. Special focus will be given to building of staff capacity and timeliness and quality of financial information.

Financial Covenants

- BWDB and WARPO will ensure that a satisfactory financial management system is maintained through out the project period.
- BWDB and WARPO will ensure that adequately qualified and experienced financial management staff is available on a full time basis and through out the entire project implementation period, for overseeing the financial management and disbursement of the project.
- BWDB and WARPO will submit to IDA audited financial statement of the project, no later than six months from the end of the financial year.
- BWDB and WARPO will prepare and submit to IDA no later than 45 days following the end of each quarter financial management reports, in form and content agreed with the Bank during negotiations.

Disbursement & Financing Arrangements

158. **Financing Plan:** The total project cost of US$140 million would be financed from an IDA Credit of US$102.66, GON Grant of US$20.1 million and remaining US$17.25 million would be funded by the Government of Bangladesh. The civil works would be funded by IDA (70%) and GON (17%) and incremental operating cost 70% in average over the years by IDA, while other costs would be 100% financed either by IDA or by GON. In average about 75% of the project cost would be financed by IDA and GON while remaining 15% would be financed by beneficiaries and GOB. Overall financing plan is given in Table 1 below. IDA's and GON's share of the project cost will be disbursed under the transaction based disbursement procedures initially. After the first MTR, disbursements may be switched over to report based one, on the basis of Financial Monitoring Reports (FMRs) if the borrower so prefers and IDA finds that project financial management system is working satisfactorily and is generating timely and reliable (full set of) FMRs which are acceptable to IDA..

159. The table below sets forth the approximate allocation of the amounts of the IDA Credit and the GON Grant to each category.

Table 1: Project Finanicng Plan

US$ Millions

Category	Total Cost	IDA	Dutch	GOB	Total Finacing
1. Civil Works					
(a) Improvement of Schemes & training Center	61.20	42.84	10.40	7.96	61.20
(b) O&M Performance Improvement of Schemes	32.00	22.40	6.00	3.60	32.00
Sub-Total	**93.20**	**65.24**	**16.40**	**11.56**	**93.20**
2. Goods					
(a) Vehicles and office equipment for BWDB	6.50	6.50			6.50
(b) Vehicles and office equipment for WARPO	1.10		1.10		1.10
Sub-total	**7.60**	**6.50**	**1.10**	**-**	**7.60**
3. Consulting services					
(a) BWDB	15.60	15.60			15.60
(b) WARPO	1.50		1.50		1.50
Sub-Total	**17.10**	**15.60**	**1.50**	**-**	**17.10**
4. Training and Studies					
(a) BWDB	8.20	8.20			8.20
(b) WARPO	1.00		1.00		1.00
Sub-Total	**9.20**	**8.20**	**1.00**	**-**	**9.20**
5. Incremental Operating cost					
(a) BWDB	9.30	6.51		2.79	9.30
(b) WARPO	0.30	0.21		0.09	0.30
Sub-Total	9.60	6.72	-	2.88	9.60
Total	**136.70**	**102.26**	**20.00**	**14.44**	**136.70**

160. **Special Accounts (SA):** To facilitate smooth payments of IDA's and GON's share of eligible expenditures, two separate Convertible Taka Special Accounts (CONTASA) will be opened for BWDB and WARPO with such branches of any commercial bank as having adequate experience (in maintaining such accounts), manpower and computerized operations, in order to be acceptable to IDA. Special Account for BWDB would be operated by the Project Director of the PCU. Centralized payments for all project expenditures from the PCU would be continued up to the first MTR. When the scheme rehabilitation and other decentralized activities gear up, decentralized payments by the concerned RACs will be met through transfer of IDA funds to the bank accounts for the concerned RACs, following 90-Day Advance Procedure. BWDB and WARPO will operate the SA for components managed by each implementing agencies following IDA guidelines. Both the implementing agencies will be responsible for managing their respective SA, including submission of withdrawal applications to IDA.

161. The authorized allocation of BWDB SA would be Tk 250,000,000 (US$3.6 million equivalent) and that of WARPO would be Tk 10,000,000 (US$145,000 equivalent). However at the start of the project the authorized allocated shall be limited to Tk 125,000,000 (US$1.8 million equivalent) for BWDB SA. The remaining amount of the authorized BWDB SA allocation may be withdrawn once the cumulative disbursements of BWDB disbursement categories reach or exceed SDR 13 million (US$20 million equivalent).

162. **Disbursements under the Project:** The applications to replenish the respective Special Accounts may be submitted on a monthly basis or whenever the withdrawals from the respective SAs reach 50% of the initial deposit, whichever occurs first. The direct payment withdrawal applications and applications for Special Commitment may be submitted to IDA provided the value of such application is equivalent to 20% of outstanding advances to Special Account . The Table 2 sets forth the allocation of the amounts of the IDA Credit and GON Grant to each Category.

163. ***SOE:*** IDA will require full documentation for all prior review cases where contracts exceed the equivalent of: (a) US$500,000 for civil works (b) US$100,000 for goods and (c) US$100,000 for consultants services with firms and US$50,000 with individuals. Expenditures below these thresholds and all expenditures with respect to training, and incremental operating costs would be claimed on Statement of Expenditures (SOEs) basis. BWDB and WARPO will maintain all documents at their respective headquarters with respect to the withdrawals on the basis of SOEs. During initial supervision by IDA, the mission will closely review the SOE claims to assess how far the funds are utilized for the intended purposes. Any deviations noticed during such reviews would be noted for remedy and improvement.

Table 2: Credit/Grant Allocation
US$ Millions

Category	Total Cost	Amount Alllocated		% of expenditurs	
		IDA	GON	IDA	GON
1. Civil Works					
(a) Improvement of Schemes & training Center	61.20	37.00	10.00	70%	17%
(b) O&M Performance Improvement of Schemes	32.00	20.00	5.00	70%	17%
Sub-Total	**93.20**	**57.00**	**15.00**		
2. Goods					
(a) Vehicales and office equipment for BWDB	6.50	6.00		100%	
(b) Vehicles and office equipment for WARPO	1.10		1.10		100%
Sub-total	**7.60**	**6.00**	**1.10**		
3. Consulting services					
(a) BWDB	15.60	15.00		100%	
(b) WARPO	1.50		1.50		100%
Sub-Total	**17.10**	**15.00**	**1.50**		
4. Training and Studies					
(a) BWDB	8.20	8.00		100%	
(b) WARPO	1.00		1.00		100%
Sub-Total	**9.20**	**8.00**	**1.00**		
5. Incremental Operating cost					
(a) BWDB	9.30	6.00		70%	
(b) WARPO	0.30	0.20		70%	
Sub-Total	9.60	6.20			
5. Unallocated		10.06	1.40		
Total	**136.70**	**102.26**	**20.00**		

Annex 8: Procurement Arrangements

Bangladesh Water Management Improvement Project

General

163. Procurement under the project would be carried out in accordance with the World Bank's Guidelines: Procurement under IBRD Loans and IDA Credits of May 2004, Revised October 2006 and Guidelines for Selection and Employment of Consultants by World Bank Borrowers of May 2004, Revised October 2006.. Within the overall context of Bank guidelines, procurement of goods, works, and services (for which the shortlist entirely comprised of national consultants) will follow the Government's new procurement regulations the Public Procurement Regulations 2003 (PPR) and incase of any conflicts between the two procedures or ambiguous/confusing interpretation Bank Guidelines will prevail.

164. The Project's General Procurement Notice (GPN) has already been published in the United Nations Development Business (UNDB) identifying large value contracts, and it will be updated annually.

165. **Procurement Responsibility:** Bangladesh Water Development Board (BWDB) and Water Resource Planning Organization (WARPO) will implement the project under the direct supervision and responsibility of the Ministry of Water Resources. (MOWR). Both BWDB and WARPO will have a Program Coordination Units (PCUs), assisted by a technical support team. As described below in more detail, a Procurement Panel (reporting to the MOWR) would be appointed for procurement of all contracts above threshold levels for prior review and carry out ex-post review of the contracts below the threshold level that would be procured by the implementing agencies, BWDB and WARPO.

Procurement Management Capacity

166. **Procurement Environment:** The Country Procurement Assessment Report (CPAR), broadly accepted by the Government in February 2001, identified inadequate public procurement practices as major impediment affecting project implementation in Bangladesh. Procurement deficiencies include: absence of a sound legal framework, protracted bureaucratic procedures allowing multi-point rent seeking, lack of critical mass of professionals to manage public procurement, inordinate delays in completing the procurement process and ineffective contract administration and absence of mechanisms for ensuring transparency and accountability in public procurement.

167. **Procurement Reform Actions:** To carry out procurement reform following the CPAR recommendations, the Government with IDA's support is implementing a Public Procurement Reform Project (PPRP), scheduled to close in June 2007. International Training Center of the ILO, Turin (ILO, Turin) is assisting the Government in carrying out the reform. As part of the reform under PPRP, the Government has established a Central Procurement Technical Unit (CPTU) within Implementation Monitoring and Evaluation Division (IMED) of the Ministry of Planning, with adequate staffing funded from own resources, issued Public Procurement Regulations 2003 and associated implementation procedures including streamlined procurement approval process, delegation of financial powers, and standard set of documents for procurement of goods, works, and services. Recently, the Parliament has also passed a procurement law. The law and the regulations contain most of the international good pulic procurement practices; notable features include: (i) non-discrimination of bidders; (ii) effective and wide advertising of procurement opportunities; (iii) public opening of bids in one place; (iv) disclosure of award of all contracts above specified threshold in the CPTU's website; (v) clear accountability for decision making; (vi) annual post procurement audit (review); (vii) sanctions for fraudulent and corrupt

practice; and (viii) review mechanism for handling bidders protests. Concurrently, in order to build procurement management capacity, CPTU in collaboration with ILO and local institutes developed a critical mass of 25 national trainers and provided training to about 1500 staff of 260 organizations up to August 2006.

168. The new regulations are being implemented by all public sector entities with varying degrees. Though the landscape of procurement has been reshaped during the course of the last several years due to the procurement reform with harmonized procedures and the new regulations have increased substantial awareness among all stakeholders (procuring entities, bidding community, etc.) by building confidence, clearly, there are still a number of potential challenges in cross-cutting governance, institutional, and implementation issues including inadequate enforcement of regulations and delegated financial powers, inadequate adherence to the provision of streamlined procurement approval process, delays in contract award, ineffective contract administration, allegations of fraud and corruption, and political interference.

169. **Procurement Capacity and Risk Assessment**: Both agencies, BWDB and WARPO, have understanding and experience in public procurement and implementing IDA-financed projects. However, recently there have been several issue due to lack of internal control, lack of transparency and management of procurement process and in handling complaints; there were issues of ineligible expenditures and considerable misprocurement. In order to safeguard against this and that general conditions for public procurement in the country the project is rated "high risk" from procurement operation and contract administration viewpoint. In order to minimize the risk, several measures including a procurement risk mitigation framework have been introduced as described below.

Measures for Improvement of Governance in Procurement

170. Several measures have been introduced and agreed with the Government for improving governance in procurement and to minimize procurement risks under the Project. Three action that are main pillars of risk mitigation framework are: (a) establishment of Procurement Panel; (b) system of handling complaints; (c) establishment of procurement website.

171. **Procurement Panel.** For large value contracts subject to prior review, a Procurement Panel (PP), reporting to the MOWR, would be appointed to oversee the procurement process under the Project. As per the government's delegation of financial powers and the public procurement processing and approval procedures within the overall framework of the PPR, the Procurement Panel will submit bid evaluation report directly to the contract approving authority without tiers in between (for instance, Director General, BWDB or MOWR as the case may be). The Panel would consist of five members: two international experts, two national experts with experience in construction representing other Ministries or Agencies of the Borrower, and one national expert from BWDB who shall also be the secretary of the Procurement Panel. The Borrower will nominate the chairperson of the Procurement Panel from the two international and two national experts. The Procurement Panel would: (i) review the bidding documents for large contracts that are subject to prior review; (ii) receive bids, evaluate bids, and prepare bid evaluation reports for approval and award of contracts, and clear the notification of award.; (iii) carry out the ex-post review of bidding procedures followed in smaller contracts that are not subject to prior review and procured by the implementing agencies (BWDB and WARPO); and (iv) make fields visits to a number of sites and check the quality of construction and performance of the contractors. A schedule of procurement actions would be prepared for the whole year in a manner that Procurement Panel would meet as often as necessary for a duration of three weeks during which time they would review documents prepared for bidding during the next quarter, receive and evaluate bids invited during the last quarter and visit a few sites to check implementation quality and performance of the contractors and supervision. As the project implementation progresses and when most of the procurement is completed the frequency of Panel Meetings would reduce. The BWDB and MOWR would then and seek any internal/Government

approvals necessary for processing the procurement actions. The cost of Panel, including salaries, travel, and operational cost would be met from the Component 3, strategic studies and fiduciary reviews item.

172. **System for Handling Complaints. A** credible system of handling complaints would be put in place. The salient features of the system will be an oversight by the Program Steering Committee of the GOB maintenance of a database, a standard protocol with appropriate triggers for carrying out investigations, and taking action against involved parties. The system would be developed and managed by BWDB with oversight of the Procurement Panel. The system be supported by a database containing information about all procurement steps and other relevant information such as official estimates (global unit prices), all bidders (individual, companies, joint ventures, owners information, bank guarantee information, etc.), all bids, and relevant staff offered (technical experts, work supervisors, etc.). For ICB/international selection of consultants the Bank prescribed complaint redress mechanism will apply.

173. **Procurement Website.** An internet website would be established providing information about the procurement cycle, that is procurement notices, invitation to bid, bid documents and RFPs as issued, latest information on procurement contracts, status of evaluation, award and performance under the contracts. The website would be accessible to all bidders and interested person equally and free of charge.

174. In addition, there are several additional steps which Procurement Panel, BWBD, and MOWR has to ensure that are also described below:

1. **Procurement Cell (PC):** BWDB will strengthen its existing Procurement Cell with adequate staffing and resources acceptable to the Bank in a way that it can serve as a knowledge bank on procurement for the organization and effectively provide guidance to BWDB. PC will act as an oversight unit of BWDB for this project.

2. **Consultant as "Engineer"**: The project implementation consultants, to be recruited through a rigorous process of selection, will act as the "Engineer" for major civil works contracts (or Project Manager for smaller works) ensuring that Bank Guidelines and PPR are followed.

3. **Alert BWDB officials/staff:** The PC, in reference to the provision of the PPR, will issue an alert letter for BWDB including all field offices notifying about the possible consequences of corrupt and similar behavior in procurement practices and actions to be taken against the officials/ staff if get involved in such practices. Moreover, PC will highlight that in case of non-compliance of the Bank's procurement guidelines, strong actions (i.e. withdrawal of fund) will be taken against the concerned packages and slices.

