

Document of
The World Bank

Report No:ICR000023

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-32760)

ON A

CREDIT IN THE AMOUNT OF
US\$28.0 MILLION

(SDR 20.6 MILLION CREDIT)

TO

Bangladesh

FOR

Fourth Fisheries

March 8, 2007

Agriculture & Rural Development
World Bank Office: Dhaka
SOUTH ASIA

CURRENCY EQUIVALENTS

(Exchange Rate Effective 06/01/2006)

Currency Unit = Tk

Tk 1.00 = US\$ 0.01439

US\$ 1.00 = Tk 69.5

Fiscal Year

July 1 to June 30

ABBREVIATIONS AND ACRONYMS

ABCP	Aquatic Biodiversity Conservation Project (also referred as ARDMCS)
AET	Aquaculture Extension and Training
ARDMCS	Aquatic Resources Development, Management, and Conservation
BAU	Bangladesh Agricultural University
BC	Block Committee (in a shrimp polder)
BFRI	Bangladesh Fisheries Research Institute
BKSB	Bornal-Kola-Salimpur-Bashukhali
BWDB	Bangladesh Water Development Board
CBFM	Community Based Floodplain Management (Project)
CBO	Community Based Organization
DFID	Department for International Development (UK)
DOF	Department of Fisheries
EASRD	East Asia Rural Development (Department of the World Bank)
EOP	End of Project
ERR	Economic Rate of Return
FETC	Fisheries Extension and Training Centre
FFP	Fourth Fisheries Project
FMC	Fisheries Management Committee
FRR	Financial Rate of Return
FRSS	Fisheries Resources Survey System
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GOB	Government of Bangladesh
HRD	Human Resources Development
IBRD	International Bank for Reconstruction and Development
ICM	Implementation Completion Memorandum (for GEF-funded component)
ICR	Implementation Completion and Results Report
IDA	International Development Association
INT	Institutional Integrity (Department of the World Bank)
IOW	Inland Open Water (also referred as Inland Capture Fisheries)

IP	Implementation Progress
IRR	Internal Rate of Return
ISR	Implementation Status and Results (internal Report of the World Bank)
KPI	Key Performance Indicator
LEAF	Local Extension Agent for Fisheries
LGED	Local Government Engineering Department
MACH	Management of Aquatic Ecosystems through Community Husbandry
MIS	Management Information System
MOFL	Ministry of Fisheries and Livestock
MTR	Mid-Term Review
NCB	National Competitive Bidding
NFS	National Fisheries Strategy
NGO	Non Government Organization
NPV	Net Present Value
NS	National Shopping
PAD	Project Appraisal Document (of the World Bank)
PC	Polder Committee
PDO	Project Development Objectives
PFPT	Participatory Fisheries Planning Team (of DOF)
PRSP	Poverty Reduction Strategy Paper (of GOB)
PSR	Project Status Report (internal to the World Bank, later named as ISR)
QAG	Quality Assurance Group (of the World Bank)
QEA	Quality at Entry
QSA	Quality of Supervision
RTC	Regional Training Centre
SARPS	South Asia Regional Procurement Services
SASAR	South Asia Agriculture and Rural Development Department
SDR	Special Drawing Right
SUFO	Senior Upazila Fisheries Officer
TA	Technical Assistance
TFP	Third Fisheries Project
Tk	Taka (Bangladesh Currency)
UFO	Upazila Fisheries Officer
UK	United Kingdom
ha	Hectare

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Bangladesh Fourth Fisheries

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1. Project Context, Development Objectives and Design

(this section is descriptive, taken from other documents, e.g., PAD/ISR, not evaluative)

1.1 Context at Appraisal

(brief summary of country and sector background, rationale for Bank assistance)

The Bank's mission was to help Bangladesh reduce poverty by promoting rapid, employment-creating economic growth and intervention to directly assist the poor. The goal was clearly articulated in Bangladesh Rural Development Strategy and the Bank's Country Assistance Strategy (CAS) with respect to rural development. The CAS update aimed at accelerating agricultural growth and rural development and strengthening linkages between agriculture and non-agriculture development to address the needs of the poor. At the rural sector level, this goal was to be achieved through faster rural and agricultural development.

A large number of very poor people depend on fishing for nutrition and income. The contribution of the sector to national food supply and Gross Domestic Product (GDP) needed to be optimized in order to support economic growth and employment. At appraisal, the total fisheries production was about 1.3 million tons, of which inland fisheries contributed almost 80%. The sector accounted for about 10% of agricultural GDP, 3% of total GDP, 8% of total export earning, 60% of animal protein intake, and 7% of total protein intake in the country. Almost 2 million and 12 million full-time and part-time fishermen were employed respectively.

1.2 Original Global Environmental Objectives (GEO) and Key Indicators (as approved)

The objective of the GEF-funded project was to support the conservation of globally important wetlands and aquatic related biodiversity in Bangladesh by mainstreaming biodiversity and aquatic ecosystem conservation within the inland and coastal fisheries sector. Five Key Output Indicators (KOI) in the Project Appraisal Document (PAD) of FFP were:

- Understanding of aquatic resources and biodiversity conservation improved:
 - KOI-01: Studies completed and documented by year 3 of project;
 - KOI-02: Action plans to mainstream biodiversity conservation into fisheries sector completed;
- Socially and ecologically sound *hilsa* management plan developed and implemented:
 - KOI-03: Relevant studies completed and documented by year 1;
 - KOI-04: Hilsa management plan completed, discussed with stakeholders, approved and resourced by year 2; and
 - KOI-05: Hilsa management plan implemented by year 2.

There was no outcome level indicator in the PAD for the GEF-funded activities or component 4 of the FFP.

1.3 Revised GEO (as approved by original approving authority) and Key Indicators, and reasons/justification

There has been no change in the original PDO. In March 2005, a new objective was added to assist the Borrower in carrying out a program of rehabilitation and reconstruction of the government-owned fish farms in the areas affected by the floods of 2004.

In May 2004, KPIs were expanded from 5 to 9 to accurately reflect the scope, aims and priorities of the project as they have evolved through the series of reviews and agreed actions (see Annex 1). Major change was made for benefit distribution to the target groups. It was reduced to 50% (original 80%).

1.4 Main Beneficiaries,

(original and revised briefly describe the "primary target group" identified in the PAD and as captured in the PDO, as well as any other individuals and organizations expected to benefit from the project)

Overall, the original target groups are poor people dependent on fisheries resources. The main beneficiaries and the primary target groups by component, as envisaged at appraisal (Re. PAD, p 10, para C.3), are (a) for inland open water fisheries - poor traditional and occasional fishers in rural poor households; and (b) for fresh water and shrimp aquaculture – small holder fish and shrimp farmers and landless laborers getting employment (440,000 additional jobs to be created per year), and very poor shrimp seed/fry collectors (mainly women, total 27,000 in project area). The sub-component supporting shrimp fry collectors were dropped. Rural poor families consuming fish were considered important but not quantifiable, and thus secondary beneficiaries.

The benefit distribution indicator was reduced, at a later stage in May 2004, from 80% to 50% for the project as a whole. The original KPI-4, suggesting 80% of benefits from increased production in all project components were to accrue for the people from moderately or extremely poor categories, was realistic for inland open water component only.

1.5 Original Components (as approved)

The Fourth Fisheries Project (FFP), including the GEF-funded Aquatic Biodiversity Conservation component, was designed to be implemented over a 5-year period, with a total cost of US\$60.8 million at appraisal, of which GEF financing was US\$5.0 million, IDA financing US\$28.0 million, DFID US\$15.5 million, Government of Bangladesh (GOB) US\$9.3 million, and Beneficiaries US\$3.0 million. The project had originally five components, as follows:

Component 1- Inland Open-Water Fisheries Management (US\$17.1M): This component aimed at improving management of inland open-water fisheries by developing sustainable, community-based institutions and supporting them in undertaking a program of adaptive management of their fisheries resources. Proposed management measures included stocking, restoration of habitat, establishment of fish sanctuaries, and construction of fish passes or a combination of these options. Main activities to be accomplished by project-end were (a) 60,000 ha of open water bodies/floodplains stocked each year with fingerlings; (b) 8 fish-passes and 5 fish- friendly regulators built; (c) 10 fish habitats rehabilitated; and (d) 50 fish sanctuaries established.

Component 2 - Coastal Shrimp Aquaculture (US\$8.5M): This component aimed at establishing sustainable and equitable institutional arrangement for managing coastal polders¹ and works to facilitate the development of environmentally friendly shrimp production. The main

¹ Polder is an area encircled by earthen embankment with water control structures for drainage and flushing.

activities of this component included (a) Rehabilitation of 4 Third Fisheries Project (TFP) polders, and (b) Development of a new polder for improved shrimp culture.

Component 3 - Freshwater Aquaculture Extension and Training (US\$5.7M): This component included development and application of an appropriate extension strategy for fresh water aquaculture and establishment of an institutional network. Specifically, this included (a) extension strategy developed, documented, and approved by end of year 3; (b) Framework for aquaculture support network prepared for 200 *thanas/upazilas*² by year 2; (c) Coordinated aquaculture extension programs involving network members developed, resourced and implemented in 50 thanas by end of year 3, and a further 150 thanas by end of year 5 -- all to sustain beyond project life; (d) improved aquaculture technology adopted by 35% of trained farmers in 670 ha³ of demonstration pond in 200 thanas increasing productivity to 3 tons per ha by end of project; and (e) At least 25% of project participants in pond aquaculture development would be women.

Component 4 - Aquatic Resources Development, Management, and Conservation Studies (US\$ 3.9M): The component aimed at assisting the Government in strengthening the basis for aquatic resources policy development and fully blended with FFP. This was to be achieved through studies of the key issues in aquatic resources development and management for the conservation of *hilsa*⁴ fisheries, aquatic biodiversity and genetic diversity. Specific activities were: (a) planned studies completed and documented by year 3; and (b) action plans to mainstream biodiversity conservation into fisheries sector completed. Originally, 19 research studies under three themes were envisaged: *Hilsa* Conservation (5), Aquatic Biodiversity Conservation (10) and Genetic Diversity (4).

Component 5 - Institutional Support: Manpower, Training and Equipment(US\$25.8M): This aimed at strengthening the capacity of Department of Fisheries (DOF) to manage and support the fisheries sector, plan for its development and long-term sustainability, and implement the national fisheries policy. Specific activities included: (a) Action Plan for the implementation of the National Fisheries Policy completed and documented by year 1; (b) Assessment of organizational and human resource capacity and needs of DOF completed by year 1; (c) Plan for organizational and human resource development plan prepared and approved by year 2, and implemented by year 3; and (d) Strategy and program for post-project development of the fisheries sector prepared and approved by end of the project.

1.6 Revised Components

In addition to the original components, a new component was included in 2005 for rehabilitation of 31 fish farms affected by 2004 floods.

² *Thana* has now been named as *Upazila*, a sub-district, the lowest level of Bangladesh Government administration.