4. **Alert bidders in pre-bid meeting:** BWDB HQ and all field offices, through a notification, will alert bidders during pre-bid meeting on consequences of corrupt practices (fraud and corruption, collusion, coercion, etc.). The alert message, among others, will include that if bidders are found to have adopted such practices, they would be debarred from subsequent bidding processes in conformity with PPR and the Bank's Guidelines as appropriate. In addition, in the pre-bid meeting, the bidders will be clarified for preparation of bid correctly.

5. **Bid opening committee (BOC):** A formal structured BOC will be constituted for each contract package including at the field level as per the provisions of the PPR. For the sake of more transparency, the BOC may include representatives from BWDB and professional body/ consultant.

6. **Bid opening minutes:** During the same day of bid opening, photocopies of the bid opening minutes (BOM) with readout bid prices of participating bidders will be sent to the Procurement Cell and the Project Director (PD) either by email, fax or special messenger. For prior review packages, such BOM will be shared with IDA.

7. **Timeliness of bid evaluation and contract award:** In accordance with the procurement approval process of the Government, bid evaluation reports will include certificates of impartiality and will be submitted directly to the contract approving authority following the stipulated timelines. PC will put extra effort to ensure award of contract within the initial period of bid/proposal validity so that no extension of validity is required. PC will closely monitor the timing taking into account that IDA may not finance contracts which are not awarded within the first extension of period of bid validity.

8. **Sub-delegation of financial powers:** BWDB will sub-delegate decision-making authority to its field level as per the GOB's financial delegation notification, wherever appropriate. All field offices shall ensure exercise of their authority in the field of bid evaluation, contract award, and contract administration without referring them to the higher authority.

9. **Action for corrupt practices – by bidders:** In cases of possible collusion found or established for reasons i.e. same hand-writing, identical unit prices in BOQs, consecutive serial numbers in bank guarantees for bid security etc, procuring entities (BWDB field offices) will initiate actions including debarring contractors as appropriate in accordance with PPR and Bank's guidelines. If any firm is debarred, the list of debarred firms will appear in the web sites of CPTU and BWDB, and the debarment notice will be circulated to all field offices of BWDB and other government/ public sector offices, putting it as a lesson to discourage corrupt or similar behavior. BWDB will share such information with IDA regularly.

10. **Action for corrupt and similar practices – by GOB staff:** In cases of possible corrupt or similar practices, BWDB will thoroughly investigate it and if involvement of GOB staff is established, BWDB will take department / disciplinary action against those concerned strictly in accordance with the services rules. In addition, sanction provisions as per the PPR will apply.

11. **Low competition among bidders and high price of bids:** The case(s) of low competition (not solely based on number of bidders) coupled with high priced bids will be reviewed by PC. The review and decision in this regard would be in the context of qualification criteria (too higher side?), the contract size (too small or too large), location and accessibility of the site, capacity of the local contractors (for smaller and non-attractive contracts), etc. In logical cases BWDB may go for changing the scope of work and in cases where local bidders capacity is very low contract packages may divided into more slices.

12. **Measures to reduce coercive practices:** Upon receiving allegations of coercive practices resulting in low competition, BWDB will look into the matter and take appropriate measures. For prior review contracts, observations of BWDB will be shared with the Bank, along with the evaluation reports. BWDB may seek assistance from law enforcing agencies to provide adequate security for bidders during bid submission. For ICB contracts, provision for bid submission through International/National Courier Services will be allowed & confirmation of the receipt of the bid will be informed to the bidder through e-mail.

13. **Rebidding:** In case of re-bidding, BWDB will enquire into the matter, record and highlight the grounds of re-bidding (i.e. corruption or similar, high bid prices etc.) along with recommended actions to be taken. For prior review cases, all such detailed reports will be sent to the Bank. The Bank may not finance contracts recommended for rebidding and take further remedial measures, if in the opinion of the Bank, it is determined that collusion, corruption or similar practices have been adopted in the bidding process.

14. **Filing and record-keeping:** Procuring entities (BWDB HQ and field offices etc.) will preserve records and all documents regarding their public procurement in accordance with provisions of the PPR, and these records will be made readily available on request for audit/investigation/review by the Bank.

15. **Procurement Plan in websites:** The procurement plan of WMIP will be published in the website of BWDB and CPTU, and updated semi-annually.

16. **Procurement monitoring information in websites:** BWDB will furnish to CPTU information of their public procurement processing activities as per provisions of PPR. BWDB HQ will enter all information related to procurement monitoring into the database software (to be established) at BWDB HQ and transmit the information to CPTU online or offline, to be incorporated into CPTU's central MIS database. Quarterly reports will be generated for monitoring procurement performance of BWDB and published in the website of CPTU and/or BWDB. These reports will be shared with the Bank.

17. **Publication of award of contract in websites:** BWDB within two weeks of contract award publish in its and CPTU's websites the following information: identity of contract package, date of advertisement, number of bids sold, number of submitted bids, number of responsive bids, brief reasons for rejection of bids, name of the winning bidder and the price it offered, date of notification of award, date of contract signing, proposed completion date of contract as well as brief description of the contract awarded. For contracts following International Competitive Bidding (ICB) procedures, BWDB shall publish notice of award of such contracts in UNDB Online and Development Gateway Market (dgMarket) in accordance with the provisions of the Bank's Guidelines.

18. **Complaints handling mechanism:** BWDB, for procurement under national competitive bidding (NCB), will enforce a complaint handling mechanism in accordance with the provisions of the PPR including submission and disposal of complaints within the timeline stipulated therein. In the offices of PD, PC, and all fields/ districts, BWDB will introduce a complaint box and during pre-bid meetings, bidders will be informed of their rights to complain. For ICB, complaints will be handled as per the Bank's Guidelines.

19. **Late payments and liquidated damages:** Each procuring entity within BWDB will ensure timely payment of bills of the suppliers/ contractors/ consultants as per the provisions of the contract. For delays in implementation, liquidated damages will be imposed as per the contract.

20. **Post procurement audit (review)**: As per the provision of the PPR, PC will carry out annual post procurement audit (review) based on sample contracts by hiring chartered accounting firm (with international affiliation), share the findings of the report with the Bank, and will initiate actions/ steps for improving procurement practices, as appropriate.

21. **Oversight by PC:** The Procurement Cell will provide this function through a team composed of its members and consultants. This monitoring team will review compliance with the above actions by all field offices, carry out time to time filed inspections, review the cases on corrupt and similar practices, review contract award and management issues (i.e. delays in award, liquidated damages, delayed payments, etc.), prepare reports on monitoring of contracts and submit **quarterly report** to the Director General, BWDB, covering items 20 percent above, and the same will be shared with the Bank.

22. **Special training course:** Prior to the start of the project, BWDB will arrange a three-day special training course, covering Bank's Guidelines and PPR. All officials handling procurement are required to participate in this training. Besides, the training schedule stipulated below is required to be fully met. No staff should be allowed to handle procurement without appropriate procurement training.

23. **Training – bidding community:** As a long term initiative, on a regional basis, BWDB will conduct procurement workshops/seminars for the bidding community on Bank's procedures, PPR, corruption and bidding process.

24. **E-Procurement:** In order to minimize collusive and coercive bidding practices, with a medium term perspective, BWDB will take initiative to introduce e- procurement in their system with its own IT infrastructure, under the overall framework of CPTU's central portal. When the bidding environment in Bangladesh will be assessed as ready, BWDB can be a front-runner in adopting e- procurement on a pilot basis as part of the follow-on procurement reform agenda in Bangladesh.

25. ***NCB conditions to be added:*** i) Post bidding negotiations shall not be allowed with the lowest evaluated or any other bidder; and ii) Bids should be submitted and opened in public in one location immediately after the deadline for submission; and iii) Rebidding shall not be carried-out without the IDA's prior concurrence.

175. **Other Actions.** Other actions taken or to be taken during implementation to improve the procurement governance are:

(a) contracts would be awarded within the initial bid validity period without any extension;
(b) enhanced community participation in planning and management of the construction works bringing higher level of accountability; and a large number of construction contracts (costing up to US$10,000) would be awarded to the WMO's themselves, that are ultimate beneficiaries of the Project, based on Community Based Contracting procedures (CBCs);
(c) BWDB and WARPO have prepared a draft procurement/selection plan for goods, works, and services;
(d) BWDB's four training-of-trainers (TOT) will undergo refresher courses as organized by CPTU/IMED; and
(e) BWDB, by December 31, 2007, will submit a training plan for all concerned procurement staff (HQ and field) that will undergo procurement training during the next two years. The Bangladesh Public Procurement Reform Project II (funded by IDA) has adequate provision for training of professionals from the Ministry of Water Resources.

176. With the above arrangements, the procurement under the project is likely to be effective and transparent resulting in smooth implementation of the project leading to achievement of the project development objectives. However, procurement process and implementation of the contracts would be

reviewed every six months by the Program Steering Committee in collaboration with the Bank an BWDB and adjustments would be made, and corrective actions would be taken if necessary.

Procurement Arrangements.

Overall procurement arrangements with tentative amounts are given in Table A.

177. **Procurement of Works.** Civil works are primarily in Component 1 and 2 related to improvement of schemes and enhancement of their O&M performance. Contracts for civil works will follow the participatory scheme management (PSM) cycle. Because of the nature of the schemes and operation and maintenance, all civil works at this stage are expected to be scattered across the country.

(i) ***International Competitive Bidding (ICB).*** Civil works contracts estimated to cost more than US$2.0 million equivalent per contract may be procured using ICB.

(ii) ***National Competitive Bidding - NCB***: Civil works contracts estimated to cost less than US$2.0 million equivalent per contract may be procured using NCB. This includes rehabilitation and improvement of medium/large schemes and operations and maintenance performance improvement for FCD and FCDI schemes.

(iii) ***Shopping - S****:* Works of very small contracts relating to supply and planting of saplings or similar works may be procured, through shopping procedures by soliciting at least three quotations, in packages with an estimated value less than US$20,000 equivalent per contract. The aggregate amount of works to be procured on three quotations basis is estimated about US$4.0 million.

(vi) ***Community Participation - CP:*** Works related to water management community schemes or similar works for tree nursing and related works estimated to cost less than US$ 10,000 equivalent per contract may be procured directly through community participation of destitute women using landless contracting societies (LCS). The aggregate amount works to be contracted to communities is estimated about US$6 million.

178. **Procurement of Goods.** Generally goods will be procured using ICB, followed by NCB and national shopping for small valued contracts.

(i) ***ICB***: Goods and equipment contracts estimated to cost US$300,000 equivalent or more per contract will be procured using ICB. This includes computer and IT equipment and vehicles, boats etc.

(ii) ***NCB:*** Goods and equipment contracts estimated to cost less than US$300,000 equivalent per contract may be procured using NCB. This includes office equipment and vehicles etc.

(iii) ***Shopping - S:*** Goods of very small contracts or individual purchases of off-the-shelf items may be procured, through prudent shopping procedures, in packages with an estimated value less than US$ 20,000 equivalent per contract.

(iv) ***Direct Contracting - DC*:** Computer software, books journals and training materials with individual contract costing less than US$2,000 equivalent may be procured following DC.

Consultants' Services and Training

179. Major consultancy assignments relate to implementation, monitoring and evaluation, scheme database, institutional improvement and human resources development, etc.

(a) ***Quality- and Cost- Based Selection (QCBS)***: Consulting services through firms estimated to cost US$500,000 equivalent or more per contract will be procured following QCBS. Major assignments include Implementation Support consultants, BWDB's institutional improvement consultants and Project M&E consultants.

(b) ***Fixed Budget Selection (FBS)***: Consulting services for social mobilization and capacity building of the community organizations for participatory scheme cycle management by NGOs/Community Support Organizations. The project design includes participatory scheme cycles approach in which social mobilization, organizations and capacity building for implementation of the sub-project scheme cycles are main items. The implementation requires mobilization of Community Organizers which are to be obtained on contracting out to the NGO/CBO who have similar field experience. Thus these contracts include social mobilization and capacity building of the community organizations for participatory scheme cycle management by NGOs/Community Support Organizations and they are to be hired by FBS procedure and it is given as an option.

Services through firms estimated to cost less than US$200,000 equivalent per contract may be procured following FBS in accordance with the Borrower's Procurement Regulations. All contracts costing US$200,000 or more shall follow the FBS method in accordance with the Consultant Guidelines.

(c) ***Least Cost Selection (LCS):*** Services through firms estimated to cost less than US$100,000 equivalent per contract may be procured following FBS or LCS. Contracts may include strategic studies and similar assignments and WARPO Institutional Strengthening and similar assignments.

(d) ***Single-Source Selection (SSS):*** Specific consultants' services through firms, satisfying Consultants' Guidelines (paragraph 3.9 to 3.13) with the Association's prior agreement, may be procured following SSS. However, specific consultants' services through firms, estimated to cost less than US$50,000 per contract, with the Association's prior agreement, may be procured following SSS method in accordance with the Borrower's Procurement Regulations. All other specific contracts costing US$ 50,000 or more per contract, with the Association's prior agreement, may be procured following Consultant Guidelines.

The SSS contracts may include: maintenance/ updating and dissemination of national water resources database, BWDB schemes database etc. by the Institute of Water Modelling (IWM) which has initially developed the scheme database and carried out this work in a continued basis. The IWM has been established with assistance of bilateral and multilateral donors in early 1990s. It has the information on schemes it is mandated to manage this database for the country on a continued basis. Similarly, Center for Environmental and Geographic Information Services(CEGIS) for environmental screening of the schemes. Overall justification for SSS contracts for IWM and CEGIS is based on the continuation of work they have been doing in the country and they have data and information which is necessary to carryout such work. Also this would be the least cost solution while contributing to national capacity building. See Table 2 and subsequent paragraphs on justification for more details.

(e) ***Individual Consultants (IC)***: Services for assignments, estimated to cost US$50,000 or more, for which teams of personnel are not required and the experience and qualifications of the individual are the paramount requirement, will be procured through individuals in accordance with Section V of the Consultants Guidelines. All other individual consultants may be selected following Borrower's Procurement Regulations. Individuals will be selected on the basis of their qualifications for the assignment.

180. Project Costs include provision for Training and Workshop. The project will support staff training and development for BWDB, human resource development of WARPO and the Program Coordination Unit. It will also include beneficiaries training for system improvement and operation and maintenance after transfer, as well as training to be provided for Agriculture and some other extension services.

Incremental Operating Costs.

181. Incremental operating costs will be financed by IDA at an average of 70%. The incremental operating costs including (i) the costs of office utilities, supplies (including fuel and maintenance costs), stationeries and salaries and allowances of additional staff employed by BWDB, exclusively for purposes of the Project, bank charges, and advertising expenses; and (ii) the costs of office utilities, supplies (including fuel and maintenance costs), and stationeries incurred by WARPO, exclusively for the implementation of the Project, bank charges, and advertising expenses , would be disbursed on the basis of annual budgets to be prepared by implementing agencies and agreed with IDA.