³ 670 ha pond area was considered as demonstration area, while 7,000 ha was considered for economic analysis at appraisal (see Annex 5, Table A.4/B.4)

⁴ *hilsa*: Ilish Ilish, the most important salt/brackish water commercial fish species of Bangladesh.

1.7 Other significant changes

(in design, scope and scale, implementation arrangements and schedule, and funding allocations)

The implementation of the FFP in the initial years were difficult and slow due to various reasons including slow transfer of *jalmohals* (Government-owned water bodies) for the open water fisheries management, additional studies to address the social and environmental concerns related to shrimp aquaculture, and lack of capacity within DOF for translating the national fisheries policy into a strategy for implementation. Following slow progress and challenges during the first few years of implementation, the overall project scope was scaled down at Mid-Term Review (MTR) in June 2002 and subsequently in May 2004 with corresponding cancellations of the IDA Credit including re-allocations among categories. The revisions at MTR (June 2002) were the following:

- Area for inland open water fisheries reduced from 60,000 ha to 22,700 ha;
- Number of pilot fish-structures⁵ reduced from 13 to 6;
- Number of fish habitat for restoration reduced from 10 to 7;
- Development of a new shrimp polder was dropped due to time constraint; and
- SDR 6.0 million cancelled from the IDA Credit and about US\$1.3 million from GEF Grant.

Subsequent revisions in May 2004:

- All pilot fish-structures dropped;
- A new subcomponent on pilot livelihood initiatives for affected fishers included;
- KPIs expanded from 5 to 9 (see para 6.3); and
- Extension of IDA Credit closing date by one and half year up to June 30, 2006.

Second cancellation of SDR 1.5 million from IDA Credit was made, effective May 2, 2006 due to further revision in the scope.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

(including whether lessons of earlier operations were taken into account, risks and their mitigations identified, and adequacy of participatory processes, as applicable)

Project Development Objective was consistent with the CAS. In line with the CAS, the development objective at appraisal was to reduce rural poverty by promoting agricultural growth with special attention to assisting the poor directly. It addressed the issues of enhancing rural development and natural resources management, and strengthening institutional capacity to promote and sustain them. It was also consistent with the GOB's Rural Development Strategy.

The Bank's diagnosis of the problems and the proposed technical solutions were generally appropriate. The PAD is well written and clear, excepting the benefit distribution aspects by component. Prior to this project, there were a number of project interventions in the fisheries sector--the last being the TFP. The Bank was, therefore, well-equipped with a wealth of experience in the sector, and incorporated the lessons gained from previous projects. This project

⁵ Fish-structure is to facilitate in-out fish movement from water bodies encircled by earthen embankment/ road.

had community-based approach to fisheries development and the early involvement of the stakeholders in the process. The involvement of NGOs, and the partnership with other bilateral donors were also stressed.

The quality at entry was deficient. With the benefits of hindsight, the quality at entry was deficient due to (a) the complexity of the project--attributed to a combination of five related, but very different components, which was very demanding on staffing and resources; (b) the lack of a clear definition of one of the main outcomes regarding distribution of the project benefits for various components; (c) the ambitious targets for the Inland Open Water Fisheries component, with the optimistic assumptions that transfer of *jalmohals*⁶ will happen smoothly in the given policy environment; (d) short time frame for complex biodiversity research and lack of capacity within DOF to carry out GEF-funded studies; (e) ambitious target for institutional component to implement the Human Resources Development (HRD) plan by project year 3; and (f) the resultant difficulties and ambiguities surrounding the issue of floodplain stocking (see section 10.1).

Target for benefit distribution was unrealistic. It was envisaged at appraisal that by project-end at least 80% of the benefits resulting from increased production will go to the beneficiaries from moderately and extremely poor categories, which was found to be unrealistic to achieve during implementation. This 80% benefit distribution was specified for the whole project, without breakdown by project components. While poverty targeting was applicable in component, such as Inland Open Water Fisheries Management, it was unrealistic in others. For example, the expected benefits distribution in the shrimp polders has been largely pre-determined in terms of ownership of shrimp farms. Similarly, for the Aquaculture Component, owners of fish ponds are, by default, not the very poor.

Inland open water fisheries set an ambitious target. The target of the inland open water fisheries component to increase productivity by 100% by project-end, and stock fingerlings in 60,000 ha of water bodies was unrealistic. During the early years of implementation, it was found that:

- transfer of *jalmohals* from the Ministry of Land, and establishment and strengthening of community organizations were difficult and required more time than previously anticipated;
- even for the floodplains of TFP, selected in advance at appraisal, could not be stocked with fingerlings during second year of the project, due to delays in appointing NGOs, and changes made in the composition of Fisheries Management Committees (FMCs); and
- project duration was short for a 3-year stocking cycle that allowed only two batches to run.

As a consequence, the area for stocking fingerlings was decreased from 60,000 ha to 22,700 ha and the productivity target was reduced to 50%. While the revisions demonstrated a sense of reality, it can be said fairly safely that the appraisal target was over-optimistic.

Maximum stocking density of 10 kg/ha/year was interpreted as a fixed one in most cases. While the PAD was clear about the modality of intervention in fingerlings stocking in terms of water area, depth, and phases; and maximum stocking density and decision making,

⁶ *jalmohals* are Government-owned water bodies.

experience has shown that this activity faced implementation difficulties. In reality, stocking was made to the maximum of 10 kg/ha, regardless of whether it was necessary or not, before communities were adequately organized. In some water bodies, stocking was not required. As the stocking density was set to the maximum, some communities were unable to pay for their co-share.

2.2 Implementation

(including any project changes/restructuring, mid-term review, Project at Risk status, and actions taken, as applicable)

Overall, the project implementation is rated moderately satisfactory. Delays with the individual components became apparent during implementation to warrant changes in scope, and extension of the project became necessary. With its effectiveness in late 1999, the project went into implementation in early 2000, and was generally moving at a slow pace up to the MTR. Implementation of the Freshwater Aquaculture Extension and Training component was relatively smooth and effective from start to the end of the project. The studies on Aquatic Biodiversity and Conservation, although had a late start due to delay by about two years in hiring the consultants, caught up substantially towards the end and delivered the defined outputs. Institutional Support component achieved satisfactory result towards the end of the project, albeit with long delays early in the implementation process. Inland Open Water Fisheries, experienced delays mainly due to longer time required to deal with the social aspect of community organizations; and delays in transfer of jalmohals from the Ministry of Land. For the Shrimp component, additional studies were required to address social and environmental concerns as expressed by NGOs to DFID-HQ during implementation and was independently assessed before civil works could be started. At the end, the findings of the study did not alter the program, which was an extension of an earlier program supported under Third Fisheries Project (TFP). Other key factors affecting the implementation are the following:

Important implementation issues and solutions were identified in a timely manner, except scaling down of benefit distribution indicator. Major changes took place at MTR in mid-2002, and later in mid-2004. At MTR, the changes were mainly regarding the key output targets with reduction in floodplains areas for fingerlings stocking, and by dropping the construction of new shrimp polder altogether. However, the major outcome indicator of 80% benefits accruing to the poor was only scaled down to 50% two years after the MTR. Although the distribution issue was raised and discussed during the early years of project implementation, downward revision was made during the later part in May 2004. The target should have been clarified and revised, preferably by the MTR.

Despite slow start, National Fisheries Strategy and Action Plans were prepared for the fisheries sector. Implementation of the Institutional Support component showed a positive change in implementation of the project. This component was rated unsatisfactory until late 2004, and turned to moderately satisfactory towards project-end. Initial rating was due primarily to the slow progress in translating the National Fisheries Policy (NFP) into a strategy. Following recommendations at MTR, a Participatory Fisheries Planning Team (PFPT) was established in 2002 within DOF to review and define its core functions in the context of the NFP, and to design a National Fisheries Strategy (NFS). The Strategy and Action Plans were very relevant and timely for development of the fisheries sector. The DOF and the Ministry of Fisheries and Livestock (MOFL) showed strong commitment to and ownership of the outputs which, the ICR mission believed, were the results of implementing this multi-component project. Most importantly, the sector and the sub-sectors strategies were taken to the national planning process by incorporating

them into the Government's Poverty Reduction Strategy Paper (PRSP) and to prepare the sector Roadmap.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Overall, the original design for M&E was rather weak, especially on the critical matter of defining and measuring changes in poverty situation. As to how the critical poverty target (KPI no.4: At least 80% of project benefits were to accrue for beneficiaries from moderately and extremely poor categories by end of project.) would be achieved was neither thought out for the fresh water and shrimp aquaculture components, nor were resources clearly allocated to identify baselines and monitor on this indicator, including other M&E activities.

M&E team however, showed resourcefulness in establishing baselines and undertaking evaluation. Despite the weak design, the project M&E team showed considerable resourcefulness during implementation in establishing in-depth socio-economic baselines and undertaking evaluation for the three main components, such as inland open water, fresh water and shrimp aquaculture. With small adjustments, the actual poverty indicators used were consistent with others used in the country. Various catch assessment activities, which were not included directly in M&E, but tried out, remained weak till the last year or so of project extension. This means that final evaluation of open water production remains a difficult job. However, it can be expected that the community-based catch reporting system, which was developed and made operational in the last few years, will provide a useful foundation for future monitoring in project areas, and perhaps serve as a model to be developed on a wider scale.

M&E results were satisfactorily used to adjust the project design during implementation. While it is difficult to assess their direct utilization, the M&E results undoubtedly made a considerable contribution to project implementation. For example, support for Community Based Organization (CBO) strengthening was increased to address the evaluation findings indicating earlier weaknesses in terms of "elite capture" and apparent over-enthusiasm for stocking under inland open water fishery management. Specific training on poverty targeting was provided as targeting weaknesses were identified under evaluation of the Aquaculture Extension component. This could not however correct the low number of poor targeted under aquaculture extension. Overall, the considerable amount of objective and thorough M&E carried out in close collaboration with DOF component teams has no doubt positively influenced their learning and reflection, and their ownership of the project as a whole.

2.4 Safeguard and Fiduciary Compliance

(focusing on issues and their resolution, as applicable)

Procurement: Overall, the procurement procedures followed the Bank's guidelines with a few flaws however. The overall procurement capacity of the DOF needs to be upgraded. In post-review of sample contracts, a few cases of procedural flaws were found in National Competitive Bidding (NCB) and National Shopping (NS) packages. The provision for NS should be at a minimum with appropriate monitoring mechanisms. Post review of NCB contracts below the Bank's prior review threshold were carried out on a half-yearly basis for the implementing agencies (DOF and BWDB), to avoid procedural discrepancies and ensure efficient execution of the procurement plan. Hiring of consultants to undertake the studies, under GEF-funding, took about 21 months, which put everything behind the schedule and also disrupted the implementation of other project components.

Financing and Disbursement: Of the total IDA Credit of SDR 20.6 million (US\$28.0 million equivalent), 58% was disbursed, 6% was undisbursed and 36% was cancelled with downscaling. DFID provided US\$15.5 million equivalent of co-financing, of which almost 100% was disbursed. Out of the total GEF Grant of US\$5.0 million, 66% was disbursed, 9% undisbursed and 25% was cancelled with adjustment in the planned studies. As scope of the project was scaled down at MTR, SDR 6.0 million was cancelled as of January 30, 2003 at the borrower's request. There was also a second cancellation of SDR 1.5 million, effective May 2, 2006 due to downward revision of the scope. As of December 31, 2006, total IDA disbursement amounted to SDR11.99 million (92%) of the revised total allocation of SDR13.10 million.

Financial Audit: Overall, the financial management aspects have been handled generally in a satisfactorily manner. All financial statements that were received within the due dates were audited. In all, the GOB auditors made 94 observations (DOF 75 and BWDB 19) for IDA-funded activities, and 5 observations against GEF-funded component. At ICR, 42 (FFP 39, GEF 3) audit observations were settled and 57 (FFP 55, and GEF 2) are outstanding. From the Bank's viewpoint, 6 number of observations were identified as material. Subsequently, IDA received satisfactory responses on all of these audit observations. A further scrutiny of the outstanding observations revealed that all the observations material to IDA were adequately attended to. Most of the remaining observations were related to non-compliance with the government procedures, such as deductions of taxes, deposit of the interest in the treasury and deduction of Bank charges, commission from bank account beyond authorized provision etc.

Environment: At appraisal, the project was designated as Environmental Category B, since the components were found to have relatively limited environmental impact potentials. It was also envisaged that with proper implementation per the project design, the components would either have insignificant or a beneficial impact on the environment. At the end of the project, no evidence of significant environmental damage was found or reported by the local communities. Significant community involvement in implementation has helped to avoid any significant environmental risks before they could actually occur.

Under the Inland Open Water Fisheries component, one of the issues identified at appraisal was impact of stocking exotic species on indigenous biodiversity. Based on an impact study under GEF-funded component, DOF was advised to stock common carp on a pilot-research basis in up to four floodplains representing no more than 10% of the total fingerlings stocked, and monitor the issue in detail. Sanctuary establishment and habitat restoration had very positive impacts that were well received by the communities. Two risks were also anticipated with shrimp aquaculture component: overlapping of extended shrimp culture period with rice cultivation, and threat of wild shrimp seed collection on coastal biodiversity. The first risk was addressed by the community organizations with a general agreement on an overall management plan including a cropping plan for each functional block. The second risk, the threat on biodiversity, a GEF-funded study concluded that wild fry/post larvae collection was likely to have an insignificant impact at this point of time. With the availability of hatchery produced shrimp fry and GOB's ban on fry collection, the conclusions of the study were found plausible. The study also found that the polders with shrimp culture resembled more closely to natural systems with the seasonal sequencing of freshwater during the rainy season, followed by brackish water in the dry season. Implementation of the *hilsa* management and conservation plan by GOB has showed positive outcome for *hilsa* as well as other fish species. Environmental issues should be integrated into project's M&E frame work and be a part of routine monitoring.

Resettlement: The project was designed to minimize land acquisition and to keep it around 20 ha, and about 9 ha was acquired for the project. During implementation of the shrimp

component, which was expected to use most of the lands, acquisition was completely avoided for excavation/re-excavation of canals. The polder communities decided to contribute the lands on rent (or *haari*, a traditional land rental arrangement) which enabled the landowners retain the regular incomes from and titles to the lands. Acquisition for the regulators eventually amounted to about 9 ha, which affected 152 households, and displaced a non-formal primary school and a household living on public land. The polder communities relocated the displaced school and household away from the canals. Acquisition of the land was however delayed till November 2004 due to uncertainties about commencement of the rehabilitation works. Considering the delay in land availability, but the need to synchronize the works on canals and regulators, the polder communities and the landowners, who were also the direct beneficiaries in shrimp aquaculture, decided to use the same rental arrangement on an interim basis for the period until the acquisition process was completed. As of June 30, 2006, BWDB transferred the compensation funds to the Deputy Commissioners, but no payment for compensation was made. Compensation payment had been underway and about 50% has reportedly been completed by January 2007.

2.5 Post-completion Operation/Next Phase

(including transition arrangement to post-completion operation of investments financed by present operation, Operation & Maintenance arrangements, sustaining reforms and institutional capacity, and next phase/follow-up operation, if applicable)

Transition arrangements for the project were generally good and hand over had been quite smooth. This was made possible by the teams from within the DOF who were actively involved in the management of project activities. Smooth handover was especially likely for the Aquaculture Extension and Shrimp Aquaculture development, where local DOF and BWDB would continue to provide support to the fisher and polder communities. The agreements between BWDB and polder committees on sharing Operation & Maintenance (O&M) activities related to the physical infrastructure were viewed as a major step forward to sustainability. Commendable efforts were also given by project teams into identifying and implementing exit strategies during the last year of the project.

Institutional arrangements for an inland open water unit and broader M&E support were not in place within DOF. Following approval of Monitoring and Evaluation sub-strategy under the project, and preparation of an action plan, MOFL indicated its willingness to complete necessary institutional arrangements in phases. Locally, phasing out started in several inland open water management sites by end of 2005, with reasonably functioning CBOs and some of which were promised continuing NGO support. However, it was difficult to know with any certainty what would happen at open water sites once the project closed with little or no resources to ensure NGO follow-up with difficulties generally expected to arise due to social complexities of capture fisheries. The situation may as well get worse due to transfer of the experienced *upazila* level DOF officials, whose support was critical for coordination and technical oversight, and could provide external mediation to resolve difficult social issues.

To track the long term beneficial impacts, key performance indicators should have covered the following:

- Production changes at household levels;
- Distributional aspects of benefits of production to poorer groups (clearly identified in the project);
- Process monitoring to examine whether there is a return of "elite capture" under open water fishery; and

- Effectiveness of targeting poverty and gender under the aquaculture extension activities.

However, there were considerable uncertainties as to how the M&E activities could take place on a regular basis without external support, as there was no institutional set-up with adequate resources for this type of M&E. On a more fundamental level and in the medium term, an objective reassessment of and building a monitoring system for the country's fisheries resources were also needed to establish a solid basis for assessing production changes in general and especially of declines observed in non-project open water areas. Experience with other projects, e.g. those related to the management of Oxbow lakes, indicated that monitoring of fish supply in local markets could contribute to resource assessment, at least in cases of more confined water bodies.

Possible role of the World Bank in the fisheries sector. With other donors assisting GOB to develop the fisheries resources, especially in inland open water, the World Bank could play an important role with policy issues, including monitoring and evaluation. This could be with a view to more programmatic and PRSP aligned future financial support by the Bank and other donors. Particular areas for policy considerations would be on:

- *Jalmohal* lease issues for inland open water fisheries including rational fees and its payment modality, poverty and gender targeting; and
- Balancing contributions of aquaculture and inland water fisheries to poverty alleviation as well as biodiversity aspects.

A major achievement of this project has been the formulation of the National Fisheries Strategy (NFS) and eight Sub-strategies that have already been approved by the MOFL, and eight draft action plans to implement the NFS. These documents, strongly owned by DOF, were in turn taken up for incorporation at a higher level in the national planning process, and in the PRSP and fisheries sector Roadmap. The GOB is looking for financing the implementation of its action plans. *It is recommended that the World Bank reviews these documents and action plans and works out, together with the GOB, how best to proceed for future development of the fisheries sector.*

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

(to current country and global priorities, and Bank assistance strategy)

The project was very relevant to and consistent with the country's development priorities. The development objectives, design and implementation were highly relevant to and consistent with the country's current development priorities and the Bank's country and sectoral assistance strategies and corporate goals. The issues of increased productivity and growth, and reduced poverty remain top priority of the Government. Presently, the FFP together with other donor-funded projects supports only about 250 of the country's 12,000 inland water bodies. Experience and lessons from this project are considered instrumental for developing the remaining water bodies. In this respect, the NFS and Sub-Strategies, the improved capacity of DOF, and the knowledge from various studies are considered highly relevant.

3.2 Achievement of Project Development Objectives

(including brief discussion of causal linkages between outputs and outcomes, with details on outputs in Annex 4)

At closing, the project largely achieved its revised objective of productivity increase. However, the second objective of equitable distribution of the benefits was only achieved for the inland open water component (77%). Overall, 19% of the project's benefits has reached the targeted poor (weighted average), compared with the appraisal projection of 80% (see para 6.2). This distribution target was revised from 80% to 50% in mid-2004, after 4.5 years of implementation (see para 6.3). The details of the achievement by component are the following:

The inland open water fisheries component is rated satisfactory against its revised targets. This component largely met (see para 8.4) the revised physical targets (18,500 ha out of revised 22,700 ha) for implementation of fisheries management interventions and organizations for open water sites. It also achieved both the productivity (65% as compared to revised 50%) and equity objectives (77%). Targets for stocking area were revised at the MTR after delays in transfer of *jalmohals*, because this would leave insufficient time to properly engage and strengthen communities. The achievement of the more realistic targets should also be appreciated, in the light of overall declines in open water catches outside the project sites. Implementation of the FFP, together with other similar projects, proved that the community-based approach to management of open water bodies was feasible and beneficial if they were owned and managed by well-trained communities. The implementation experience suggests that a long-term lease, at a reasonable and predictable fee, to the poorer communities could lead to better management of open water bodies, and, thus, reduce rural poverty.

The coastal shrimp aquaculture component is rated moderately unsatisfactory against its revised targets. This component, despite delayed start, achieved the revised output targets in terms of polder rehabilitation and organization of water management committees (see para 8.4). Proposed development of a polder, new to those initiated under TFP, there was not enough time to create and strengthen social organizations and then to identify and implement any required rehabilitations. As such, development of the polder was dropped at MTR. While its expected productivity objective would be largely achieved at full development (estimated at 30% as compared to original target of 20%), equitable distribution objective was less likely to be achieved due to the existing ownership structure of the shrimp farms. The project created recognition of and provided a role and voice to the landless poor in decision making as well as access to productive resources. Social preparation before construction of infrastructure played a significant role in removing social conflicts, assuring the quality of works, and forging community ownership of the assets created by the project. Development of shrimp, a high-value added international commodity, could also contribute significantly to the economic development of the country.

The freshwater aquaculture extension and training component is rated moderately satisfactory. This component achieved its original target (200,000 farmers in 211 *upazilas* including 25% women trainees), and marginally fell short of its productivity objective (45% as compared to original 50%). Its beneficial impact on the poor was, however, far less than estimated at appraisal, primarily due to the existing ownership structure of the ponds. The aquaculture sub-sector has, nevertheless, seen a general upward trend over the past years; the FFP added an extra momentum to this pre-FFP upward trend. It has shown that even limited investment on farmer training and extension could have a substantial positive impact on the farm communities. The project also benefited non-target farmers as they learned from trained neighbors and the private operators as they established hatcheries and nurseries in response to the

increasing demand for spawn and fingerlings. The training and piloting of village-level Local Extension Agents for Fisheries (LEAFs) to sustain the project efforts at low cost was also a breakthrough for the Government approaches. Experience in other Asian countries has shown that aquaculture can help to diversify agriculture, increase income, and play an important role at a certain stage of development.