Table A: Procuerment Arrangements
US$ Millions

Category	ICB	NCB	Other[1/]	N.B.F[2/]	Total
1. Civil Works	59.50	23.60	10.10		93.20
IDA Financing	(41.85)	(16.50)	(6.89)		(65.24)
GON Financing	(11.20)	(3.50)	(1.70)		(16.40)
2. Goods					
(a) Vehicales, equipment, and office equipment	4.60	2.10	0.90		7.60
IDA Financing	(4.00)	(1.75)	(0.75)		(6.50)
GON Financing	(0.60)	(0.35)	(0.15)		(1.10)
3. Consulting services			17.10		17.10
IDA Financing			(15.60)		(15.60)
GON Financing			(1.50)		(1.50)
4. Training and Studies			9.20		9.20
IDA Financing			(8.20)		(8.20)
GON Financing			(1.00)		(1.00)
5. Incremental Operating cost			9.60		9.60
IDA Financing			(6.72)		(6.72)
GON Financing			-		-
Total	**64.10**	**25.70**	**46.90**	**-**	**136.70**
IDA Financing	**(45.85)**	**(18.25)**	**(38.16)**	**-**	**(102.26)**
GON Financing	**(11.80)**	**(3.85)**	**(4.35)**	**-**	**(20.00)**

1/ Includes (i) goods to be procured through shopping; direct contracting (ii) consulting services to be procured following quality and cost based selection, selection under fixed-budget, least cost selection, single source selection, and individual consultants' methods, and cost of training and studies; (iii) Incremental Operating Cost.

2/ N.B.F. = Not Bank-financed

Procurement and Selection Planning

182. The tentative Procurement Plan for goods and works, and Selection Plan for services has been prepared for initial 18 months of the project period. BWDB and WARPO will prepare and submit to IDA a detail procurement plan for review and clearance. Prior to issuance of any invitation for bids for procurement of goods and works and selection of services, the proposed Plan shall be furnished to IDA for its review and approval, in accordance with the provisions of paragraph 1 of Appendix 1 to the respective Guidelines. Procurement of goods and works and selection of all consultants will be undertaken in accordance with Plans approved by IDA.

183. Wherever possible works would be grouped in one contract and contracts would be grouped into lots for which bids would be invited at the same time and awarded using ***slice and package method with bidder asked to bid on one or more contract in the group.*** In particular, efforts would be made to include five medium schemes of component 1 (that are adjacent, or as close to as possible to each other) into a single lot for which bids would be invited at the same time. In case of large schemes, two schemes from the same zone may be combined into one lot. Alternatively, two large schemes and two medium schemes can be included in a single lot depending upon the situation and convenience in preparation of contract bidding documents. Similarly, five medium schemes of component 2 and/or 2 large schemes in each zone would be grouped into one contract package.

184. **Use of Standard Biding and Contract Documents.** For ICB procurement of goods and works, the use of IDA's Standard Bidding Documents (SBD) is mandatory. For NCB procurement, BWDB/WARPO may use the Government's Standard Bidding Documents in form acceptable to IDA. For selection of international consulting firms, the Bank's Standard Request for Proposals (RFP), including standard contract form will be used; for local consultants Government's procedure laid out in the national regulations will apply including its documentation. Depending on the type of procurement, the Bank's or Government's Standard Bid/Proposal Evaluation Form will be followed for submission of evaluation reports.

Prior Review Thresholds

185. **Goods and Works**: During the initial 18 months of the project, IDA will carry out prior review of the following contracts: (i) first contract for goods by each implementing agency regardless of value, and thereafter contracts estimated to cost US$ 100,000 equivalent or more, irrespective of the procedures; (ii) for works- first package/contract regardless of value in each zone and thereafter all contracts estimated to cost US$500,000 equivalent or more, irrespective of the procedures; and (iii) first contract in each zone awarded on the basis of community participation basis. After 18 months, the above thresholds will be reviewed/defined/redefined in the revised procurement plan, if necessary.

Table B: Thresholds for Procurement Methods and Prior Review a/

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review
Works	>= US$2,000,000	ICB	All contracts.
	<US$2,000,000	NCB	First contract in each zone regardless of value and thereafter, all contracts valued US$500,000 or more.
Goods	>=US$300,000	ICB	All contracts
	<US$300,000	NCB	First contract by each implementing agency regardless of value and thereafter all contracts valued US$100,000 or more.
Services	>=500,000	QCBS	All contracts.
	Selective contracts	FBS	All contracts of US$100,000 or more
	<US$100,000	FBS/LCS	Post review
	>=US$50,000	IC- Qualifications, references	All contracts
	<US$50,000	IC- Qualifications, references	Post review
	Selective contracts	SSS	Prior agreement

a/ Prior review threshold would be reviewed after 18 months and adjusted if necessary.

186. **Consultants Services**: IDA's prior review will be required for consultants' services contracts estimated to cost US$100,000 equivalent or more for firms and US$50,000 equivalent or more for individuals. All single-source contracts will be subject to prior agreement by IDA. All TORs of the consultants are subject to the IDA's prior review.

Post Review

187. For compliance with the Bank's procurement procedures, IDA will carry out sample post review of contracts that are below the prior review threshold. The Procurement Panel would also review and carry out audit of such contracts. Such review (ex-post and procurement audit) of contracts below the threshold will constitute a sample of about 20 percent of the contracts in each zone in proportion to the contract in each zone.

Review of Procurement Performance

188. IDA will monitor the compliance with the requirements of Bank's different procurement methods and performance standards on a continuous basis. As part of the project's planned annual review/mid-term review, a comprehensive assessment of procurement performance will also be carried out. Based on the review, in consultation with the government, IDA may revise the prior review threshold including the procurement and selection methods.

189. **Reporting.** The project will prepare quarterly Procurement Monitoring Report (PROCMOR) as per specific formats agreed with GOB.

190. **Frequency of procurement supervision missions proposed.** Once every six months. Besides, as part of the fiduciary control, Bank's staff and independent consultant, as deemed appropriate, will carry out post review/procurement audit of contracts.

Details of the Procurement Arrangements

1. Civil works.

Major contracts.

1	2	3	4	5	6	7	8
Ref. No.	**Contract Description**	**Estimated Cost (million Dollars**	**Number of Contracts**	**Procurement Method**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**
BD-WMIP-C1 System Improvement and Management Transfer							
BD-WMIP-C1-MD-ICB1 to 14	SIMT of Medium schemes in groups of 5 in each Division/zone (?)	About 2.5 m each package	14	ICB	No	**Prior**	Starting from Dec. 2008
BD-WMIP-C1-MD-NCB1-11	SIMT of Medium schemes	About 0.5 m each package	11	NCB	No	**Post**	Starting from Nov 2009
BD-WMIP-C1-LG-ICB1 to -8	SIMT of Large Schemes in groups of 2 in each Division/zone (?)	About 2.8 m each package	8	ICB	No	**Prior**	July 2010
BD-WMIP-C1-LG-ICB9 to -21	SIMT of Large Schemes	About 1.4 m each package	5	NCB	No	**Prior**	October 2011
BD-WMIP-C2 System O&M Performance Improvement							
BD-WMIP-C2-MD1 to 10	O&M Performance improvement of medium schemes	About $625,000 each package	10	NCB	No	**Prior**	Starting from Dec 2008
BD-WMIP-C2-MD11 to 20	O&M Performance improvement of medium schemes	About $125,000 each package	20	NCB	No	**Post**	Starting from April 2009
BD-WMIP-C2-LG1 to 10	O&M Performance improvement of medium schemes	About $840,000 each package	10	NCB	No	**Prior**	Starting from April 2009
BD-WMIP-C2-LG11 to 19	O&M Performance improvement of medium schemes	About $420,000 each package	8	NCB	No	**Prior**	Starting from April 2009

2. Consulting Services

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost (US$ Mill.)**	**Number of Contracts**	**Selection Method a/**	**Review by Bank (Prior / Post)**	**Expected Proposals Submission Date**
1	Project Implementation Support Consultants (comp. 1&2)	7.9	1	QCBS	**Prior**	April 2008
2	Consultancy for Scheme Screening & Audit (Component 1)	1.0	1	QBS	**Prior**	December 2007
3.	Consultancy for Scheme Database (Comp. 2)	0.8	1	SSS	**Prior**	December 2007
4	BWDB Institutional Improvement (Comp. 3)	1.3	1	QCBS	**Prior**	April 2008
5	WARPO NWRD update(Comp. 3)	0.8	1	SSS	**Prior**	December 2007
6.	WARPO Institutional Improvement Consultant (Comp 3)	0.9	1	FBS	**Prior**	April 2008
7.	Monitoring & Evaluation (Comp. 3)	0.5	1	QBS/QCBS	**Prior**	April 2008

Justification for Sole Source Selection.

191. As mentioned in the Annex 4 Project Description, the selection of sub-project by PSM (Participatory Scheme Cycle Management) would involve not only social scrutiny but also technical and environmental scrutiny. That is because, in a flat terrain country like Bangladesh, any modification or improvement on the embankment on one side of the river can have impacts to the other bank of the river if they are not properly analyzed, designed and carried out. That is why in the selection of schemes two levels of screening will be conducted. First, before any rehabilitation activities are initiated, the overall cumulative impact on water flow of the batch of schemes proposed to be rehabilitated will be determined through mapping and modeling of the potential impacts. The modeling will use the "regional environmental profiles" prepared by WARPO. If any negative impact is found, those schemes will not be included in the project. Environmental Assessment (EA) for the large schemes will be conducted according to WARPO EA guidelines for FCD/FCDI schemes. In doing that the whole country comprehensive water surface database and modeling tools are being developed by the Institute of Water Modelling (IWM). The center was initially developed by the Government with the assistance of bilateral and multilateral donors in early 1990s. But now it has been running on its own. Since the whole country

data are with that center, it is inevitably the services for this technical modeling have to be entrusted to IWM on sole source basis.

192. In doing that mathematical modeling and technical auditing, the current and real time physiographic and hydrometric information (GIS) have to be provided by the country's only one Center for Environmental and Geographic Information Services (CEGIS). CEGIS was also started like IWM , initially organized by the Government almost at the same time with IWM (at one time they were under one umbrella), but now it is running on its own. It is meant to deal with satellite imagery taken and regularly developed for Bangladesh. There is only one institute dealing with this in the country and therefore it has all historical records. When it comes to GIS mapping and environmental screening, CEGIS has to be sole sourced. In that way IWM and CEGIS are related in the schemes selection and technical auditing involved in Component I of the project.

193. Moreover, under Component II, O&M Planning and Improvement, the recently rehabilitated schemes will be monitored yearly through GIS facilities (through Satellite Imagery). After every major or medium flood, the schemes will be re-evaluated by GIS mapping and the "need based O&M" would be assessed through GIS imagery. For that also CEGIS has to be contracted on SSS.

194. Overall justification for SSS contracts for IWM and CEGIS is based on the continuation of work they have been doing in the country and they have data and information which is necessary to carryout such work. Also this would be the least cost solution while contributing to national capacity building.

Annex 9: Economic and Financial Analysis

Bangladesh Water Management Improvement Project

195. The proposed project has three main components (a) System Improvement and Management Transfer; (b) O&M Performance Improvement; and (c) Institutional Improvement. The economic and financial analysis of the proposed project deals with (i) economic impact, (ii) poverty impact, and (iii) fiscal impact.

196. The primary benefits of the proposed project include:

- Increased agricultural production and incomes due to (i) a reduction in crop damages/losses; (ii) improved drainage and flood management; (iii) expansion of irrigation in FCDI schemes; (iv) changes in cropping patterns; and (v) increased cropping intensity. These benefits are likely to be realized from improvements and rehabilitation of FCD and FCDI facilities as well as from improved operations and maintenance of these facilities.
- Increased production in capture fisheries due to the introduction of measures to mitigate adverse effects on fish migration patterns. The benefits will depend on the net effect on capture fisheries as improved drainage and flood control may also reduce the size of water bodies leading to a decline in fish production. Increased fish production in culture fisheries.
- Reductions in loss of lives and damage to/loss of property.
- Increased employment opportunities due to reductions in crop damage and increases in agricultural production.
- Increased safety and reduced disruption of economic and social activities (such as access to schools and hospitals) for the population.
- Improved management of water resources through the improved/strengthened institutional capacity of key water sector institutions - namely BWDB, Water Resources Organization (WARPO), and Water Management Organizations (WMOs).
- More empowered and self reliant communities.

197. The main costs related to rehabilitation of FCD/FCDI schemes are:

- Construction and engineering costs.[1]
- Costs of scheme management, implementation, operations and maintenance.
- Costs for any land acquisition and compensation for property. This is expected to be minimal as no new schemes are proposed under the project.

Economic Impact

198. As this is a framework-type project, the exact location, number of schemes, types of schemes and the extent of rehabilitation required in the schemes is unknown at this stage. Schemes will be selected during project implementation. The quantification of benefits and costs for the economic analysis is therefore based on four sample schemes in different hydrological regions of Bangladesh (Table 1). The economic analysis extrapolates the benefits and costs from the four sample schemes to quantify the overall project benefits and costs.

199. The main benefits that have been quantified for the four sample schemes in this analysis are (i) increased agricultural production arising from a reduction in crop damage, increased cropping intensity and shifts in cropping patterns; and (ii) increases in shrimp and salt production (in the coastal polder

[1] Costs of mitigating other adverse social and environmental impacts such as increased flooding in neighboring areas and possible adverse impacts on navigation are incorporated into the design costs of the scheme.

scheme). Due to lack of adequate historical data on loss of lives and damage to/loss of property, these benefits are not quantified. However, these benefits are likely to be fairly substantial particularly in the coastal polders which are susceptible to cyclones and storm surges. Hence it is likely that the estimated economic rates of return (ERR) are biased downward, particularly for the coastal polder.

200. A summary of the sample schemes selected for the analysis is provided in Table 1. Based on the list of schemes that could potentially be taken up under this project it is estimated that the project will serve an approximate population of 9.9 million people.[2]

Table 1: Sample Schemes

Hydro-Regions	Scheme	Type	BWDB Division	1000 – 5000 ha (medium)	Above 5000 ha (large)
NW	Toker Danra	FCD	Chapai Nawabganj	1650 ha	
NC	Pathakhali-Konai	FCD	Tangail	5000 ha	
NE	Zilker Haor	FCDI	Sylhet		5,263 ha
SE	Chokoria (Polder 65)	CFCD	Cox's Bazar		6,649 ha

FCD = Flood Control and Drainage; CFCD = Coastal FCD, FCDI = Flood Control, Drainage and Irrigation. Areas are gross scheme area.