The aquatic biodiversity conservation component (GEF-funded) is rated satisfactory. Despite initial delays in implementation, the achievements of this component through Studies were considerable. The planned 14 studies were completed, which have clearly improved knowledge and awareness of the aquatic resources and conservation issues. Many of the findings were already institutionalized and translated into Government policy and action plans. A Plan for *Hilsa* management had been under implementation since 2004. Various initiatives were started to improve the genetics of the major cultured fish species by establishing brood banks and training hatchery operators. After closure of the GEF funding in December 2004, the *Hilsa* and Genetic Improvement sub-components were continued with IDA Credit up to June 2006.

The institutional support component is rated satisfactory. One of the major achievements of the FFP was made by the Institutional Support to DOF and Training of NGOs. Despite the slow pace in the early years, this component produced many tangible outputs, namely, the National Fisheries Strategy (NFS) and eight Sub-strategies, and eight draft action plans to implement the NFS. Unlike similar past documents, the NFS and action plans were produced by using the experiences and lessons learned from FFP and other past and current projects, and were genuinely owned by MOFL and DOF. These documents were also accepted for incorporation in the national planning process, in the PRSP and sector Roadmap. Similarly important were the draft proposal for reorganization of the DOF, and the capacity building of its staff in order to work with the NFS.

The rehabilitation of the damaged fish farms under the Flood Recovery Assistance component was completed and they were in operation. The component covered rehabilitation of 31 fish farms under DOF, including one (Raipur Regional Training Centre) repaired earlier under the project.

3.3 Efficiency

(Net Present Value/Economic Rate of Return, cost effectiveness, e.g., unit rate norms, least cost, and comparisons; and Financial Rate of Return)

The overall ERR was re-estimated at 120% as compared with 48% at appraisal. At ICR, economic analyses were carried out in order to compare with the ex-ante analyses at appraisal. The analyses were done by component, using actual costs incurred and the benefits estimates produced by various studies and surveys. Summary of the analyses is presented below (details and assumptions are presented in Annex 5).

Components	ERRs(%)	
	PAD	ICR
Inland Open Water	42	33
Coastal Shrimp Aquaculture	70	19
Freshwater Aquaculture	77	266
Aquatic Resources	282	164
Whole Project	48	120

The improvement was due primarily to: (i) better performance of the Freshwater Aquaculture component. (The analysis was still conservative: it included only 12,599 ha pond area out of total 22,430 ha actually covered by the project [7,000 ha at appraisal], in consideration of variations [40-70%] in the farmers' adaptation to improved practices.); and (ii) larger weight of the Aquatic Resources component (83% of the total net benefits). (If the Aquatic Resources component was excluded from the calculation, the ERR of the whole project decreases to 84%.) The Inland Open Water and Coastal Shrimp components generated lower ERRs which, however, were still economically acceptable. The lower-than-expected ERR of the Shrimp component was due primarily to two main factors: (i) long implementation period causing delay in realization of the benefits; and (ii) 20% decrease in shrimp price estimated at appraisal. Decreased ERR for the Inland Open Water component was due primarily to a decrease in water areas, which caused an increase of the unit cost. At 12% discount rate and over 20 years, the Net Present Value (NPV) was estimated at Tk 10.7 billion (or about US\$153 million).

3.4 Justification of Overall Outcome Rating

(combining relevance, achievement of PDOs, and efficiency)

Rating: Moderately Satisfactory

Overall outcome is rated Moderately Satisfactory. With a project assigned value of 4.16, the rating was based on the evaluation approach stipulated in Appendix B of the new Guidelines on Implementation Completion and Results Report (August 2006). The contribution to PDO by each project component is elaborated in section 8.2. Shrimp component would have a better outcome rating without delays due to additional studies carried out by Co-financier in response to NGO concerns (see Section 7.2). The evaluation breakdown by component is summarized below:

Components	Rate to PAD	Rate to Revision	Total
1. Inland Open Water	2	5	
2. Coastal Shrimp aquaculture	2	3	
3. Freshwater aquaculture	4	4	
4. Aquatic resources	5	5	
5. Institutional support	5	5	
Weighted disbursement	31%	69%	
Final Rating	1.12	3.04	4.16
Note: HS = 6; S = 5; MS = 4; MU = 3; U = 2; HU = 1.			

3.5 Overarching Themes, Other Outcomes and Impacts

(if any, where not previously covered or to amplify discussion above)

(a) Poverty Impacts, Gender Aspects, and Social Development

The project's expected contribution to poverty alleviation goals and equity objectives were ambitious and probably not achievable. In strict percentage terms, less than a quarter of the original target was reached. Benefits reached only 19% of the poor, as opposed to the original target of 80%. A total of 45,000 poor fishers and, by inference, roughly the same number of households was reached by the project.

Targeting poor fish and shrimp aquaculture farmers were difficult. Due to pond ownership distribution, outreach to poor fish and shrimp aquaculture farmers would be difficult

unless there was a greater affirmative action towards the poor. Interestingly, despite the very low targeting under Aquaculture Extension (8% of fish farmers), this component covered over a third of all the poor under the project. Despite the reduction in project sites, considerable effort and achievement were made under Inland Open Water to support poorer fulltime fishers, and include landless in shrimp area committees and rehabilitation activities. In the alternative livelihoods support component, which was added later, the NGOs achieved very good targeting and livelihood results for the very poor, although not all were from fisher families. Despite being a small sub-component, it reached more poor than the shrimp component.

The inland open water component put an effort to ensure and monitor representation of the poor on fishery management committees. Later assessments generally indicated that poorer fishers were benefiting as much as the better off, at least towards the end of the project. However, impact assessment for both the shrimp and aquaculture extension components indicated that the better-off were not only the larger beneficiary group, but also got relatively greater benefits from production. To some extent this could have been expected, given the land and other resources available to them. However, there were also indications that the technologies (fish aquaculture extension) and the location of constructions (shrimp aquaculture) tended to favor those with larger ponds/ shrimp farms.

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Hilsa conservation plan affected those who were involved in the fishing of juveniles.

While the hilsa conservation and development plan, implemented under the project, increased its production, it negatively affected those who were involved in jatka (juvenile hilsa) fishing. The survey carried out by the project indicated that livelihood of about 65% (270,000) of the hilsa fishers in the project area, had been affected seasonally as a result of establishing sanctuaries and closed season management. The Government, however, implemented the mitigation measures in a limited way through food/income support for the affected households. As under aquaculture, there were considerable production benefits; but there might have been considerable bias as to who enjoyed these benefits. The project also dropped an original sub-component targeted specifically at very poor, mainly women shrimp fry collectors, as wild shrimp fry collection was banned by the Government at an early stage. It was noted in its favor that the project, through other studies it supported, identified and strongly recommended measures to address these negative impacts. One study noted that wild shrimp fry collection by poorer people had only a minor role in shrimp fry decline.

50,000 women were trained on aquaculture, which is 25% of total trainees. Originally, only the aquaculture extension and shrimp fry collection components specifically targeted women. The latter, as noted above, was dropped. Under the aquaculture extension the target was almost achieved, reaching nearly 50,000 women (25%). This is definitely significant, it showed a large number of women could be reached through extension, and impact assessment demonstrated that they could also make efficient use of resources and training. Ironically, this efficiency--linked with relatively low production increases compared to men--could not fully materialize due to the fact that they were unable to harness more household resources, which remained largely under the control of their husbands or other male relatives. As a result, women's share of benefits remained lower than that of males. Aside from the alternative livelihoods component, which included women, there was little assessment of how women might have benefited from inland open water or shrimp fisheries development.

Community Organizations were useful in resolving local conflicts. While not specifically one of the objectives, but mentioned as important in various part of the PAD, the project assisted in addressing complex local social issues through the formation and capacity building of broad-based fisheries and water management committees. These efforts significantly

helped to address local conflicts and issues regarding shrimp farms and canal water sharing, inclusion of landless poor in CBOs and define local rules and leadership for some beels⁷ and rivers.

Local Elites had substantial influence in 40% CBOs. During project implementation, the floodplain stocking under the Inland Open Water Fisheries Management component experienced "elite capture" in some places in the sense that the targeted poor fishers did not really benefit from stocking and in some cases were even negatively impacted. Beginning in October 2003, the project addressed this problem for about 60% of the relatively better performing CBOs through capacity building and networking with NGOs and similar CBOs in the country. For the remaining 40%, floodplain stocking was phased out and alternate income generating activities targeting the poor fishers as well as other poor members of these committees were taken up in a modest way.

(b) Institutional Change/Strengthening

(particularly with reference to impacts on longer-term capacity and institutional development)

Learning by doing is possibly the better way. This is described under the specific Institutional Development component (Section 8.2). Here the broader and unintended achievements are summarized. With no specific institutional development baselines and assessments, changes can only be described qualitatively. For example, there was extensive training, including overseas courses, for the project related staff. However, despite the positive feedback given by trained DOF individuals who were still around at ICR, it is hard to assess whether these are as important as the experiential learning through direct engagement in project implementation. It seems more significant that experiences in this, and other related projects like MACH⁸ and CBFM-II⁹ have provided DOF working groups with very substantial and realistic insights into developing a longer term National Fishery Strategy and sub-strategies for the country. Provided resources are adequate and policy changes taken place, particularly in terms of jalmohal lease arrangements necessary at the highest level, the strategies may provide one of the most solid foundations and longer term institutional change of the project.

Institutional change at the local level is necessary. To support policy implementation in the long term, institutional change is also necessary at the local level. First of all the project has engaged a considerable number of DOF staff and NGOs as implementers for the different components. Being trained and gaining capacity through experiences (including difficult ones from earlier stages of the project and into exit strategies) these agencies are now in a better position to continue their support in the future. However, there are always uncertainties as to the resources available for sustaining and expanding experiences, particularly for inland open water activities, the most critical one is supporting the poor fishers. Unfortunately, the model of linking local open water fishery management to local upazila governments, as adopted under other projects and provides a key link to local problem resolution, has been developed too late to be adopted under FFP.

⁷ Beel is a lake-like water filled depression, often subject to large seasonal fluctuation.

⁸ MACH - Management of Aquatic ecosystems through Community Husbandry, implemented by NGOs, funded by USAID.

⁹ CBFM II - Community-Based Fisheries Management-Phase II project, implemented by the WorldFish centre, funded by DFID.

The project successfully carried out few pilots, which need phased scaling up. At the community level, the project has developed resource management and service support institutions at the local level, with very useful institutional models emerging towards the later stages. For inland open water, functional fishery management committees were in place in most of the project sites, with representation, resource generation and leadership criteria to ensure at least some longer-term empowerment of poorer fishers. Resource generation at local level by private sector initiatives, such as *Pankowri* model (seasonal aquaculture in privately-owned floodplains) still need external oversight, say through NGOs, to ensure fair allocation of benefits to the poor and biodiversity aspects. Under the project, innovative arrangements have been made with inclusion of landless in water management committees in shrimp polder 32. For fish aquaculture, the Local Extension Agents for Fisheries (LEAF) system, while only a pilot, has shown itself to be very popular as a local participatory farmer-to-farmer support system, with potential for further development as a private extension system. The government has allocated resources to expand the model.

(c) Other Unintended Outcomes and Impacts (positive or negative)

Secondary adoption was made by about 33% neighbors of the direct beneficiaries. In the Fresh Aquaculture Extension component, in addition to the trained 200,000 farmers, secondary adoption was estimated to be around 33% of the project direct beneficiaries. This secondary adoption is likely to increase further in the future. This important parameter indicates that the technical package is well accepted by rural communities, and aquaculture is financially attractive. Other unintended positive outcomes and impacts were identified particularly in relation to the developments in the private sector, although systematic data are lacking to substantiate this claim. In response to increasing demand for spawn and fingerlings, many private hatcheries and nurseries have been established. These production-related activities together with those for marketing have created additional employment. In recent years, aquaculture has grown rapidly, and played dominant role in fish markets. In the longer term, the negative impact of this success could be, from producer side, the decline of fish prices.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops
(optional for Core ICR, required for ILI, details in annexes)

No Beneficiary survey was carried out for FFP.

4. Assessment of Risk to Development Outcome

Rating: Substantial

5. Assessment of Bank and Borrower Performance
(relating to design, implementation and outcome issues)

The overall risk that the project's development outcomes will not be realized is substantial, especially if the original emphasis on poverty alleviation is considered.

Continued policy support at national level is at high risk. The basis for this risk rating are that the institutions and financial resources to sustain them, to ensure continuing support to the poor, at DOF, local agency or community levels (representative CBOs), are at initial stages of development, despite considerable advances under the project. Further improvements are not likely at the local level, given the transfer of DOF staff and uncertain presence of NGOs. The lack

of policy support at the national level for long-term lease of jalmohals to communities for inland open water fisheries (that has now been included in the new National Fisheries Strategy prepared under the project), despite repeated requests throughout the project, means a high risk of not achieving pro-poor outcomes in the long run.

Production increase for open water fisheries and aquaculture are likely to be sustained.

Regarding production outcomes, the risks are considered moderate for inland open water fisheries (including hilsa) and low for aquaculture. Because the production gains have been proven, and the benefits are largely under the control of the beneficiaries, especially in aquaculture, these gains would be relatively resilient to external risks, such as political changes, need for external resources, and environmental impacts. Despite its benefits for poorer or better-off stakeholders, open water fisheries may still face risks: production may return to original 'open access' controlled by rent seeking "political elites", causing the loss of production gains.

Production gains for shrimp aquaculture, although still not proven, are also likely to sustain, because they are also largely under beneficiary control. However, they may still be vulnerable to natural disasters - as all productive activities in coastal areas are. In this respect, the good quality of construction under the project is expected to somewhat reduce vulnerability and improve flood recovery.

Mainstreaming of biodiversity and conservation aspects will face challenges and is at substantial risk. Regarding biodiversity and conservation aspects, which have been incorporated in the approved National Fisheries Strategy, the Government is likely to find it difficult to implement its action plan satisfactorily in view of growing population with a low resource base.

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

(i.e., performance through lending phase)

Rating: Moderately Satisfactory

Bank performance through the lending phase was moderately satisfactory. The DO to reduce poverty by promoting agricultural growth with special attention to directly assist the poor was consistent with the CAS. The Bank's diagnosis of the problems and the proposed technical solutions were generally correct, other than the complexity due to five related, but very different components. The PAD is of good quality, well written and clear, excepting its benefit distribution aspects. It incorporated the wealth of experience the Bank previously acquired in the fisheries sector. However at hindsight, a number of weaknesses in quality were there at entry, and the main ones have been elaborated in Section 7.1.

In spite of deficient quality at entry, the project largely overcame the problems and accomplished moderately satisfactory status, because of the persistent follow-up by the Bank during implementation through close monitoring and necessary adjustments in the project design.

(b) Quality of Supervision

(including of fiduciary and safeguards policies)

Rating: Moderately Satisfactory

Overall, the quality of supervision is rated 'moderately satisfactory.' Supervision missions were adequately carried out, with appropriate staffing. Implementation issues and solutions were correctly and timely identified and discussed with the counterpart. Nevertheless, in

retrospect, the Bank should have taken early action to rectify and clarify the most important and contentious outcome: the 80% benefit distribution to the poor. The decision to reduce the target was made after 4.5 years during implementation. The resolution of this particular issue by MTR could have positively influenced the project outcome.

Joint implementation review teams (IDA and DFID) rated this project as 'Satisfactory' from the beginnings till September 2003 (PSR No.11). The November 2003 mission downgraded the rating to 'unsatisfactory' based on the assessment of outcome level KPIs. The "problem status" of the project continued till October 2004 (PSR No.14). Meanwhile, a "supervision clinic" was arranged in February 2004 to review the project's performance and provide guidance to the Bank team on steps to overcome implementation problems. Based on the guidance, the intensity of reviews was enhanced and the outcome indicators were expanded by May 2004 mission, from 5 to 9 to accurately reflect the scope, aims and priorities of the project as they have evolved through the series of reviews and agreed actions. A major change was made for benefit distribution to the target groups, which was reduced to 50% (original 80%). From March 2005 (ISR No.15), the project has been rated 'moderately satisfactory' following six-point scale as against previous four-point scale.

The Bank team assisted the Government in identifying and preparing the Fourth Fisheries Project including the GEF-funded component and accessing the GEF resources. The Bank's Quality Assurance Group (QAG) carried out a Quality of Supervision Assessment (QSA6) in August 2004 and rated the overall supervision quality during FY 2003-2004 as *moderately satisfactory*.

(c) Justification of Rating for Overall Bank Performance

Rating: Moderately Satisfactory

Due to the points discussed in (a) and (b) the Bank performance was rated Moderately Satisfactory.

5.2 Borrower Performance

(a) Government Performance

Rating: Moderately Satisfactory

Government performance is rated moderately satisfactory. Government's commitment to the project was seen throughout implementation period, although was not sufficiently flexible to adapt to evolving situations, to make changes to project targets, as was evident at MTR and at subsequent stages of implementation. Many good practices and lessons (such as establishing sanctuary as a means for conservation and biodiversity, genetic improvement, local extension agent for fisheries, and *hilsa* management) learned from this project have been incorporated into the Government's regular program. But the delay in hiring consultants for GEF-funded activities and transfer of *jalmohals* was one of the major shortcomings that eventually delayed the entire implementation process and reduction in key targets for inland open water component. While varying lease periods have been guaranteed, it is still uncertain whether or not the leases will be renewed at expiration of the current period. This uncertainty may greatly affect performance of the Inland Open Water component that promises to benefit the poor more than other components.

(b) Implementing Agency or Agencies Performance

Rating: Moderately Satisfactory

Implementing Agency	Performance
Department of Fisheries, Ministry of Fisheries and Livestock (MOFL)	<i>The performance of the implementing agencies is rated moderately satisfactory.</i> DOF and BWDB were generally committed to achieving the development outcomes, from preparation through implementation. DOF entrusted Local Government Engineering Department (LGED) with the responsibility of fish habitat restoration works. It is commendable particularly for DOF for its commitment and ownership of the National Fisheries Strategy and Action Plans. The agencies tried out some new concepts such as LEAF and acquired experience and lessons, particularly in community organization, which have been incorporated into its programs. The recognition of and collaboration with NGOs by DOF, although not yet as full strategic partners, can be seen as a key to achieving community engagement in fisheries management.
Bangladesh Water Development Board, Ministry of Water Resources (MOWR)	Covered in the previous para.

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Satisfactory

The overall performance of the borrower is rated moderately satisfactory. The main factors that preclude the ICR team to rate Satisfactory are: slow and partial transfer of *jalmohals*, delay in awarding consultancy contract for GEF-funded activities, slow implementation, particularly the formulation of NFS and action plans.

6. Lessons Learned

(both project-specific and of wide general application)

1. *User rights over common property resources are fundamental.* While there was considerable achievement in terms of production increases in aquaculture, the greatest share of benefits to the poor accrued under the inland open water component. This was particularly important, especially in a situation where inland open water fisheries are gradually declining. Resolving the institutional issue of lease, which provides secured access right to the fishing communities in a predictable and fair manner, is fundamental for successful implementation of the open water fisheries component and a prerequisite for further development of many other water bodies in Bangladesh.

2. *Simple cost-effective entry points are needed in open water fisheries.* Priority should be given to the development of simple interventions, such as establishment of sanctuaries, control of fishing gears, closed fishing seasons, etc, in parallel to strengthening of the community organizations. More costly stocking activities can then begin depending on the community

perception of benefits and their ability to invest their own resources. Stocking of good quality fingerlings in closed and small water bodies managed by strong community organizations can have a higher chance of success.

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3. **Community involvement in preparation through monitoring of construction works increases quality.** Participation of community organizations in preparation, implementation and monitoring enhances the quality of infrastructure, although it requires a longer time. Better quality together with the user-friendly infrastructure such as regulators in the shrimp polders will increase production and the chance of sustainability.

4. **Political support is critical to sustain nature conservation efforts.** Implementation of the *hilsa* management and conservation plan by the Government showed that political will, coupled with strong support by the relevant Government agencies, can bring about cooperation among various parties; and that accurate management information from the project and the local communities was essential for successful management of fishery and other natural resources.

5. **Dealing with social change demands longer time and realistic targets.** A protracted time horizon and less ambitious targets are needed to deal with social change, the creation and distribution of rights, building community organizations to manage common property resources and the accompanying changes of thinking in the bureaucracy.

6. **Flexibility is needed in case of community driven process oriented programs.** While donors may be in a relatively better position to accommodate or adjust to the changes, particularly in the case of a process-oriented project, the government, due to its inherent, rigid project processing system, still finds it difficult to do so. There is thus a need for a change in government's approach to such projects, including the subsequent need for appropriate training and sensitizing of staff.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

No comments were received from the Borrower and Implementing Agencies. Summary of Borrower's ICR for the project was received on November 26, 2006 (see Annex 7) and the Government has indicated its 'no objection' to the public disclosure of the final ICR.

(b) Cofinanciers

No comments were received from the Co-financier (UK-DFID). A Project Completion Report for the FFP was prepared by DFID in June 2005, which is available in the project file.