201. **Main assumptions:** The underlying assumptions for estimating project benefits are summarized below:

- A project life of 25 years is assumed for all schemes.
- All costs and benefits have been updated to 2003 prices. Parity prices of major traded commodities have been used, based on World Bank commodity Price Projections[3].
- Financial prices on non-traded goods and services have been adjusted using a standard conversion factor (SCF) of 0.90, in keeping with recent Bank projects in Bangladesh.
- For FCD/FCDI schemes taken up under component 1 of the project, rehabilitation and improvement (R&I) costs are estimated at 7000 Tk/ha for medium schemes and 6000 Tk/ha for large schemes. R&I works for the large scheme are split over two years and it is assumed that the costs are evenly divided between the years (i.e. 3000 Tk/ha for each of the two years). In the first year, a start-up cost of 300 Tk/ha is included for all R&I schemes to cover O&M and community mobilization related costs.[4]
- Projections for O&M costs assume a regime involving annual O&M and emergency/ special maintenance every 10 years. O&M costs are assumed to be 900 Tk/ha for annual maintenance and 3,000 Tk/ha for emergency maintenance. These costs include engineering and administration costs.
- Other costs included in the economic analysis for component 1 include costs related to training for BWDB staff and beneficiaries of the project, costs for technical assistance, land acquisition

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[2] This is based on the assumption that rehabilitated schemes and schemes with improved O&M will cover an area of approximately 789,100 ha. Assuming an average cultivated area of 0.40 ha per household and an average household size of 5, this translates into a population of approximately 9.86 million people.

[3] Price projections are based on the 2004 World Bank Global Economic Prospects, Appendix 2 on Global Commodity Price Prospects.

[4] These costs are costs per gross hectare and are converted to costs per net hectare using a conversion factor of 1.28 which is the weighted average of the conversion factor for the four sample schemes included in the economic analysis.

costs as well as costs for agricultural support services. Technical assistance costs for component 1 are assumed to be equivalent to 73 percent of the total TA costs for components 1 & 2.

- Other costs included in component 2 include all costs related to maintenance of the scheme data base, costs for agricultural support services, transport and equipment purchased for improved O&M and 27 percent of the total technical assistance costs for components 1 & 2.
- The main benefits that have been quantified are the agricultural benefits. Agricultural benefits are quantified using data from the four sample schemes and a prediction of cropping patterns, yields and cropped area with rehabilitation in these schemes. The primary benefits anticipated on the basis of the sample schemes are a reduction in crop losses and increases in cropped area for rice crops due to re-excavation of canals and improved drainage in the schemes. Crop production models for each of the schemes were constructed in FARMOD. Overall cropping patterns and inputs used were based on data obtained from the respective Upazilla officials in each of the project areas. Price data was collected from the Department of Agricultural Marketing, Department of Agricultural Extension and local markets in the scheme sites.
- As the first year will be devoted to community mobilization activities related to Participatory Scheme Cycle Management (PSM) in each FCD/FCDI scheme, it is assumed that R&I will be completed in the second year of the project in each of the medium schemes. Subsequently, project benefits will only be realized from year 3 onwards. In case of large schemes, two construction seasons will be necessary, so project benefits will only be realized from year 4 onwards.
- As only technically operational schemes, that do not require rehabilitation, will be selected for component 2 of the project it is assumed that project benefits for component 2 will only be realized from year 5 onwards.
- The without-project scenario assumes that production of all rice crops and sugarcane will decrease by 2% each year (as compared to the present scenario) in the third, fourth, fifth and sixth year due to increases in crop damage in schemes that are not functioning to the design standards. The without-project production in years 7-25 will be equivalent to production levels in year 6.
- To extrapolate the project benefits from the four sample schemes to all schemes to be covered under components 1 and 2, a weighted average of the benefits per hectare of the four schemes is used where the weight is the net area of the schemes. It is also assumed that in year 2, 31,800 ha are rehabilitated under component 1. In following four years, 79,500 ha, 111,300 ha, 111,300 ha, and 45,000 hectares respectively will be covered under component 1 with a total area of 378,900 ha eventually covered under component 1. It is assumed that a total of 410,200 ha will be covered under component 2. The area covered under component 2 includes 26,800 ha in year 1, 67,000 ha in year 2, and 98,800 ha, 106,300 ha, 111,300 ha in each of the subsequent years.

202. **Economic Rates of Return:** As indicated in Table 2, the economic rates of return (ERR) for the sample schemes to be taken up under component 1 and for the whole of components 1 and 2 are well above the opportunity costs of capital (12%). The ERR for all schemes to be covered under component 1 is 29.5%, generating net benefits amounting to Taka 2.6 billion (2003 Taka). The ERR for the different schemes range from 14.8% to 32.2%.[5] The ERR for all schemes to be covered under component 2 is 48%. While component 3 (institutional improvement of key water sector institutions) is expected to yield many positive externalities, these are not quantified in the economic analysis. The benefits of institutional improvement will however be reflected in the improved performance of FCD/FCDI schemes and, in fact, institutional improvement is a necessary condition for realization of the economic rates of return in components 1 and 2.

[5] The cost estimates used to compute the ERR for the four sample schemes are based on the actual costs as determined by project engineers in each of these schemes. The per hectare R&I costs used for computing the ERR for component 1 as a whole are less than the actual costs for these four schemes as they are based on estimated costs.

Table 2: Summary of Economic Analysis (components 1 & 2)

FCD/FCDI Schemes	ERR (%)	NPV-25 years (2003 Million Taka)
Pathakali-Konai	32.19	45.74
Zilker Haor	26.08	49.83
Chokoria (Polder 65)	14.77	16.87
Toker Danra	27.57	10.62
All schemes (component 1)	29.51	2,576.12
All schemes (component 2)	48.02	3,574.82

203. The sensitivity analysis (Table 3) indicates that the economic rates of return of components 1 and 2 are robust to wide-ranging deviations from the base case assumptions. Sensitivity analysis carried out for a scenario with a 25% rise in investment costs together with a 25% reduction in benefits indicates that the ERR is still above the opportunity cost of capital for both components. A 25% increase in costs along with a 25% decrease in benefits results in an ERR of 14.80% for component 1 and 29% for component 2. A 29.86% increase in costs and a similar decrease in benefits results in an ERR of 12% for component 1. A 43.79% increase in costs and a similar decrease in benefits results in an ERR of 12% for component 2.

Table 3: Summary of Sensitivity Analysis Results (components 1 & 2)

Scenario	ERR (%)	NPV-25 years (2003 Million Taka)
Component 1		
Base case	29.51	2,576.12
25 % increase in costs	23.47	1,881.98
25 % decrease in benefits	20.22	1,113.99
25% increase in costs & 25 % decrease in benefits	14.80	419.85
Component 2		
Base case	48.02	3,574.82
25 % increase in costs	41.41	3,050.24
25 % decrease in benefits	35.55	2,058.35
25% increase in costs & 25 % decrease in benefits	28.85	1,533.77

Poverty Impact

204. Successful completion of the rehabilitation works of FCD/FCDI schemes and improved operation and maintenance of these schemes under the project could potentially have a substantial effect in reducing rural poverty in the areas served by the project. Floods can affect every facet of life in rural Bangladesh -- households may suffer significant crop losses, their homes and other durable assets may be damaged or destroyed, the availability of employment and/or wages may decline and transportation networks may be disrupted. The resultant loss of household wealth coupled with reduced access to safe water and sanitation facilities may affect household food security, health and nutrition. While both poor and non-

poor households encounter losses during floods, the shock suffered by poorer households is often much larger as they have fewer assets to begin with and their losses as a proportion of pre-flood asset values are likely to be higher than those of wealthier households. Poorer households in rural Bangladesh are also likely to be more dependent on daily wage labor as a source of employment and income, and may suffer disproportionately as the availability of employment dries up during and after floods.

205. Due to a lack of data on the extent of damage to assets and loss in employment and earnings due to floods in the project areas, it is not possible to provide a definitive statement on the extent to which the project could potentially reduce poverty. However, using data for rural households from the 2000 Household Income and Expenditure Survey of Bangladesh, it is possible to simulate the potential poverty impact under different assumptions of likely project benefits. The results of such a simulation exercise are summarized in Table 4. These simulations trace the impact of a combination of higher returns to agriculture (due to a reduction in crop losses) and higher annual daily agricultural wage income on poverty rates. The simulations assume that the incidence of poverty in the areas served by the project is similar to the incidence of poverty in rural areas of Bangladesh in 2000.

206. The poverty impact of the project could be substantial. It is estimated that 1.97 million households will benefit from the project. Assuming that the incidence of poverty in the areas served by the project is similar to the incidence of poverty in rural areas of Bangladesh, approximately 46.9% of households in the potential project area fell below the upper poverty line and 31.1% of households fell below the lower poverty line in the year 2000. Assuming that on average the agricultural benefits are equivalent to 5,000 taka/ha and annual daily agricultural wage income increases by 2%, the incremental income due to project interventions will result in 7.1% fewer households under the upper poverty line and 6.7% fewer households under the lower poverty line in the project areas. The annual incomes of landless farmers will increase by 837 taka . Annual incremental income for marginal, small, very small, medium and large farmers will be equivalent to 1,620 taka, 3,078 taka, 3,586 taka, 6,317 taka and 17,420 taka, respectively.

207. On the other hand, if the benefits per hectare are doubled to 10,000 taka and annual daily agricultural wage incomes increase by 2%, it is likely that there will be 9.1% fewer households under the upper poverty line and 8.8% fewer households under the lower poverty line. On the other hand, if per hectare benefits are only 1,000 taka and annual daily agricultural wage income increases by 2%, the poverty impact will be smaller but not insignificant, with 4.3% fewer households under the upper poverty line and 4.7% fewer households under the lower poverty line in the project area. As daily agricultural wage income accounts for 13-14% of the incomes of landless households and marginal farmers, compared to less than 1% for large and very large farmers, the landless and marginal farmers stand to gain significantly from increases in agricultural employment in the project areas.

Fiscal Impact

208. The total project costs are estimated at US $ 140.0 million. The Government's and beneficiaries' shares of the total project costs amounts to $17.25 million (about 12% of total costs, including taxes). With management transfer in the post-project period, BWDB's share of recurrent expenditures would decline. Improved O&M will also reduce the future rehabilitation needs and associated costs.

Table 4: Poverty Impact of the Project

(a) Below the Upper Poverty Line

Landholding Category	Distribution of HH	Distribution of Cultivated Area	Total Cultivable Area (Ha)	Average Cultivated Area (Ha)	Number of HH	% HH below the Upper Poverty Line	% HH below the UPL with benefits of 1,000 Tk/ha	% HH below the UPL with benefits of 3,000 Tk/ha	% HH below the UPL with benefits of 5,000 Tk/ha	% HH below the UPL with benefits of 10,000 Tk/ha
Landless	52.56%	18.17%	143,386	0.14	1024184	54.45%	49.10%	48.75%	47.90%	47.35%
Marginal	15.77%	11.95%	94,297	0.30	314323	51.44%	46.45%	45.18%	43.83%	42.16%
Very small	14.63%	22.03%	173,830	0.60	289717	41.03%	38.81%	36.00%	33.47%	28.72%
Small	8.86%	15.96%	125,911	0.71	177340	30.39%	28.58%	24.75%	22.87%	17.94%
Medium	7.13%	22.63%	178,574	1.26	141726	18.96%	16.58%	12.67%	10.49%	6.58%
Large	1.05%	9.26%	73,102	3.48	21006	9.92%	7.97%	2.67%	2.67%	2.67%
Total	100.00%	100.00%	789,100	0.40	1972750	46.88%	42.61%	41.14%	39.79%	37.82%

(b) Below the Lower Poverty Line

Landholding Category	Distribution of HH	Distribution of Cultivated Area	Total Cultivable Area (Ha)	Average Cultivated Area (Ha)	Number of HH	% of HH Below the Lower Poverty Line	% HH below the LPL with benefits of 1,000 Tk/ha	% HH below the LPL with benefits of 3,000 Tk/ha	% HH below the LPL with benefits of 5,000 Tk/ha	% HH below the LPL with benefits of 10,000 Tk/ha
Landless	52.56%	18.17%	143,386	0.14	1024184	38.60%	32.52%	31.88%	31.45%	30.43%
Marginal	15.77%	11.95%	94,297	0.30	314323	31.81%	26.62%	25.81%	25.14%	22.46%
Very small	14.63%	22.03%	173,830	0.60	289717	23.97%	21.35%	20.21%	18.32%	14.16%
Small	8.86%	15.96%	125,911	0.71	177340	18.23%	16.38%	12.85%	9.97%	7.07%
Medium	7.13%	22.63%	178,574	1.26	141726	9.07%	7.47%	6.18%	4.94%	1.08%
Large	1.05%	9.26%	73,102	3.48	21006	5.30%	2.63%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	789,100	0.40	1972750	31.13%	26.43%	25.36%	24.41%	22.31%

Note: The poverty impact of the project is based on simulations using data for rural households in all areas excluding the Northwest from the 2000 Household Income and Expenditure Survey of Bangladesh. Based on a total project area of 789,000 ha, the distribution of cultivated area and the average cultivated area among different landholding categories from the HIES, the number of HH's benefiting from the project is estimated. The change in the percentage of households falling below the upper and lower poverty lines is estimated by simulating different levels of per hectare project benefits due to incremental agricultural production in the project areas and a 2% increase in annual daily agricultural wage income.

Table 5: Fiscal Impact of the Project on BWDB's Revenue Budget

Indicator	07/08	08/09	09/10	10/11	11/12	12/13	13/14	TOTAL
Total Project Costs (US $ million)	8.1	12.8	20.3	27.4	31.5	26.0	13.9	140.0
Total Investment Costs (US $ million)	7.3	10.6	16.2	21.1	23.0	16.7	3.7	98.6
Total Recurrent Costs (US $ million)	0.8	2.2	4.1	6.3	8.5	9.3	10.1	41.4
GoB/Beneficiaries Share of Total Costs (US $ million)	0.12	0.65	1.79	3.10	4.11	4.11	3.02	16.9
GoB/Beneficiaries Share of Recurrent Costs (US $ million)	0.10	0.40	0.80	1.30	1.90	2.20	2.50	9.30
BWDB Revenue Budget (US $ Million)	35	34	33	33	32	31	31	
BWDB O&M Budget (US $ Million)	17.75	17.05	16.59	16.25	15.85	15.43	15.43	
Total Project Cost as % of BWDB Revenue Budget	23.14%	37.64%	61.51%	83.03%	98.43%	83.87%	44.84%	
GoB/Beneficiary Share as % of BWDB Revenue Budget	0.34%	1.91%	5.42%	9.39%	12.84%	13.26%	9.74%	
Total Recurrent Costs as % of BWDB Revenue Budget	0.28%	6.47%	12.42%	19.09%	26.56%	30.00%	32.58%	

Annex 10: Safeguard Policy Issues

Bangladesh Water Management Improvement Project

209. The Project triggers five safeguard policies, including environment assessment, natural habitats, pest management, involuntary resettlement, and project on international waterways all of which will be addressed under the Project, Environmental Management and Social Action Plans.