(c) Other partners and stakeholders (e.g. NGOs/private sector/civil society)

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD M)	Actual/Latest Estimate (USD M)	Percentage of Appraisal
COMMUNITY-BASED INLAND OPEN-WATER FISHERIES MANAGEMENT	17.00	5.00	29.41
COASTAL SHRIMP AQUACULTURE	8.50	5.00	58.82
FRESHWATER AQUACULTURE EXTENSION AND TRAINING	5.70	4.20	73.68
INSTITUTIONAL SUPPORT TO DOF AND TRAINING OF NGOS	25.70	24.50	95.33
2004 Floods Rehabilitation	0.00	1.50	
Aquatic Resources Development, Management and Conservation Studies	3.90	1.80	46.15
Total Baseline Cost	60.80	42.00	
Physical Contingencies	0.00		
Price Contingencies	0.00		
Total Project Costs	60.80		
Front-end fee PPF	0.00	0.00	0.00
Front-end fee IBRD	0.00	0.00	0.00
Total Financing Required	60.80	42.00	

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD M)	Actual/Latest Estimate (USD M)	Percentage of Appraisal
Borrower	Grant	12.30	6.50	52.85
International Development Association (IDA)		28.00	16.70	59.64
UK: DEPT. FOR INTERNATIONAL DEVELOPMENT	Grant	15.50	15.50	100.00
UN Development Program - GEF	Grant	5.00	3.30	66.00

Annex 2. Outputs by Component

Component 1: Community-based Inland Open-water Fisheries Management

Based on social and technical considerations, initial selection for areas suitable for intervention under this component was 51 sites. The reduction in sites came largely on the realization of considerable difficulties that would be faced in getting entrenched local elites to give up their user rights over most water bodies. NGOs were contracted between 2001 and 2003 to assist communities form committees and rules for open water management. Community based fisheries management organizations were established at all 51 sites; however, for 12 sites, direct project support was withdrawn over the period 2003-05 because the time available to achieve sustainable management would be too short to address deep-seated social issues. At present, 39 sites are performing satisfactorily with a potential to be sustained after project end. In 10 of these sites, direct NGO support has already been withdrawn since January 2006. A total of 18,500 ha are covered under the 39 sites. This is considerably less than the original targets for areas (60,000 ha¹⁰) and sites (98). The target was later scaled down to a revised agreed target of 20,000 ha. For 2005 in 39 sites, 11 have been stocked by fishers using their own resources, with a total area of 6200 ha. A total of 75 fish sanctuaries have been established covering all sites - of which 15 established under fishers own initiative. In 7 sites habitat restoration has been done through LGED.

To assess the outcomes, unfortunately baseline production estimates are uncertain. Open inland waters are generally well known to be very hard to monitor reliably the yield, due to the high variability between gears, areas, years, seasons and long-term changes taking place on floodplains, and engaging scattered small-scale fishers in the process. The relatively crude data from FFP field monitoring shows very high variability, and reports indicate high margins of error, so a large part of the data cannot be used confidently. What the project has been able to do in the last few years, is to train communities to gather their own data through regular record keeping, making such information useful also to themselves. This information can be used to make some assessments at a later stage.

Drawing on the best available data, in a majority of sites there were production increases in the years 2001-03 of around 10-50% per year in non-stocked sites and 100-200% stocked sites. While some of the variability is inherent between sites, the ICR team is undertaking a more in-depth analysis to try to identify the most useful data to derive trends. With the latest (2004-06) more reliable catch records, annual increase is generally in the order of 5%, with an even spread of sites with decreasing and increasing catches. The figures between 2001-03 and 2004-06 are not strictly comparable as the data were collected differently, but change may be due to yields reaching a maximum. Also the dip in yield to 2005-2006 may be due to the particularly favourable catches from flood year 2004. Overall, the increases are roughly in line with fishers' own impression (beneficiary impact survey) indicating largely marginal increase in catch and income. Based on sub-samples of more reliable data, and comparisons with DFID-funded CBFM-II¹¹ and USAID-funded MACH¹² projects data, the roughly estimated yield increases are likely to be in the order from 150 at baseline to 250 kg/ha in the last two years around a 65% increase. There have been increases in the number of fish species recorded at most sanctuary sites.

¹⁰ 143,000 ha under original economic assumptions.

¹¹ Community-Based Fisheries Management-Phase II project, implemented by the WorldFish centre, funded by DFID.

¹² Management of Aquatic ecosystems through Community Husbandry (MACH), implemented by NGOs, funded by USAID.

Stocking targets have been considerably underachieved, probably due to too rigid and over-ambitious expectations of community contributions at earlier stages, without the necessary community organizational build-up. Interestingly enough, with time, many of the fishers groups have begun to stock on their own: in 2005-06 eleven CBOs stocked 24 ton fingerlings using their own resources.

41,600 fishers were covered under these areas in 2001/2, of whom 60% were full or part-time professional fishers who generally represent the poorest segment of rural populations in Bangladesh. Project data indicate that the total number of fishers on project sites has decline by 2005-06 to nearer 33,200, though some of this difference may be due to original inclusion of non-fishers. Nevertheless if the decline is real, it could be because improved catch has contributed to increased assets to start other livelihoods. However, based on impact assessment information, this could point to a more worrying trend of an exit out of fisheries due to increased management restrictions on access. This would be especially worrying if those leaving are poorer, however evidence from FFP surveys on a few sites do not link these changes consistently to project effects, but a more general exit from fisheries. Exit from fisheries activities by professional fishers in control areas could be even greater. Therefore, there is the possibility that, with the decline in fisheries, the professional fishers need to seek an alternate livelihood to support their families. In 2004 75% of fishers surveyed considered that all or the majority of poor fishers (they are nearly always professional) benefited from stocking, but on sanctuary sites this was more mixed: 24% saw a majority benefiting, and minority losing out. Significantly, however these moderate increases in benefits have to be set against control sites where yields were consistently declining.

Sustainability. The establishment of Fisheries Management Committees (FMCs) and village level sub-committees have been the first and fundamental step in creating sustainable co-management of fishery resources, with user-group voice in the decisions on the nature of interventions and their implementation. In addition to development of site based management committees, initial work on networking by community based organizations has been started in collaboration with other projects at a regional level. It is, however, too soon to tell whether that will result in sustained sharing of experiences and provide support to policy change.

In all cases, the FMCs have obtained the lease rights either through a nominal or zero fee or in the case of more productive areas -- variable fees based on expected yield. However, these leases are of variable length, expiring in 2004, 2007 and some up to 2014. The expiries of these leases post-project are of considerable concern to fishers. Several groups mentioned threats by former powerful leaseholders wishing to have the old auction system again. In addition, it was noted that in areas with otherwise relatively successful gear restriction and sanctuary interventions (e.g. BKSB beel), khas land was being privatized as ponds, and fish attracting depressions established on private land in the beel area. While it was felt by fishers that such activities are increasingly likely to capture project benefits by elites, they were unwilling to address such high conflict and politicized land use issues.

Component 2: Coastal Shrimp Aquaculture

Overcoming a two-year delay in its start due to additional studies to examine social and environmental impacts, this component has achieved much of what it set out to do in terms of outputs, and in some ways more than expected. With the support of three contracted NGOs, all committees have been established as planned and all Polder Committees (PCs) have built up their own funds. The development of committees took place during the two years when various studies were undertaken, which at hindsight may have assisted the overall quality of interventions. The community consultation process has resulted in piloting of an approach with voluntary agreements between land owners, lease holders and Block and Polder Committees to resolve land

issues on shrimp polders. Despite delays, procurement actions and construction have nearly been completed for targeted works in all 4 polders, though polder no. 32 is lagging behind. In addition, a communal shrimp landing platform/collection hall is nearing completion. The communities decisions on the site selection and construction of structures, as well as on the supervision of implementation, have created an unprecedented sense of ownership of water management systems in the polder areas.

However, due to the delay in implementing this component, and works only coming to completion at the end of project, it is not possible to assess outcomes in terms of direct production benefits associated with the project. For sampled areas, from the total project area covering 10,454 ha under 4 project polders, the baseline shrimp yield levels of 250 kg/ha (polder 5) and 183 kg/ha (polder 23) are considerably lower than the appraisal assumptions (around 350kg/ha), probably due to gher (shrimp farms) ponds splitting into smaller units as part of longer-term trends. Nevertheless anecdotal evidence indicates that some improvement of around 10-15% is already being achieved; and, with full functioning and management, this could increase to 30-40%. The baseline studies for shrimp gher suggest that considerable further increases will not happen without further improved disease management primarily in the form of ensuring disease-free fry in association with appropriate water management practices.

Overall most owners of shrimp farms are smallholders, though a few big farmers own the largest area of shrimp farms. The number of smallholders benefiting from project water management infrastructure and interventions who are either moderately or extremely poor constitutes 20% in polder no. 23, and 38% in the more remote polder no. 5. Polders no. 31 and no. 32 are more likely to reflect the neighbouring polder no. 23. Further, the total pond areas under management of the poor are even smaller, as they tend to own smaller ponds. In terms of shrimp farming, the distribution of relative benefits of improved water management (and so production increases) is likely to go to larger farms adjoining canals rather than those in the middle of blocks. These farms have better production to start with, and are thus less likely to be poor. Nevertheless, with the project, all groups benefit from the improve water management capacity and management.

The establishment of a voice for the landless through their committees and representation in block and polder committees has been a considerable achievement. The landless have gained fishing access to canals (khas land) through committee agreements in one polder. They have also been engaged to a greater extent in labour on gher and canal rehabilitation.

Sustainability. The breadth of committee membership and sense of ownership in the water management systems under development is a considerable project achievement; and, like the inland water committees, are fundamental to sustainability. Nevertheless, due to the late start of activities on the ground of this component, there are some points of concern on sustainability that were repeatedly raised. The first concern is a request from all key local stakeholders for extension of NGO presence for an additional two years or so. There is clearly a concern that there may be a return to conflicts without external mediation, as well as continuing limitations in committee membership and skills, which could affect the water management systems effectiveness. The second recurring fear was for the return of canals/khas lands to private lease after the end of the project. Under the original project agreement these leases were meant to be permanently cancelled. The re-privatization of leases would not only affect landless getting fishing rights but also community management of water flow through these canals to gher.

Initially there was a subcomponent on improved shrimp fry collection methods with training of 30,000 shrimp fry collectors, most of whom are very poor, women and children. This component was dropped when the government banned wild fry collection. The government was unwilling to

look into further capacity support to former fry gatherers (many of whom are in fact continuing due to lack of alternate activities), despite them being among the extremely poor, since wild fry collection had become an illegal activity under the government ban. A GEF funded study under Component D also found that these small scale shrimp fry collectors do not have a major impact on fishery resources, compared to larger nets. It is likely that such collectors will phase out in time due to an increase and low price fry supplied by private hatcheries.

Alternative Livelihood Program

There was no specific component or target originally associated with this activity. This was because it was finally agreed in 2004 in response to reduced livelihoods for shrimp fry collectors due to the ban, and the desire to support inland open water fishers affected by seasonal fishing closures and other interventions. This activity was set up on a pilot basis with 2,000 households in 8 Upazilas, and two NGOs, working in the polder and inland open water areas.

The NGOs effectively targeted extremely poor households (less than 60Tk/day), mostly women, and the interventions were popular with beneficiaries and effective despite differences in approaches. In the inland water areas, also over 25% of households targeted were non-fishers. A process evaluation concluded while the program was intensive and of relatively high cost, this was necessary to reach such underprivileged and often scattered beneficiaries. Impacts have not been assessed, though there were signs that new livelihood activities were being adopted. The pilot activities lasted less than a year due to the end of the DFID funded period. The DOF did not continue this activity under IDA funding as it lacked the suitable manpower for the intense monitoring. Thus, while the two NGOs have considered extension of activities under their own funding, this can only be sustained on a very limited scale considering the overall needs of the project area

Component 3: Freshwater Aquaculture Extension and Training

This component has satisfactorily established effective aquaculture extension strategy with partners. A large concerted mechanism was put in place to reach a large number of aquaculture farmers. The effort included the development of 12 training manuals and three TV spots, training of 460 DOF and 175 NGO officers, 167 school teachers, 17 fish fry traders, and 90 Local Extension Agents for Fisheries (LEAF). The resulting extension training reached 200,000 farmers (75% male and 25% female) in 211 pails. 8000 Fisheries Villages were organized.

Successful implementation of the project activities have significantly improved the knowledge base and capacity of DOF staff and NGO officers as well as developed the skill of 200,000 trained farmers. Ninety-five percent of the farmers understand 40-70% of the training messages while 5% understood all. The average yield (2.9 mt/ha) as obtained by the trained farmers is 45% higher than that of the untrained farmers. (60, 40 and 12% in case of farmers trained in Batch 1 & 2, 3 and 4, respectively). The yield increase in case of women operated ponds was lower than for men (27% higher than the untrained farmers, compared to 50% higher for men), but their profit margin per unit input was higher than that of the male farmers, as their production cost was also lower, especially in later training batches. There has also been secondary adoption of training recommended practices - by up to 33% of non-trained pond-owners in project villages in the first two batches.

The physical targets of this component were successfully achieved both on output and outcome levels, though poverty targeting in relation to the original overall indicators in the logframe was not achieved. Targeting of the poor was very weak but not discriminatory, as there few poor farmers with ponds. Initially the project had no clear specific poverty targeting or strategy for this

component. Only 8% of project trainees were moderately or extremely poor people largely a reflection of the existing pond holding structure. However even after training of extensionists on poverty targeting, selection of poor did not significantly improve.

Continued support by DOF at upazila level is necessary to make achievement by this component sustainable. The support would include continued presence and contacts of the trained DOF officers, NGO officers and school teachers with the fish farmers, Fisheries Village Groups and LEAFs duly supported by information, training and extension materials developed and distributed by the component to continue the activities in the right direction. Through the NFS sub-strategy, there are plans and even some resources allocated to continue support to and expansion of the LEAF concept by the upazila team. There is also institutionalization of the concept of Fisheries Village and farmer's exchange visits for aquaculture extension as well as the development of a project proposal for external funding under the Aquaculture Investment Program.

Component 4: Aquatic Resources Development, Management and Conservation Studies

This was a blended GEF funded component under the Fourth Fisheries Project with three sub-components - Aquatic Biodiversity Conservation, Hilsa Fishery Management and Genetic Improvement of cultured fishes.

Aquatic Biodiversity Conservation: Aquatic Biodiversity conservation was supported and studied under the inland open water and brackish water components. The studies produced some recommendations to provide policy direction to the future fisheries sector development and to incorporate adequate attention for conservation of aquatic biodiversity in the inland open waters. Improved knowledge of the key biodiversity issues have been defined and brought into routine management strategies of DOF, and incorporated into the NFS.

Hilsa Fishery Management: Four major studies were conducted on the reproductive biology, management conservation strategies, stock assessment and catch monitoring of hilsa as a key commercial and indicator species. Trainers training and awareness campaign modules were developed and training was offered to 80 Officers of DoF and BFRI, and 2,500 Fishers and other stake holders. Capability of GoB officials has improved considerably concerning hilsa fishery management on one hand and on the other hand the stakeholders awareness for conservation of the hilsa fishery through implementation of the Fish Conservation Act has increased significantly. Four sanctuaries and one major nursery ground and an imposed fishing ban (two months in the sanctuary areas and ten days in the major nursery ground) were established. GoB has increased logistic support for hilsa management and created a permanent budget head to provide food assistance to the affected fishers during the fishing ban periods. The declining trend of hilsa production appears to have been reversed with a registered an annual increase of 11.9% in 2005 over 2004. However, a longer term monitoring program will be required to show that the above noted interventions were significant in reference to other natural fluctuations due to annual changes in hydrology. It is important to note that concurrent with the documented impact on hilsa production, monitoring of other associated aquatic species in the vicinity of project interventions appear to have increased in diversity and density due to the hilsa-targeted interventions. Continued monitoring of those species will also need to be pursued over the long-term to confirm this early finding.

Genetic Improvement: Three studies were conducted: Development of Brood Stock Management Plan for Bangladesh, Short-term Preservation of Milt for Enhancement of Genetic Diversity, and Pilot Cross Breeding of Hatchery Stocks for Genetic Improvement. The results obtained were disseminated to 90 DOF and 345 private hatchery operators through organizing training programs.

Brood Stock Management and Breeding Plans were developed in collaboration with BAU and BFRI. Techniques for short term preservation of fish milt were developed for genetic diversity improvement of hatchery brood stocks of mirror carp and used successfully for cross breeding of hatchery brood stocks. One scientific paper was presented in a national seminar and two manuals (Manual for Genetic Conservation in Commercial Hatcheries in Bangladesh and Identification Manual of Pure Silver Carp Breeders) were published. The importance of restored genetic quality of silver carp for poorer pond owners has been highlighted. The studies indicated that biodiversity-safe stocking of exotics is possible by reducing their reproductive capacity. Stock improvement through cross breeding of hatchery stocks created interest among private hatchery operators, some of whom are actively taking up innovations. There is improved awareness of the stake holders about genetic quality of the fish seeds. The knowledge base of hatchery operators has been enhanced in genetic-related issues for hatchery operation.

Component 5: Institutional Support to Department of Fisheries (DOF) and Training of NGOs

The National Fisheries Strategy (NFS) and its 8 sub-strategies have been prepared and were approved by the Ministry of Fisheries and Livestock in January 2006. Only the Aquaculture Extension sub-strategy was originally planned in PAD, and the whole set of sub-strategies and action plans were only included after the MTR. The sub-strategies are: Aquaculture, Aquaculture Extension, Inland Capture Fisheries, Marine Sector, Shrimp, Monitoring and Evaluation, Quality Control, and Human Resources Development. These have been prepared in participatory manner within DOF and with partner agencies and projects, and in local consultations and capture many hard-learned lessons. Discussion within and among sub-strategy working groups has led to coherent and mutually reinforcing strategies providing a unified and very solid platform for future government led action and any external support. A draft, overall 10 year action plan and priorities for the NFS has been prepared; and action plans for eight sub-strategies have been finalized. The DOF staffs involved in the project are clearly fully engaged and aware of the policy and resource constraints facing the future implementation.

The Government has allocated a budget line for the implementation of the HRD sub-strategy, and a draft proposal for reorganization of DOF and capacity building is being prepared. The HRD strategy has had to quite rightly follow the delayed NFS, rather than precede it. There are provisions for expansion of LEAFs and continued training and linking to the local upazila Fisheries Officer levels and government for continued capacity support.

Several thorough impact studies for all key components have been prepared despite lack of specific budget line¹³. A computer network linking 64 districts with Headquarter has been established. While the MIS is under development and wide levels of training have improved capacity, there are some concerns with its future maintenance and transfer of trained staff. Some dedicated staff have been budgeted under a DANIDA project. Under the project, links have not been firmly established to the DOF fisheries resources survey system (FRSS) established in 1982 and which needs updating, but the information issues have been clearly identified as needing to be addressed in the NFS with recommendations for the establishment of Monitoring and Evaluation Wing in DOF.

Sustainability. The project undertook several steps to try to ensure as much post-project mainstreaming and sustainability of its efforts as possible. The project staff in conjunction with DOF staff prepared and largely implemented exit strategies overall, and for the different

¹³ These outputs are in fact more directly project management related rather than strictly long-term outputs.

components, in 2006. Much of it has been to ensure lessons and capacity that has been built at national and local levels from the project are mainstreamed into supporting the implementation of the NFS. The preparations have been highly appropriated and well undertaken, if somewhat belated. In addition, there are various specific activities in other components that were, with good foresight, designed for supporting sustainability: fishery and polder management committees and forum; LEAFs; action plans to mainstream biodiversity and hilsa management. And these have been largely adopted by the Government.

There are further converging lessons from FFP and other projects, on the nature of inland open water management in particular, which have been mainstreamed in the NFS and action plans, such as: the decentralization of fishery management decisions and stakeholder bodies to Upazila level, the need for long-term leases for open water body based on user groups management plans. The MOFL in principle seems committed to following through on these. The challenge is to sustain and build the capacity to implement them, especially the inland open water and shrimp components. Here considerable resources are further needed to scale-up and further support communities, and gain committed top-level policy change in terms of leases. Large amounts of external resources for fisheries are unlikely to be available in the next couple of years at least. The question of long-term leases has been on political agendas for many years, and, as the original design documents recognized, there are very powerful vested interests in controlling and exploited natural resources for fisheries. The issue of allocating long-term leases to broad based and poorer user groups is thus likely to remain the key challenge and goal for future fishery management.

Component 6: Floods Rehabilitation

The Flood Recovery Assistance component was introduced from March 2005, in response to the request by the Government. This new component covers rehabilitation of 31 fish farm under DOF, including one (Raipur RTC) earlier repaired under the project. So far, rehabilitation of 16 farms has been substantially completed, and works in remaining 15 are expected to be completed by end of project.

Annex 3. Economic and Financial Analysis

(including assumptions in the analysis)

Summary

The economic and financial IRRs are robust. At ICR, the ERR was estimated at 120% and FRR at 116% as compared to 48% ERR and 37% FRR at appraisal. Component-wise outcome is given below.

Component	At Appraisal		At completion	
	ERR	FRR	ERR	FRR
1. Inland Open-water	42%	36%	33%	33%
2. Coastal Shrimp Aquaculture	70%	57%	19%	19%
3. Freshwater Aquaculture	77%	69%	266%	266%
4. Aquatic Resource	282%	261%	164%	164%
Total Project	48%	37%	120%	116%

Assumptions and Analysis The main project benefits are increased fish and shrimp production through various project interventions, increased employment opportunities, and better aquatic biodiversity conservation. The project costs include fingerlings, civil works, transport, machinery and equipment, consultants, training, and studies, which were budgeted/spent for the (sub) components from all financing sources (i.e. Borrower, IDA, UK-DFID and GEF) . All values have been expressed in Bangladesh currency (Taka) at constant 2006 prices.