Environmental Assessment (EA OP/BP/GP4.01)

210. **EA and EMP Preparation.** The environmental objective of the project is to ensure the integration of environmental assessment and impact mitigation activities into the integrated water management system, including the rehabilitation and O&M of FCD/FCDI at the levels of MOWR, BWDB, WARPO and community organizations. This objective will be achieved through the institutionalization and implementation process of participatory scheme management cycle. The specific environmental needs for each individual scheme sub-project will be determined and mitigated through the participatory screening and designing process which includes both the social and environmental assessments.

(i) **Key environmental issues** in this project arise from the rehabilitation of the embankments or polders and the impact it has on the water flow. Since the purpose of this project is for the rehabilitation of the existing structures and does not include any new construction, there are no major environmental impacts foreseen. The short-term impact of the actual reconstruction/rehabilitation phase is temporary water pollution. The longer-term impacts that may occur due to mismanaged operation of the facilities are disruption of fish migration and habitat, loss of floodplain habitat for other aquatic species, water logging in polder areas, and increased sedimentation or erosion. The increased agricultural productivity may bring about greater pesticide use and the mismanagement of the irrigation canals may disrupt water flow and create polluted pools of water.

(ii) **Relevant concerns and actions to mitigate these risks** are considered as an integral part of the Participatory Scheme Management cycle framework which includes both an overall screening process and an environmental assessment and mitigation mechanism for each individual scheme that will be rehabilitated. The detailed methodology in which the management will take place is outlined in the overall Environmental Management Framework and the Environmental management plan, manual and assessment guidelines for individual FCD/FCDI schemes.

(iii) **EA categorization** for this project is considered **category B** since the purpose of this project is to assist the MOWR, BWDB, WARPO and the community organizations to improve their institutional and technical skills in the integrated management of water resources. The other factors that were taken into account are: (i) the project activities are not expected to have any significant adverse environmental impacts; (ii) the physical works supported by the project are all rehabilitation/improvement works (as contrasted with new construction) of existing FCD/FCDI schemes; and (iii) the rehabilitation/improvement program would specifically mitigate any negative impact of past water sector investments, and would improve fisheries, bio-diversity, in-stream ecology, wetlands management, navigation, and degradation due to saline water intrusion.

211. ***Main features of the EMF and EMP:*** This project addresses Environmental Management as an integral part of the entire implementation of the project. The Environmental Assessment and Management have been embedded into the Participatory Scheme management cycle (PSM) process. The

assessment and management guidelines to be followed during the implementation of the PSM have been prepared in two separate documents. The BWDB will primarily be responsible for the Environmental Management Framework (EMF) and Environmental Management Plan (EMP) implementation in the project. An Environment Committee (consisting of representatives from BWDB, the Department of Environment and WARPO) will be constituted to oversee the individual EMP preparations and will also facilitate inter-agency coordination and provide overall guidance for the EMF/EMP implementation.

- *Environmental Management Framework for the overall project*: This document covers the overall assessment and management of the project as a whole, the potential cumulative impacts of rehabilitation of the embankments to the regional hydrological regime, and the institutional mechanisms for MOWR, BWDB and WARPO to ensure the environmental considerations, prevention, mitigation and management aspects will be operationalized and institutionalized. The mitigation measures to be incorporated in the design of the rehabilitation will be clearly stated in the contractual documents. The community Water Management Organizations (WMO) will determine the responsibility for their management of the water resources.

- *Environmental management plan, manual and assessment guidelines for individual water projects*: EMP would primarily be in the form of a screening and mitigation framework (customized for each type, location and scale of activity) and corresponding institutional framework, to be in place during selection, implementation and monitoring and evaluation of the diverse investments proposed in the project. When a potential impact is identified during the assessment, the EMP will include prevention and mitigation activities that can be incorporated in the design and plan of the rehabilitation and integrated water management process. Detailed case studies will be developed in order to guide the process of the EA and associated EMP preparation. The manual and guidelines identify the possible environmental impacts and provide simple, easy to follow plans, guidelines and manuals that can be used by the communities and field staff to assess and manage their respective schemes. Each environmental impact indicator is matched with corresponding the mitigation measure to facilitate implementation.

212. ***Timeline and status of EA:*** The Environmental Management Framework and the Environmental Management Plan, manual and assessment guidelines for individual small and medium scale water projects have already been prepared. The EMF and parts of the community based assessment guidelines have been translated into Bengali and distributed to all stakeholders before project appraisal.

213. ***Consultation with Stakeholders:*** Key stakeholders include institutions such as MOWR, BWDB, WARPO, LGED, and NGOs as well as farmers, fishermen, boatmen, and the many other stakeholders who are dependent on or impacted by the FCD, FCD/FCDI and coastal embankment infrastructures. The IUCN consultants that prepared the EMF/EMP met numerous times with the Environment committee members and conducted Focus Croup Discussions with the water users at the local level and the local BWDB staff. Case studies were conducted in seven FCD/FCDI schemes to determine the effectiveness of the procedures in the manual and guidelines.

214. ***Monitoring and Evaluation of the impact of the Project on the environment:*** The EMF/EMP procedures will be applied throughout the entire project through its integration into the PSM process at the stages of screening and identification of schemes, implementation and monitoring. Therefore, the screening, drafting, implementation and monitoring of the EMP will be conducted by or with the stakeholders.

Natural Habitat (OP/BP/4.04)

215. The construction works are expected to be limited to the areas with FCD and FCDI schemes, however, the project screening consultants would screen any possible affects on the natural habitat during the design and propose any mitigation measures that may be necessary. During constructions the M&E consultants would monitor and ensure that proper EMP actions are incorporated in the construction contracts and in the Project.

Pest Management (OP4.09)

216. The Project is not supporting the use of pesticides. There is a remote possibility that more reliable functioning of FCD and FCDI schemes may result in higher use of chemicals and pesticides. Therefore, policy in Pest Management (4.09) is triggered. The M&E consultants would monitor this aspect and if necessary funding would be provided from the strategic studies component to implement proper measures for implementation of a pest management plan.

Involuntary Resettlement (OP 4.12)

217. The major physical works, rehabilitation/ improvement of the FCD/FCDI schemes, are likely to invoke OP 4.12 on involuntary resettlement. Although most of the civil works are expected to be carried out on BWDB's own lands, it is assumed that works on some embankments may require use of private lands. It is also possible that the civil works may temporarily affect people who may have been using the embankments, especially the sections used as roads and pass through villages, to live on and/or make a living from. According to the project implementation plan, the magnitude of displacement from private and public lands will only be known when the WMOs would be sufficiently strengthened to participate in selection of FCD/FCDI schemes, and planning and implementation of the rehabilitation/improvements. However, based on knowledge, field investigation of some FCD/FCDI schemes and the general nature of anticipated rehabilitation/improvement works, it is assumed that the physical works are highly unlikely to cause any significant adverse impacts, as the works will largely remain limited to the lands already used for the embankments. Use of private lands, wherever needed, is generally expected to be in strips along the existing facilities. Land requirements are also likely to be limited where embankments, if any, are to be retired, and the associated impacts are unlikely to be severe because of the linearity of the embankments.

218. ***Impact Mitigation:*** The specifics on land acquisition and associated impacts will only be known in the second or third year after the WMOs are reorganized/strengthened to participate in FCD/FCDI selection, and planning and implementation of the rehabilitation/improvement works. BWDB has prepared a Resettlement Policy Framework (RPF) by following the Bank's OP 4.12 on Involuntary Resettlement. Both substantially and experientially, the RPF is based on IDA-funded and BWDB-executed River Bank Protection Project (Cr. 2791-BD) and Coastal Embankment Rehabilitation Project (Cr. 2783-BD), and the Rural Transport Improvement Project (Cr. 3791-BD) which has also used a 'framework approach' and went into implementation recently. This RPF will provide the basis to prepare separate Resettlement Action Plans (RAPs)[1] for phased physical works packages as the batches of FCD/FCDI schemes are selected for rehabilitation/improvement. *These phased RAPs will be subjected to Bank review and approval before the civil works packages are accepted for Bank financing.*

[1] With this RPF in place, a typical phase-wise RAP will basically record the required amount of additional lands, if any, and identify the impacts and impacted landowners and others in the selected FCD/FCDI schemes; review the mitigation measures with respect to any impacts unforeseen in the RPF; work out the budgets for land acquisition and resettlement; and the RAP implementation schedules.

219. The Resettlement Policy Framework contains:

(a) A **land acquisition framework** outlining the principles and guidelines to be used to acquire lands from private ownership and resume public lands from authorized and unauthorized private uses, and to compensate the owners for their losses;

(b) A detailed **policy matrix** defining the compensation/entitlements, entitled persons, application guidelines and institutional/organizational responsibility to implement the policies ;

(c) An **organizational framework** to plan and implement resettlement activities in general, and in particular to identify the scheme-specific impact details, as well as to perform the process tasks related to policy revisions, budgeting, work planning, and the like;

(d) A **grievance redress procedure** to deal with potential disputes and complaints related to land acquisition and planning and implementation of the resettlement activities;

(e) A **planning process** defining the tasks leading to preparation of the FCD/FCDI specific land acquisition plans, identification of the impact details, preparation of resettlement budgets and time-schedule for RAP implementation, etc; and

(f) A **monitoring and evaluation framework** to be used for land acquisition and preparation and implementation of the phase-wise RAPs.

220. The RPF will provide the basis to prepare separate RAPs for each yearly civil works program, and will contain the details of the impacts and impacted persons, budget and the implementation time-frame. The RAPs will be subjected to review and approval by IDA.

221. ***Stakeholder Consultation and Participation:*** One of the key project objectives is to enhance and sustain stakeholder participation in water resources management, including certain functions that would be transferred to the local communities. The Participatory Scheme Cycle Management (PSM) has been designed to ensure WMO and other local stakeholder participation starting with selection, social assessment and screening of the FCD/FCDI schemes, and planning and implementation of the rehabilitation/improvement works to monitoring and evaluation. The Guidelines for Participatory Water Management (GPWM) provides the operational framework to include local stakeholders in water resources management and participation of various categories of stakeholders (such as farmers, fishermen, small traders, craftsmen, boatmen, landless people, women and NGOs). The proposed RPF also requires direct involvement of the WMOs in land acquisition and planning and implementation of all resettlement activities. The project would support implementation of participatory water management using the GPWM. The PSM and GPWM are largely based on the following:

- A Rapid Water Management Assessment of about 29 systems throughout the country that was completed in April 1997, under the Systems Rehabilitation Project by multi-disciplinary teams. These systems included irrigation, and flood control and drainage schemes and their combination. Extensive consultations were carried out in these schemes with the various stakeholder groups (farmers, professional and other fishermen, investors in shrimp and salt production, leaseholders of water bodies, boatmen, traders, pump owners, Union Parishad members, and BWDB local staff responsible for O&M), to understand their stakes and needs, incidence and source of conflicts, critical aspects of water management and options thereof, as well as the prevailing decision-

making authority and process causing beneficial and adverse impacts on various uses and user groups.

- During project preparation, scoping sessions were carried out with various stakeholders groups to better understand users' perspective on rehabilitation/ improvement needs, potential problems and solutions, and arrangements for project implementation and operation and maintenance. Supplementary inputs were also used from similar projects being executed by BWDB and other GOB agencies with financial assistance from donors like CIDA and ADB.
- Two NGOs (ASA and IUCN) have been a part of the project preparation consultants' team. IUCN has been engaged by BWDB to prepare the environmental aspects (Environmental Assessment/Environmental Management Plan) of the project.
- A workshop was held to provide information to, understand views of, and discuss collaboration arrangements with various stakeholders on the project. Consultation and discussion sessions will also be held during the social and environmental assessment and RAP and EMP preparation processes.

222. ***RAP Preparation and Implementation:*** Assisted by the TA consultants, BWDB will prepare and implement the yearly RAPs. Unlike the previous projects, where separate management structures were created for each new project, implementation of WMIP will be mainstreamed in the BWDB's organizational structure. A Program Coordination Unit (PCU) headed by a Project Director (PD) will coordinate the various project activities, and an inter-ministerial Project Steering Committee (PSC), chaired by the Secretary, Ministry of Water Resources (MOWR), will attend to any implementation issues which may involve other ministries. Among other responsibilities, the PD will ensure that the engineering designs are done in time identifying the locations and magnitudes of the land requirements, and that the acquisition plans are prepared and approved by MOWR. The PD will also oversee preparation and implementation of RAPs for the yearly work programs, and will ensure that all compensations/entitlements are paid to the landowners and other affected persons before the lands are handed over for civil works.

223. In view of its institutional development and local capacity building, 57 new positions have been proposed, of which seven will be positioned at zonal offices as Deputy Director of Community Development (DDCDs) and the 50 will be working as Community Organizers (COs) at division levels. BWDB would utilize the services of the new recruits (DDCDs and COs) and the relevant TA consultants to plan and implement the resettlement activities, including those related to land acquisition. For this purpose, the DDCDs and COs will be trained to perform the process tasks required for RAP preparation and implementation, in addition to those needed for community capacity building for water management and income generation activities. In the field, the focal points are the BWDB Executive Engineers (XENs – in the divisions) who will directly coordinate all activities related to land acquisition and the RAP preparation and implementation activities, and oversee the activities of DDCDs and COs who will be working more closely with the WMOs. The XENs will be closely assisted by the TA and consultants.

Consultation and Disclosure

224. During project preparation, consultation and scoping sessions were carried out with various stakeholder groups in selected schemes to better understand the users' perspective on rehabilitation/improvement needs, problems and potential solutions, and arrangements for project implementation, and operation and maintenance. Consultation and discussion sessions were held during the Environmental Assessment/Environmental Management Plan preparation process wherein safeguard policies of the Bank relevant to the project were explicitly elaborated. A workshop was also held to provide information to, understand views of, and discuss collaboration arrangements with, various

stakeholders on the project. Extensive consultations with stakeholders, who may be either adversely or positively impacted from an environmental viewpoint, were held during the preparation of the EMF and EA/EMP guidelines. The EMF recommendations were summarized in Bengali and distributed during stakeholder consultation workshops.

225. In line with the provisions of PSM cycle, the RPF requires direct involvement of WMOs, affected landowners and other stakeholders in all aspects of the land acquisition and resettlement processes, including compensation, grievance redress, implementation, and monitoring and evaluation. Phase-wise/yearly RAPs will likewise be prepared with direct participation of WMOs and landowners in process tasks like census, determination of replacement value/market prices of affected assets, and implementation and monitoring of the mitigation measures.

226. Draft EMF and RPF were put on public display by Bangladesh Water Development Board (BWDB) on February 19, 2004 in nine places all over the country including the Department of Environment for review and comments by the individuals, community organizations, NGOs and others. Summeries were translated into Bengali. EMF and RPF were submitted to the World Bank's InfoShop for disclosure on February 9, 2004.

Annex 11: Governance and Accountability Plan

Bangladesh: Water Sector Management Project

Introduction

227. Bangladesh is a "high risk" country requiring special measures to guard against governance and corruption issues during project implementation. The Government of Bangladesh is fully committed to the Project and its proper and most effective implementation because improvement in water resources management is crucial for the economy and development of the Country. To mitigate and guard against governance, corruption and fraud risks and improve transparency and accountability in implementation of project activities several measures have been incorporated in the Project. These include:

- The overall design of the Project itself leading to transparency in water management.
- Improved Institutional Arrangements for Project implementation.
- Measures in management of Procurement, Civil Society oversight and remedies.
- Improved Financial Management Procedures.
- Enhanced Supervision and Surveillance arrangements

Project Design

228. The Project is designed to improve the governance in the water sector in the long run and supports the institutional reform program that brings more transparency and accountability in water distribution. The approach is to empower the water users' the Water Management Organizations to takeover the water management in FCD/FCDI schemes. This arrangement would be finalized through a formal management transfer agreement between the Government and WMOs. The project supports transformation from a fully government owned/managed system to a decentralized system with participatory management. In particular, the WMOs would act as countervailing power to the institutions at the upper tiers of the system demanding better governance at all levels. This would bring transparency and accountability in the operation and management of FCD and FCDI schemes as well as in planning, prioritizing, designing and implementing of the project activities. These aspects are described in detail in the PAD earlier.

Implementation Arrangements

229. Institutional arrangements for project implementation are designed with proper checks-and-balances in implementation of project activities, supervision, monitoring and redressal of governance/corruption issues in case they arise during project implementation. As indicated in Annex 6, BWDB and WARPO would be the primary implementing agency for project implementation under the oversight of the Ministry of Water Resources (MOWR) and Project Steering Committee (PSC). The M&E consultants would also over see project implementation status.

230. Beneficiaries through their WMOs would be involved in planning, design, and implementation stages of the project bring higher level of accountability in implementation of project activities. They would implement smaller contracts for improvement of FCD and FCDI Schemes,

Measures in Procurement

231. **Special Measures for Dealing with Procurement Risk.** These are given in the Annex 8 in more detailed and listed below for completeness:

(i) Appointment of a Procurement Panel, reporting to MOWR, to oversee the procurement process under the Project and the implementation process. This is a major step in bringing transparency and accountability in implementation of the Project. Details are given in Annex 8 on Procurement.
(ii) Enhanced community participation in implementation;
(iii) Establishment of System of handling complaints;
(iv) Establishment of Procurement website;
(v) Establishment of a procurement information and documentation system, filling system and a database; and
(vi) Several other measures listed in Annex 8.

232. **Procurement Packaging.** Project works, goods and services to be procured under the Project have been packaged into larger packages, or groups of contracts wherever possible. It is usually smaller contracts and involvement of small contractors without much performance record which creates problems in management also requiring more resources for supervision and contract management. The packaging would help attract good and qualified contractors with track record in performance, contract implementation, financial standing and business practices. The packaging would make procurement management and supervision much easier allowing detection of any irregularities in procurement as well as implementation of the contracts. Details are given in Annex 8.

233. **Enhanced Disclosure.** As mentioned above the Project would have a Procurement Website showing the status of procurement actions, bidding documents, evaluation and award, and other information listed in Annex 8. In addition an enhanced disclosure process described below would be followed:

(i). The implementing agency (BWDB, WARPO) will provide the following information in the PIP, the Procurement website, and in the bidding documents:

"The contact point for complaints related to the Water Management Improvement Project:

To : Director General, BWDB/Secretary Ministry of Water Resources

Tel: Fax: e-mail:

To: Team Leader of Project Management Consultant/Agent

Tel: Fax: e-mail:

To the World Bank Fraud and Corruption unit
Email: investigationshotline@worldbank.org
Website: http://www.worldbank,org/integrity

If one prefers to remain anonymous, s/he may wish to make use of a free email service (such as Hotmail or Yahoo) to create an email account using a pseudonym. This way, it would be possible to correspond with the complainant, when necessary, to seek clarification or additional information. This would be helpful for in pursuing the allegations. Through a Fraud and

Corruption Hotline hired by INT for this purpose: (24 hours/day; translation services are available).

Toll-free: 1-800-83 1-0463
Collect Calls: 704-556-7046

Mail:
PMB 3767, 13950 Ballantyne Corporate Place
Charlotte, NC 28277, United States"

(ii). Each annual Work Program and the Procurement Plan will be published on the official Procurement Website and made available to the public as a part of the public disclosure policy of this project.

(iii). MOWR/BWDB will publish a quarterly newsletter on the official Procurement Website including information concerning the list of contracts, implementation progress, project-related workshops and the number, typology and status of complaints for each location. BWDB will send the quarterly newsletter to the civil society (e.g. WMOs, their council members, NGO) forum in hardcopy or through an electronic mailing system.

(iv) Guidelines on disclosure of information to the public on project and procurement activities shall be incorporated in the Project Implementation Plan (PIP) and will include the following key actions:

(a) The BWDB/WARPO will and the World Bank may make publicly available, promptly after completion of a mid-term review of the project carried out in accordance with the creditagreement, the mid-term review report and the aide-memoire prepared for this purpose. BWDB/WARPO will also post this on the official website within 2 months of the completion of the mid-term review.

(b) The BWDB/WARPO will and the World Bank may make publicly available promptly after receipt all final audit reports (financial or otherwise, and including qualified audit reports) prepared in accordance with the credit agreement and all formal responses of the government in relation to such reports. BWDB will also post this on the BWDB official (Procurement) website within 1 month of the report being accepted as final.

(c) The BWDB/WARPO will and the World Bank may:

- Make publicly available promptly after finalization all annual Procurement Plans and schedules, including all updates there to; BWDB/WARPO will also post this on the official website within one month of the end o f the fiscal year.
- Make available to any member of the public promptly upon request all bidding documents and requests for proposal (this provision does not include actual bids and proposals) issued in accordance with the procurement provisions of the credit agreement, subject to payment of a reasonable fee to cover the cost of printing and delivery. Each such document will continue to be made available until a year after completion of the contract entered into for the goods, works or services in question.
- Make available to any member of the public promptly upon request all shortlists of consultants.
- Actively encourage representatives of civil society groups to attend the public bid openings and other key procurement steps. Representatives of civil society will be included as observers and sign the attendance list for the Procurement/Selection process.

For works: The Procurement Panel (PP) will: (a) manage the opening of bids, and certify the Minutes of bid opening of bids (b) send one copy of the bids (after the bid opening) to the BWDB/WARPO within 24 hours; and (c) keep in a safe place one copy of the sealed bids (after bid opening) and make available the copy of the bids and the minutes of the opening of the bids to the PSC and World Bank.

For consultants services: Procurement Panel would carry out the recruitment of the consultants in line with TORs described in Annex 8. PP would carry out the opening of technical and financial proposals, and certify the Minutes of Opening of technical/financial proposals, also keep in a safe place one copy of the technical proposals submitted by each consultant (once they are open), the sealed financial proposals (before they are open), and one copy of the financial proposals submitted (after they are open).

In line with the Procurement Guidelines, within two weeks of contract award (Bank's no objection) publish in UNDB online, dgMarket, on Procurement website, and send to those who submitted bids, contract award information identifying the bid and lot numbers and the following information (a) name of each bidder who submitted a bid (b) bid prices as read out at the bid opening, (c) name and evaluated prices of each bid that was evaluated; (d) name of bidders whose bids were rejected and the reason for their rejection; and (e) name of the winning bidders, and the price it offered, as well as the duration and summary scope of the contract awarded.

Make available, promptly upon request by any person or company, a list of all contracts awarded in the three months preceding the date of such request in respect of a project, including the name of the contractor/supplier/consultant, the contract amount, the number of bidders / proposes, the procurement method followed and the purpose of the contract.

The Procurement/Project official website would provide monthly updated information on project activities. This information would include, inter alia: nature of contracts awarded (estimated cost, scope of works, contractor details); current estimate o f the progress of implementation (e.g. gross estimate of completion as a percentage o f works to be carried out); other project-related activities such as workshops; data concerning complaints and remedial actions.

234. **Civil Society Oversight.** BWDB will actively encourage representatives of WMOs in particular and civil society groups in general to attend public bid openings and other key procurement steps. Civil society observers may be invited from local universities or other independent institutions. Experience in other projects strongly suggests that implementing agency should not control the selection and briefing of such representatives, therefore a third-party such as PP, acting on behalf of the BWDB, may be required to perform these roles. Details concerning the selection and briefing of representatives must be recorded at the national level.

235. The BWDB will establish a mechanism whereby the WMOs, media and civil society groups can become involved in monitoring the progress of the project including implementation. This mechanism will include regular sharing of information with the media. Copies of press clippings (etc.) will be filled and entered into the database. Regular (e.g. annual) Accountability Meetings will be held to enhance accountability and sharing of information. The first of these will occur at the BWDB's Circle/Zone level, before procurement of contractors or service providers, so that any WMOs, civil society and community representatives required for the procurement processes (etc.) can be selected in a transparent manner. Each meeting must be properly organized and the agenda widely distributed amongst interested parties.

236. **Mitigation of collusion risks.**

Works contracts. BWDB will use "semi" e-procurement and publish on its official website for all works contracts:

- all Invitations to Bid,
- bidding documents and drawings,
- clarification of bids,
- bid opening minutes,
- information on contract award.

Manual system will continue to run in parallel for contractors who wish to use it.

- Bidding documents will be available for download on-line.
- PP to certify the documents are on-line prior to the issuance of the Invitation to Bid and remain available to bid opening.
- Pre-qualification for ICB contracts more than US$10 million
- List of bidders remains confidential until bid opening.
- The specifications shall be defined clearly in the bidding documents. Clarifications can be sought through written correspondence and replies will be sent to all bidders. Appropriate guidelines for providing guidelines for this will be prepared. Any changes due to clarifications etc, would be valid only after amendment to the bidding documents are issued.
- Bids to be kept under control of PP during the "Bid Submission Period".
- Two sealed copy of the bids submitted to be kept by PP, which will send one sealed copy to BWDB within 24 hours to be kept by PP.
- PP to immediately check the bids for any signs of collusion and to certify the minutes to be submitted to BWDB
- Bid Evaluation Report (BER) to be complete and submitted to the Bank within 4 weeks. BER would be prepared by PP to be submitted to BWDB, and copy to the PP and PSC.
- Bids awarded within original bid validity period. Bank may only provide only one extension of bid validity period or for cumulatively less than 8 weeks under special circumstances.
- No rebids. If needs a rebid due to corruption and/or collusion, Sub-project is not eligible for financing. Since Collusion is an offense appropriate actions would be taken against bidders found in collusion, at the minimum such bidders would be disbarred from further bidding under the Project and all contracts awarded by BWDB.
- BWDB to use FIDIC arrangements with the independent supervision by project consultants having responsibility as the "Engineer" or Project Manager in the works contractBWDB/consultants/PP will track the following indicators from the bill of quantities of contracts and report in the quarterly Progress Report: bid price of earth work, concrete, steel, tree planting.

237. *Consultant services.* This is expected to apply to key consulting contracts for consulting services. Use of "semi" e-procurement and publish on its official website for all consultant contracts

- Shortlisting: New process for shortlisting.
- Request for Proposals. Only the CVs of key personnel will be evaluated up to about 10 staff. (Currently up to many CVs are evaluated making this a very mechanical giving random results).
- RFP would indicate the number of staff changes the consulting firm would be allowed make in the key staff position during project implementation without any penalty. The number of changes may vary from assignment to assignment depending upon its nature and duration. Also indicate the penalties for exceeding the limits in changes.

NCB procedures. Modification to the NCB procedure as given in Annex 8.

Advertisement of bids. The BWDB will employ a standard agreed format (minimum column size=10) of advertisement and place in a nationally circulated newspaper, on the Procurement official website, on the UNDB on-line and dg Market websites.

238. Guidelines for preparation of specifications/selection criteria in the Bidding Documents/request for proposal will be prepared to ensure compliance with Bank guidelines. This will include suggestions to conduct simple surveys on available products in the market and the alternative o f hiring consultants for procurement o f works/services to define the specification / terms of reference.

239. Guidelines to prepare owner estimates, particularly for consultancy work will be defined. This will include the requirement to provide a detailed breakdown of estimates, suggestions to conduct simple market price surveys, maintaining data base of survey results and previous purchases, which will be accessible to all Implementing Units.

A narrative justification of each shortlisting will be required for proposing shortlists for prior review contracts.

The reports/records of public openings for all prior review contracts shall be submitted promptly to the Bank.

The PP will provide guidelines and training to BWDB on how to conduct clarifications/negotiations that are in line with the Bank guidelines.

239. ***Mitigation of Forgery and Fraud Risks.*** This would include, but not limited to the following actions:

- BWDB would have a qualified procurement specialist/officer and financial management specialist/officer.
- Filing system would be maintained as outlined in Annex 8.
- Timelines for procurement decisions will be agreed between BWDB and the Bank to establish service standards and avoid procurement delays to reduce opportunities for corruption.
- The BWDB establish procedures for regular review of accounting reports including all supporting documents (Le. travel report, receipts, etc.).
- Guidelines for submission of complete documentation required for requests for payments by Project consultants and BWDB.

240. The BWDB with the help of private auditors shall conduct regular interim audits which will include review of procurement process and procurement results (end use checks, quality and quantity of acquired goods/works/services, verification of payments, price comparison between contract price and market price etc.)

241. The BWDB shall delegate the authority for supervision of works by stating clearly and in detail the bidding/contract document the authority for Engineer's.

242. ***Complaint Handling System.*** A complaint handling mechanism, which includes maintaining a project complaint log and filing to monitor status of follow up of each received complaints will be established by the each implementing agency, BWDB and Procurement Panel (PP) with an oversight by

MOWR and PSC. The mechanisms will include provision for follow up investigations of substantial complaints by the internal Auditors, or third party audit to ensure independency and reliability of the system.

All complaints received shall be responded within **7** days of receipt, with copy to MOWR, PSC and World Bank.

All complaints handling component will be included in the website to be established for the project. This will be updated on a monthly basis.

For the complaint mechanism to function, it is essential that information concerning the alternative conduits for complaint (telephone hotline', dedicated email address and PO Box) is widely disseminated.

Strict procedures to ensure anonymity of informants will be enforced.

Recording and appropriate referral of all incoming complaints will be undertaken by the Implementing Agency with each case generating an automatic, standard format report to the Bank.

Tracking of the status of investigations and measures taken will be reported in monthly reports to management and the Bank. Complaints deemed possible serious infringements may be further investigated by the Bank.

243. **Sanctions and Remedies.** Remedies for non-compliance with agreed time-lines for procurement decisions/service standards will be established and will include the following remedies:

- An Evaluation report must be submitted to the Bank within four weeks of bid/proposal submission. Failure to do **so** will be deemed to be a failure of due diligence; timely and appropriate action acceptable to the Bank will be required to remedy the situation.
- Request for extension of bid validity for **8** weeks beyond the original validity will quire the Bank's prior approval. Bank will not give such no objections.

244. The BWDB will establish the remedial actions and sanctions for cases of fraud and corruption that are reported and for which evidence is found. This will include sanctions to staff proven to be involved in such cases.

245. In all contracts, evidence of fraud, corruption, collusion and coercive practices will result in termination of the relevant contract, possibly with additional penalties imposed (such as fines, blacklisting, etc. in accordance with Bank and/or Government regulations and may result in suspension of disbursement of funds with respect to that contract. Any entity that is found to have misused funds may be excluded from subsequent funding. Information regarding such cases, where lessons are learned and funds are retrieved, will be widely disseminated.

246. Disbursement to any given contract/location can be suspended or stopped completely, if cases of corruption are not dealt with effectively.

Financial Management.

247. **Governance and Fiduciary Assurance:** Financial Management arrangements are provided in detail in Annex 7. The key additions are: a) BWDB and WARPO should ensure that adequately qualified and experienced financial management staff is available on a full time basis and through-out the entire project implementation period, for overseeing the financial management and disbursement of the project

and strengthening its financial management unit; and b) annual audit by an independent private auditor in addition to the Supreme Audit Institutions audit that would also cover audit and performance audit in addition to the financial audits.

Supervision and Surveillance.

248. Supervision arrangement for this project in general and in procurement and financial management in particular, is very extensive. The prior review thresholds are selected carefully to screen all types of contracts initially in first 18 months of project (see Annex 8). First contract of all type, goods, consultancy, works, etc. would be reviewed regardless of their value in order to start a good practice procurement and contract management. With the proposed contract packaging, and prior review threshold levels, a major part of contracts would be awarded based on prior review basis. The post reviews would be carried out by qualified staff in procurement and contract management covering 15-20 percent of such the contracts. Post reviews would be done quarterly for the first 18 months.

249. In addition, the MOWR, Procurement Panel and consultants would carry out extensive supervision on the implementation of contracts. An independent team of M&E consultants would review the overall progress in implementation and inform about any issues implementation of contract on the ground to PSC and the World Bank. Bank supervision missions would more frequent in the start of the project and staffed with qualified staff in all disciplines, including procurement, contract management, and financial management.

Annex 12: Project Preparation and Supervision

Bangladesh Water Management Improvement Project

1. Timeline:

Activities	Planned	Actual
PCD review	3 August 1998	3 August 1998
Initial PID	3 August 1998	8 August 1998
Initial ISDS	3 August 1998	13 August 1998
Appraisal	10 February 2004	10 February 2004
Negotiations	November 30, 2006	11 June 2007
Board/RVP approval	March 29, 2007	September 18 2007
Planned date of effectiveness	July 31, 2007	
Planned date of mid-term review	October 2010 and 2012	
Planned closing date	June 30, 2015	

2. Key institutions responsible for preparation of the project:

Ministry of Water Resources, GOB, Bangladesh
Bangladesh Water Development Board, Bangladesh
Water Resources Planning Organization, Bangladesh

3. Bank staff and consultants who worked on the project included:

Name	Title	Unit
Masood Ahmad	Task Team Leader (Lead Water Resources Specialist)	SASAR
S.A.M. Rafiquzzaman	Irrigation Engineer	SASAR
Mohinder S.Mudahar	Economic Adviser, Consultant	SASAR
Ohn Myint	Senior Irrigation Engineer (Consultant)	SASAR
Mona Sur	Economist	SASAR
T.K. Balakrishnan	Senior Financial Management Specialist	OPCFRM
T. K. Barua	Sociologist (Resettlement)	SASES
Shankar Narayanan	Senior Social Development Specialist	SASES
Yuka Makino	National Resource Management Specialist	SASES
Zafrul Islam	Senior Procurement Specialist	SARPA
Burhanuddin Ahmed	Senior Financial Management Specialist	SARFM
Shakila Parvin Khan	Program Assistant	SACBD
Tarak Chandra Sarker	Program Assistant	SACBD
Nadia Islam	Program Assistant	SASAR
Kishor Uprety	Legal	LEGMS
Chau-Ching shen	Loan	LOAG2

4. Bank funds expended to date on project preparation:

1. Bank resources: US$845,197 (Prior about FYs:$675,000 FY04: US$150,000; FY06:$20,197)
2. Trust funds: US$551,000 (Japanese PHRD)
3. Total: US$1,396,196

Note: Project was put on hold in FY01, and preparation resumed in FY03, it was negotiated in May 2004 and then put on hold again till September 2006.

5. Estimated approval and supervision costs:

1. Remaining costs to approval: FY07: US$50,000
2. Estimated annual supervision cost: US$250,000

Annex 13: Documents in the Project File

Bangladesh Water Management Improvement Project

1. The World Bank, (June 30, 2003). Bangladesh- Country Assistance Strategy Progress Report.

2. Government of Bangladesh, (March 2003). Bangladesh: A National Strategy for Economic Growth, Poverty reduction and Social Development (I-PRSP).

3. The World Bank, (October 31, 2002). Reaching the Rural Poor: Strategy and Business Plan. Agriculture and Rural Development Department.

4. The World Bank, (2004). Water Resources Sector Strategy: Strategic Directions for World Bank Engagement. Agriculture and Rural Development Department.

5. Government of Bangladesh. (December 1998). Bangladesh: National Water Policy.

6. Government of Bangladesh, (December 2001). Bangladesh: Draft National Water Management Plan. Water Resources Planning Organization.

7. Government of Bangladesh, (2000). Bangladesh: Guidelines for Participatory Water Management.

8. Government of Bangladesh, (March 2000). Final Report Water Sector Improvement Project. Bangladesh Water Development Board.

9. Government of Bangladesh, (June 2003). Final Preparation Study Report Water Management Improvement Project. Bangladesh Water Development Board.

10. Government of Bangladesh, (March 2004). Environmental Management Framework (Water Management Improvement Project). Bangladesh Water Development Board.

11. Government of Bangladesh, (February 2004). Resettlement Policy Framework (Water Management Improvement Project). Bangladesh Water Development Board,

Annex 14: Statement of Loans and Credits

Bangladesh Water Management Improvement Project

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P098146	2008	Public Procurement Reform Project II	0.00	23.60	0.00	0.00	0.00	23.76	0.00	0.00
P102305	2007	Avian Flu Preparedness	0.00	16.00	0.00	0.00	0.00	16.10	0.00	0.00
P098273	2006	Local Governance Support Project	0.00	111.50	0.00	0.00	0.00	112.63	0.90	0.00
P089382	2006	Investment Promotion Financing Facility	0.00	50.00	0.00	0.00	0.00	47.84	0.00	0.00
P074841	2005	HNP Sector Program	0.00	300.00	0.00	0.00	0.00	323.49	-37.24	0.00
P074966	2004	Primary Education Development Program II	0.00	150.00	0.00	0.00	0.00	96.49	6.10	0.00
P086791	2004	Reaching Out of School Children Project	0.00	0.00	0.00	0.00	0.00	38.62	1.35	0.00
P078707	2004	Power Sector Development TA	0.00	7.10	0.00	0.00	0.00	13.80	10.05	3.17
P081969	2004	Enterprise Growth & Bank Modernization	0.00	250.00	0.00	0.00	0.00	142.90	65.42	0.00
P083890	2004	Economic Management TA Program (EMTAP)	0.00	0.00	0.00	0.00	0.00	19.37	9.44	0.00
P086661	2004	BD - Water Supply Program Project	0.00	0.00	0.00	0.00	0.00	40.04	1.75	0.00
P071435	2003	Rural Transport Improvement Project	0.00	190.00	0.00	0.00	0.00	112.61	60.48	0.00
P081849	2003	BD: Telecommunications Technical Assist.	0.00	9.12	0.00	0.00	0.00	7.07	5.13	1.59
P062916	2003	Central Bank Strengthening Project	0.00	37.00	0.00	0.00	0.00	37.09	33.00	0.00
P053578	2003	Social Investment Program Project	0.00	18.24	0.00	0.00	0.00	12.61	2.67	-2.10
P044876	2002	Female Secondary School Assis. II	0.00	120.90	0.00	0.00	31.06	22.20	35.29	-2.73
P075016	2002	Public Procurement Reform Project	0.00	4.50	0.00	0.00	0.00	0.22	-0.47	-0.47
P074731	2002	Financial Services for the Poorest	0.00	5.00	0.00	0.00	0.00	1.58	0.83	0.00
P074040	2002	Renewable Energy Development	0.00	0.00	0.00	8.20	0.00	1.78	6.83	0.00
P071794	2002	Rural Elect. Renewable Energy Dev.	0.00	190.98	0.00	0.00	0.00	74.69	32.11	-29.36
P044810	2001	Legal & Judicial Capacity Building	0.00	30.60	0.00	0.00	0.04	14.68	10.35	0.00
P050752	2001	Post-Literacy & Continuing Education	0.00	53.30	0.00	0.00	0.00	25.26	16.88	-6.12
P069933	2001	HIV/AIDS Prevention	0.00	40.00	0.00	0.00	21.98	0.71	18.30	-1.70
P057833	2001	Air Quality Management Project	0.00	4.71	0.00	0.00	0.91	1.48	1.85	-0.84
P059143	2001	Microfinance II	0.00	151.00	0.00	0.00	0.00	15.16	-9.48	0.00
P041887	1999	Municipal Services	0.00	138.60	0.00	0.00	0.68	25.87	22.63	21.98
		Total:	0.00	1,902.15	0.00	8.20	54.67	1,228.05	294.17	- 16.58

BANGLADESH
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2001	BRAC Bank	0.00	1.63	0.00	0.00	0.00	1.60	0.00	0.00

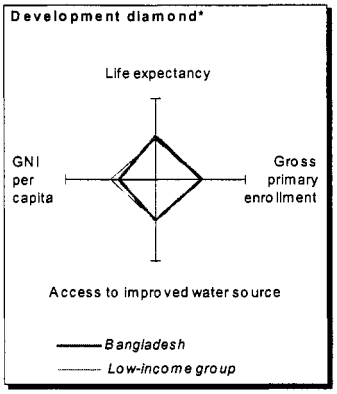
1997	DBH	1.91	0.65	0.00	0.00	1.91	0.65	0.00	0.00
1991	Dynamic Textile	0.00	0.00	0.00	1.48	0.00	0.00	0.00	1.48
	GTFP Dhaka Bank	5.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
	GTFP Eastern Bnk	2.59	0.00	0.00	0.00	2.59	0.00	0.00	0.00
2004	GrameenPhone Ltd	24.00	0.00	0.00	0.00	24.00	0.00	0.00	0.00
2006	GrameenPhone Ltd	59.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	IPDC	3.13	0.00	0.00	0.00	3.13	0.00	0.00	0.00
1998	Khulna	10.40	0.00	0.00	11.99	10.40	0.00	0.00	11.99
1998	Lafarge/Surma	35.00	10.00	0.00	0.00	35.00	10.00	0.00	0.00
2000	Lafarge/Surma	0.00	0.00	0.00	15.00	0.00	0.00	0.00	15.00
2003	RAK Ceramics	7.20	0.00	0.00	0.00	7.20	0.00	0.00	0.00
2000	United Leasing	2.57	0.00	0.00	0.00	2.57	0.00	0.00	0.00
	Total portfolio:	150.80	12.28	0.00	28.47	91.80	12.25	0.00	28.47

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2000	USPCL	0.00	0.00	0.00	0.00
1998	Khulna	0.00	0.00	0.00	0.00
	Total pending commitment:	0.00	0.00	0.00	0.00

Annex 15: Country at a Glance

Bangladesh Water Management Improvement Project

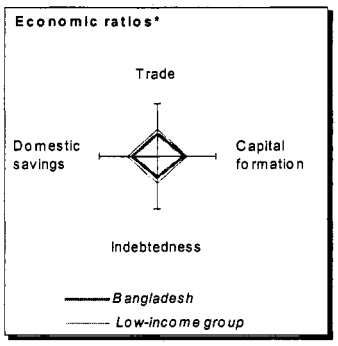
POVERTY and SOCIAL	Bangladesh	South Asia	Low-income
2006			
Population, mid-year *(millions)*	144.4	1,470	2,353
GNI per capita *(Atlas method, US$)*	480	684	580
GNI *(Atlas method, US$ billions)*	69.9	1,005	1,364
Average annual growth, 2000-06			
Population *(%)*	1.9	1.7	1.9
Labor force *(%)*	2.2	2.1	2.3
Most recent estimate (latest year available, 2000-06)			
Poverty *(% of population below national poverty line)*	50	..	..
Urban population *(% of total population)*	25	29	31
Life expectancy at birth *(years)*	63	63	59
Infant mortality *(per 1,000 live births)*	56	66	80
Child malnutrition *(% of children under 5)*	48	45	39
Access to an improved water source *(% of population)*	74	84	75
Literacy *(% of population age 15+)*	41	60	62
Gross primary enrollment *(% of school-age population)*	109	110	104
Male	107	116	110
Female	111	105	99



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

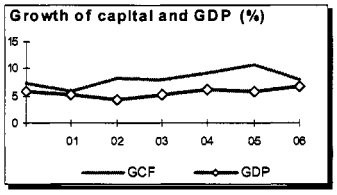
	1986	1996	2005	2006
GDP *(US$ billions)*	21.2	40.7	60.0	62.0
Gross capital formation/GDP	16.7	20.0	24.5	25.0
Exports of goods and services/GDP	5.4	11.1	16.6	17.8
Gross domestic savings/GDP	9.8	12.4	20.0	20.3
Gross national savings/GDP	16.9	20.0	25.8	26.6
Current account balance/GDP	-5.1	-3.2	-0.9	0.9
Interest payments/GDP	0.7	0.5	0.4	..
Total debt/GDP	38.1	37.7	30.6	..
Total debt service/exports	28.4	11.4	5.8	..
Present value of debt/GDP	..	..	22.0	..
Present value of debt/exports	..	..	96.5	..

	1986-96	1996-06	2005	2006	2006-10
(average annual growth)					
GDP	4.2	5.4	6.0	6.7	6.3
GDP per capita	1.8	3.4	4.0	4.8	4.5
Exports of goods and services	11.7	9.6	15.6	15.7	12.5

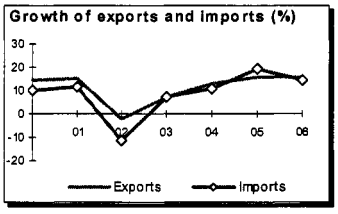


STRUCTURE of the ECONOMY

	1986	1996	2005	2006
(% of GDP)				
Agriculture	31.9	25.7	20.1	19.5
Industry	21.5	24.9	27.2	28.1
Manufacturing	14.0	15.4	16.5	17.2
Services	46.5	49.5	52.6	52.4
Household final consumption expenditure	85.8	83.2	76.4	76.1
General gov't final consumption expenditure	4.3	4.4	5.5	5.6
Imports of goods and services	12.2	18.7	23.0	24.4



	1986-96	1996-06	2005	2006
(average annual growth)				
Agriculture	2.3	3.6	2.2	4.5
Industry	6.5	7.0	8.3	9.6
Manufacturing	6.7	6.3	8.2	10.4
Services	3.8	5.5	6.4	6.5
Household final consumption expenditure	3.2	3.6	5.1	6.0
General gov't final consumption expenditure	4.0	8.3	7.8	7.9
Gross capital formation	6.7	8.6	10.7	8.0
Imports of goods and services	7.5	5.8	19.1	14.1

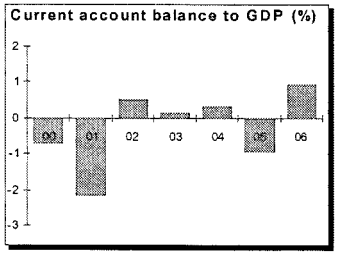


Note: 2006 data are preliminary estimates. Group data are for 2005.

*The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

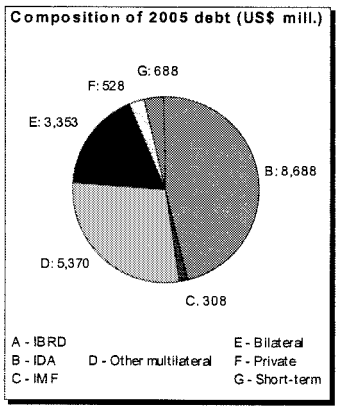
BALANCE of PAYMENTS

	1986	1996	2005	2006
(US$ millions)				
Exports of goods and services	1,043	4,437	9,750	11,718
Imports of goods and services	2,587	7,604	13,917	15,707
Resource balance	-1,544	-3,167	-4,167	-3,989
Net income	-126	55	-680	-786
Net current transfers	586	1,821	4,290	5,347
Current account balance	-1,084	-1,291	-557	572
Financing items (net)	1,212	274	624	-207
Changes in net reserves	-128	1,017	-67	-365
Memo:				
Reserves including gold *(US$ millions)*	..	1,878	2,929	3,488
Conversion rate *(DEC, local/US$)*	29.9	40.9	618	67.2



EXTERNAL DEBT and RESOURCE FLOWS

	1986	1996	2004	2005
(US$ millions)				
Total debt outstanding and disbursed	8,062	15,341	20,129	18,935
IBRD	61	46	0	0
IDA	2,450	5,713	8,895	8,688
Total debt service	448	672	671	791
IBRD	5	8	8	0
IDA	28	92	208	223
Composition of net resource flows				
Official grants	553	596	822	671
Official creditors	843	548	557	339
Private creditors	55	-30	-16	-9
Foreign direct investment (net inflows)	2	14	449	802
Portfolio equity (net inflows)	0	-117	4	1
World Bank program				
Commitments	383	168	707	500
Disbursements	337	279	615	547
Principal repayments	8	54	148	153
Net flows	330	225	467	394
Interest payments	25	45	68	70
Net transfers	305	180	399	325



BANGLADESH
WATER MANAGEMENT IMPROVEMENT PROJECT
HYDROLOGICAL REGIONS

BWDB ZONE HEADQUARTERS
HYDROLOGICAL REGION BOUNDARIES (NATIONAL WATER MANAGEMENT PLAN)
SUNDRBAN AREA

SOURCE: Institute of Water Modelling (IWM), Dhaka, Bangladesh.

88° 89° 90° 91° 92°
26° 25° 24° 23° 22° 21°

Panchagar, PANCHAGAR, THAKURGAON, Thakurgaon, GAIBANDHA, Nilphamari, NILPHAMARI, LALMONIRHAT, Lalmonirhat, KURIGRAM, Kurigram, DINAJPUR, Dinajpur, Rangpur, RANGPUR, Gaibandha, GAIBANDHA, JAIPURHAT, Jaipurhat, NAOGAON, NORTH WEST, RAJSHAHI, Naogaon, BOGRA, Bogra, CHAPAI NAWABGANJ, Chapai Nawabganj, RAJSHAHI, Rajshahi, Natore, NATORE, Sirajganj, SIRAJGANJ, PABNA, Pabna, KUSHTIA, Kushtia, Meherpur, MEHERPUR, Chuadanga, CHUADANGA, JHENAIDAH, Jhenaidah, Magura, MAGURA, Jessore, JESSORE, Narail, NARAIL, KHULNA, Khulna, SOUTH WEST, Satkhira, SATKHIRA, KHULNA, Bagerhat, BAGERHAT, Pirojpur, PIROJPUR, SOUTH CENTRAL, BARISAL, Barisal, Jhalakati, JHALAKATI, Patuakhali, BHOLA, BORGUNA, Borguna, PATUAKHALI, Sherpur, SHERPUR, Jamalpur, JAMALPUR, Mymensingh, DHAKA, MYMENSINGH, Tangail, TANGAIL, NORTH CENTRAL, Gazipur, GAZIPUR, Manikganj, MANIKGANJ, Rajbari, RAJBARI, Faridpur, FARIDPUR, Madaripur, MADARIPUR, Shariyatpur, SHARIYATPUR, Gopalganj, GOPALGANJ, Narsingdi, NARSINGDI, Brahmanbaria, BRAHMANBARIA, DHAKA, NARAYANGANJ, Narayanganj, Munshiganj, MUNSHIGANJ, Kishorganj, KISHORGANJ, Habiganj, TANGAIL, Netrakona, NETRAKONA, Sunamganj, SUNAMGANJ, SYLHET, Sylhet, NORTH EAST, MOULAVIBAZAR, Moulavibazar, HABIGANJ, Comilla, COMILLA, CHANDPUR, Chandpur, SOUTH EAST, LAKSMIPUR, Laksmipur, Feni, FENI, Noakhali, NOAKHALI, CHITTAGONG, KHAGRACHARI, Khagrachari, RANGAMATI, Rangamati, CHITTAGONG, Chittagong, EASTERN HILLS, Bandarbon, BANDARBON, COX'S BAZAR, Cox's Bazar, RIVER & ESTUARY, Bay of Bengal, MYANMAR, INDIA

DISTRICT HEADQUARTERS
DIVISION HEADQUARTERS
NATIONAL CAPITAL
DISTRICT BOUNDARIES
DIVISION BOUNDARIES
INTERNATIONAL BOUNDARIES

0 20 40 60 Kilometers
0 20 40 Miles

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JUNE 2004

IBRD 33270

BANGLADESH
WATER MANAGEMENT IMPROVEMENT PROJECT
AREAS VULNERABLE TO FLOODS AND CYCLONES

FLOOD PRONE ZONE
DROUGHT PRONE ZONE
EROSION PRONE ZONE
SUNDRBAN AREA
LIMIT OF CYCLONE PRONE ZONE

SOURCE: *Institute of Water Modelling (IWM), Dhaka, Bangladesh & National Water Management Plan (NWMP)*

88° 89° 90° 91° 92°
26° 25° 24° 23° 22° 21°

Panchagar PANCHAGAR
THAKURGAON Thakurgaon
NILPHAMARI Nilphamari
LALMONIRHAT Lalmonirhat
KURIGRAM Kurigram
DINAJPUR Dinajpur
RANGPUR Rangpur
Gaibandha GAIBANDHA
JAIPURHAT Jaipurhat
NAOGAON Naogaon
BOGRA Bogra
SHERPUR Sherpur
JAMALPUR Jamalpur
MYMENSINGH Mymensingh
NETRAKONA Netrakona
SUNAMGANJ Sunamganj
SYLHET Sylhet
CHAPAI NAWABGANJ Chapai Nawabganj
RAJSHAHI Rajshahi
NATORE Natore
SIRAJGANJ Sirajganj
TANGAIL Tangail
KISHORGANJ Kishorganj
HABIGANJ Habiganj
MOULAVIBAZAR Moulavibazar
PABNA Pabna
GAZIPUR Gazipur
NARSINGDI Narsingdi
BRAHMANBARIA Brahmanbaria
KUSHTIA Kushtia
MANIKGANJ Manikganj
DHAKA Dhaka
NARAYANGANJ Narayanganj
MEHERPUR Meherpur
RAJBARI Rajbari
CHUADANGA Chuadanga
JHENAIDAH Jhenaidah
FARIDPUR Faridpur
MUNSHIGANJ Munshiganj
MAGURA Magura
COMILLA Comilla
SHARIYATPUR Shariyatpur
CHANDPUR Chandpur
MADARIPUR Madaripur
JESSORE Jessore
NARAIL Narail
GOPALGANJ Gopalganj
KHAGRACHARI Khagrachari
LAKSMIPUR Laksmipur
FENI Feni
BARISAL Barisal
NOAKHALI Noakhali
Khulna KHULNA
Satkhira SATKHIRA
Bagerhat BAGERHAT
PIROJPUR Pirojpur
JHALAKATI Jhalakati
Bhola BHOLA
Patuakhali PATUAKHALI
BORGUNA Borguna
CHITTAGONG Chittagong
RANGAMATI Rangamati
BANDARBON Bandarbon
COX'S BAZAR Cox's Bazar

RAJSHAHI DIVISION
KHULNA DIVISION
BARISAL DIVISION
DHAKA DIVISION
SYLHET DIVISION
CHITTAGONG DIVISION

INDIA
MYANMAR
Bay of Bengal

DISTRICT HEADQUARTERS
DIVISION HEADQUARTERS
NATIONAL CAPITAL
DISTRICT BOUNDARIES
DIVISION BOUNDARIES
INTERNATIONAL BOUNDARIES

0 20 40 60 Kilometers
0 20 40 Miles

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JUNE 2004

IBRD 33269

BANGLADESH

WATER MANAGEMENT IMPROVEMENT PROJECT

REGIONAL DIFFERENCES IN RURAL POVERTY

POVERTY MEASURES IN RURAL AREAS BY REGION*:

RURAL REGIONS	HEADCOUNT
Northwest	62.8
South Ganges Floodplain	60.8
Coastal Region	37.0
North Central	49.4
Meghna Floodplain	48.8
Eastern Hills	46.6
OVERALL	53.0

SOURCE: HIES 2000.

**Bangladesh's Rural Regions Classification based on broad agro-ecological zones, hydrological regions, division boundaries and the need to limit the number of regions to get a statistically representative samples from the HIES 2000 for the region.*

NORTHWEST 62.8

NORTH CENTRAL 49.4

EASTERN HILLS 46.6

MEGHNA FLOODPLAIN 48.8

SOUTH GANGES FLOODPLAIN 60.8

COASTAL 37.0

INDIA

INDIA

MYANMAR

Bay of Bengal

Note: Meherpur upazila has been divided into two upazilas: Meherpur and Mujibnagar.

This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

UPAZILA HEADQUARTERS
DISTRICT HEADQUARTERS
DIVISION HEADQUARTERS
NATIONAL CAPITAL
UPAZILA BOUNDARIES
DISTRICT BOUNDARIES
DIVISION BOUNDARIES
INTERNATIONAL BOUNDARIES

0 20 40 60 Kilometers
0 20 40 Miles

NEPAL BHUTAN INDIA BANGLADESH DHAKA INDIA MYANMAR Bay of Bengal

JUNE 2004

IBRD 33268

IBRD 33267

BANGLADESH
WATER MANAGEMENT IMPROVEMENT PROJECT
GEOGRAPHY

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JUNE 2004

BANGLADESH

WATER MANAGEMENT IMPROVEMENT PROJECT

BWDB'S EXISTING FCD AND FCDI SCHEMES

BWDB ZONE HEADQUARTERS
FCD SCHEME
FCDI SCHEME

BWDB ZONES:
CENTRAL ZONE - DHAKA
NORTHEASTERN ZONE - COMILLA
NORTHERN ZONE - RANGPUR
NORTHWESTERN ZONE - RAJSHAHI
SOUTHEASTERN ZONE - CHITTAGONG
SOUTHERN ZONE - BARISAL
SOUTHWESTERN ZONE - FARIDPUR

SOURCE: *Institute of Water Modelling (IWM), Dhaka, Bangladesh.*

88° 89° 90° 91° 92°
26° 25° 24° 23° 22° 21°

Panchagar, PANCHAGAR, THAKURGAON, Thakurgaon, NILPHAMARI, Nilphamari, LALMONIRHAT, Lalmonirhat, KURIGRAM, Kurigram, DINAJPUR, Dinajpur, Rangpur, RANGPUR, Gaibandha, GAIBANDHA, JAIPURHAT, Jaipurhat, NAOGAON, BOGRA, Bogra, Naogaon, RAJSHAHI, CHAPAI NAWABGANJ, Chapai Nawabganj, Rajshahi, Natore, NATORE, Sirajganj, SIRAJGANJ, PABNA, Pabna, KUSHTIA, Kushtia, Meherpur, MEHERPUR, Chuadanga, CHUADANGA, JHENAIDAH, Jhenaidah, Magura, MAGURA, Jessore, JESSORE, Narail, NARAIL, KHULNA, Khulna, Satkhira, SATKHIRA, Bagerhat, BAGERHAT, KHULNA, Pirojpur, PIROJPUR, Barisal, BARISAL, Jhalakati, JHALAKATI, Patuakhali, PATUAKHALI, BARISAL, BORGUNA, Borguna, Sherpur, SHERPUR, Jamalpur, JAMALPUR, Mymensingh, MYMENSINGH, DHAKA, Netrakona, NETRAKONA, Tangail, TANGAIL, Kishorganj, KISHORGANJ, Gazipur, GAZIPUR, Narsingdi, NARSINGDI, Manikganj, MANIKGANJ, Dhaka, DHAKA, Rajbari, RAJBARI, Faridpur, FARIDPUR, Madaripur, MADARIPUR, Shariyatpur, SHARIYATPUR, Gopalganj, GOPALGANJ, Munshiganj, MUNSHIGANJ, Narayanganj, NARAYANGANJ, Sunamganj, SUNAMGANJ, Sylhet, SYLHET, Habiganj, HABIGANJ, Moulavibazar, MOULAVIBAZAR, Brahmanbaria, BRAHMANBARIA, Comilla, COMILLA, Chandpur, CHANDPUR, Laksmipur, LAKSMIPUR, Feni, FENI, Noakhali, NOAKHALI, CHITTAGONG, Chittagong, Khagrachari, KHAGRACHARI, Rangamati, RANGAMATI, Bhola, BHOLA, Bandarbon, BANDARBON, Cox's Bazar, COX'S BAZAR

INDIA (west) — INDIA (east) — MYANMAR — Bay of Bengal

DISTRICT HEADQUARTERS
DIVISION HEADQUARTERS
NATIONAL CAPITAL
DISTRICT BOUNDARIES
DIVISION BOUNDARIES
INTERNATIONAL BOUNDARIES

0 20 40 60 Kilometers
0 20 40 Miles

JUNE 2004
IBRD 33271