A 20-year project life was considered for all components. After removing price contingencies, taxes, and duties, all investment costs have been included in the analysis. The increases in yield due to project impacts were derived from project baseline survey and other studies undertaken by the project.

Whenever possible, project costs were allocated to specific components in the financial and economic analysis. However, it was not possible, for example, to allocate common costs such as the Project Management Unit, institutional development, national and foreign consultants, transport, machinery, and equipment to any specific components. Thus the overhead cost, amounted to about 63% (40% at appraisal) of the project cost, was allocated to various components according to their share (i.e. 40% to Inland Open water Fisheries, 10% to Shrimp and Coastal Aquaculture, 30% to Freshwater Aquaculture and 20% to Aquatic Resources Development and Management).

Detailed economic and financial analyses are presented below. The project's overall net present value (NPV) is Taka 10,752 million (about US\$153.6 million) and the overall economic rate of return (ERR) is 120%. As mentioned in Section 8.5 (a), about 65% of the hilsa fishers (270,000) in the project area have been seasonally affected as a result of establishing sanctuaries and closed season management. Estimated income loss of the affected juvenile hilsa fishers is about Taka 1.0 billion, which has no effect on the calculated ERR of 120%. The project significantly enhances the net economic wealth of Bangladesh. The increase in availability of fish for domestic consumption, and the foreign exchange earned through export of shrimp generate substantial benefits to society.

Inland Open Water Fisheries

Inland open-water fisheries component, including the training program, enhances the net wealth of the economy through the increase in fish production. The ERR for the inland open-water component is 33%.

Considering the integrated interventions, the component was analyzed aggregating the costs and benefits of all subcomponent together. There were initially four sub-component of the Inland Open Water Fisheries component. Such as (i) Stock Enhancement 60,000 ha, (ii) Fish Passes 8 and regulators 5, (iii) Habitat Restoration 10 sites, and (iv) Aquatic Sanctuaries 50 sites. During Appraisal, each of the subcomponent was analyzed as separate intervention for which the ERRs vary in the range of 26% to 143%.

Achievements of this component are: fish pass and regulator subcomponent was dropped; habitat restoration was partially achieved; stocking enhancement was achieved in 8,500 ha; and a total of 75 sanctuaries were established.

Coastal Shrimp Aquaculture

It generates 19% ERR (70% at appraisal), although there is delay in realization of the benefits from the shrimp component. The shrimp price is reduced from appraisal (Tk300/kg) to post project (Tk239/kg according to baseline survey). The component is substantially delayed due to additional studies on shrimp sector at the implementation stage. However, benefits have started to generate from FY2006 as reported by shrimp farmers, hence potential benefits are considered for analysis based on field survey.

There are two models considered for the shrimp component (1) shrimp and rice cultivation and (2) shrimp only. There were 8,555 ha for shrimp-rice and 1,899 ha for shrimp only polders. A 43% increase both in shrimp and fish production at full development was considered based on the field survey information.

Freshwater Aquaculture Extension.

The ERR of the Freshwater aquaculture extension component is 266% (77% at appraisal). It is estimated that a total of 113,000 farmers has adopted the improved technology (70,000 at appraisal). Total pond area of 12,599 ha (out of total 22,430 ha covered by the project) was considered for incremental production in the economic analysis against 7,000 ha at appraisal. As adaptation of training messages was found to be varying from 40-70% - Batch 1&2, 70%; Batch 3, 50%; and Batch 4, 40%, a pond area of 12,599 ha (56%) was considered for incremental production on a conservative basis. The investment costs were much lower than planned but the incremental production was much higher compared with appraisal which generated 6 times net benefits.

Aquatic Resources Development, Management, and Conservation

This component generates a high ERR of 164% (282% at appraisal) due to high benefits compared to low investment costs. All costs, both from the project by all the financiers, and GoB investment, were included in the analysis. Besides, cost of aquatic biodiversity studies was also included. The total catches, both generated from the project and the GoB investment, were considered in the analysis. During appraisal it was estimated annually around 3,707 metric tons of juvenile hilsa (known as jatka) were captured illegally by fishermen. Through the project, GoB

established protected sanctuaries, enforced closed fishing during the breeding season, and mitigated impacts on poor fishers. At appraisal, the incremental production was estimated to 23,000 tons. Recent production increase was estimated at 57,000 tons and 78,000 respectively for 2004 and 2005, representing significant increase over that of PAD. Summary results of Economic/Financial analysis is in the following table and the details are in the attached Appendices.

**Summary Results: Economic and Financial Analysis
Cost Benefit Analysis (Taka million)**

Components	Net Present Value of Flows 1998		Net Present Value of Flows 2006	
	Economic Analysis	Financial Analysis	Economic Analysis	Financial Analysis
1. Inland Open-water [1]				
i) Stock Enhancement				
Benefits	1354.1	1354.1	3323.1	3692.3
Costs	1003.8	1062.5	1297.8	1041.9
Net Benefits:	350.3	291.7	2025.3	2650.4
IRR:	42%	36%	33%	33%
ii) Fish Passes[2]				
Benefits	707.1	707.1		
Costs	467.5	502.3		
Net Benefits:	239.6	204.8		
IRR:	30%	26%		
iii) Habitat Restoration				
Benefits	319.4	319.4		
Costs	220.1	235.1		
Net Benefits:	99.1	84.2		
IRR:	35%	30%		
iv) Aquatic Sanctuaries				
Benefits	664.3	664.3		
Costs	390.4	412.8		
Net Benefits:	273.8	251.5		
IRR:	183%	143%		
2. Coastal Shrimp				
i) Compl. of TFP Polders				
Benefits	3943.9	3556.2	2646.4	2940.4
Costs	1801.5	1941	1362.7	1514.1
Net Benefits:	2142.4	1615.1	1283.7	1426.3
IRR:	70%	57%	19%	19%
ii) Dev. Of New Polder				
Benefits	786.9	710	Dropped	Dropped
Costs	618.3	667.9		
Net Benefits:	168.6	42.1		
IRR:	22%	15%		

Components	Net Present Value of Flows 1998		Net Present Value of Flows 2006	
	Economic Analysis	Financial Analysis	Economic Analysis	Financial Analysis
iii) Improvement in Shrimp Fry Collection			Dropped	Dropped
Benefits	116.3	116.3		
Costs	9.8	18.1		
Net Benefits:	102.5	98.2		
IRR:	71%	54%		
3. Freshwater Aquacul. Extension & Training				
Benefits	2141.9	2141.9	9054.4	10060.4
Costs	9928	10335	2689.8	2988.7
Net Benefits:	1149	1108.4	6364.5	7071.7
IRR:	77%	69%	266%	266%
4. Aquatic Resource Hilsa Conservation				
Benefits	2099.6	2099.6	94247.1	104719.0
Costs	724.8	755.2	62067.5	69008.6
Net Benefits:	1374.7	1344.4	32179.7	35710.4
IRR:	282%	261%	164%	164%
TOTAL PROJECT [3]				
Benefits	12133.4	11668.7	109270.9	121412.2
Costs	6866	7532.1	67417.8	74553.3
Net Benefits:	5263.4	4134.4	41853.2	46858.9
IRR:	48%	37%	120%	116%

[1] During Appraisal, each of the subcomponent were analyzed as separate intervention, however, during implementation it was found that almost all the site have multiple interventions in same sites, hence it is not possible to calculate, ERR and benefits separately for each subcomponent. Considering the integrated interventions, the component was analyzed aggregating the costs and benefits of each implemented subcomponent together.

[2] This subcomponent was dropped.

[3] The total benefits and costs include the fisheries studies and the institutional support costs as well.

Bangladesh: Fourth Fisheries Project
Implementation Completion and Results Report

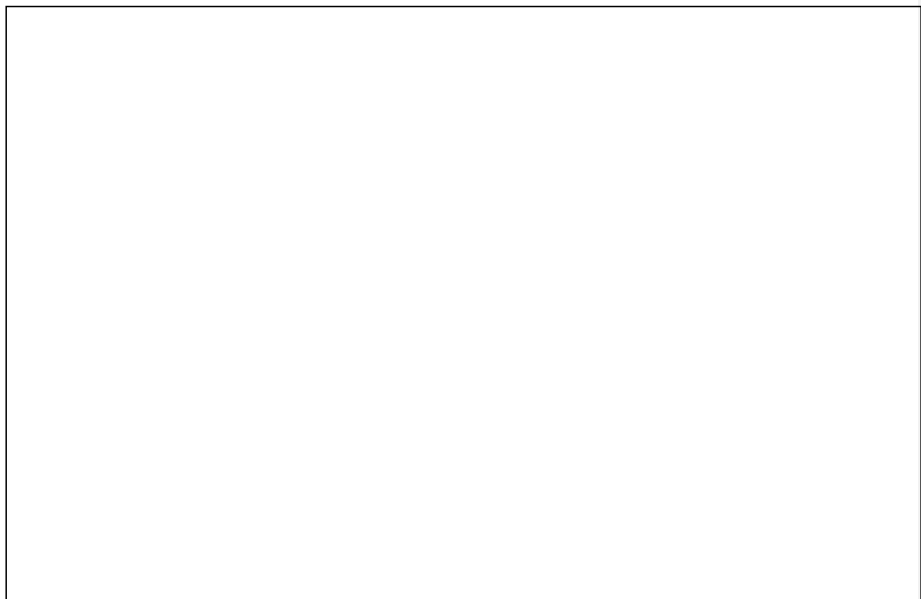
Appendix A: Detailed Economic Analysis

Table A.1: Economic Analysis at Completion of the Project (FY2006)

	Unit	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2019	
I. BENEFITS											
- Inland Openwater Management	Tk/m	0	0	31	209	198	189	193	193	193	
- Shrimp & Coastal Aquaculture	Tk/m	0	0	0	0	0	0	135	193	193	
- Freshwater Aquaculture	Tk/m	0	0	460	486	507	507	507	507	507	
- Hilsa Management	Tk/m	0	0	0	0	4374	5992	5992	5992	5992	
Total benefits	Tk/m	0	0	491	696	5079	6688	6826	6884	6884	
II. COSTS											
- Inland Openwater Management	Tk/m	13	87	123	159	166	144	121	109	31	
- Shrimp & Coastal Aquaculture	Tk/m	7	51	69	74	78	66	98	110	67	
- Freshwater Aquaculture	Tk/m	11	73	161	202	230	213	194	183	119	
- Hilsa Management	Tk/m	7	45	61	65	3894	3912	3906	3860	3860	
Total costs	Tk/m	37	256	413	500	4369	4334	4319	4263	4077	
III. NET BENEFITS			-37	-256	78	196	710	2353	2507	2622	2607
ERR =			120%		NPV	10,752					

Notes:

- 1) The economic factor was considered 0.9 for all the costs as standard.
- 2) Component-wise analysis is made separately. The benefits and costs by components were added up in the summary analysis table.
- 3) The costs figures were provided by the FFP/DoF.



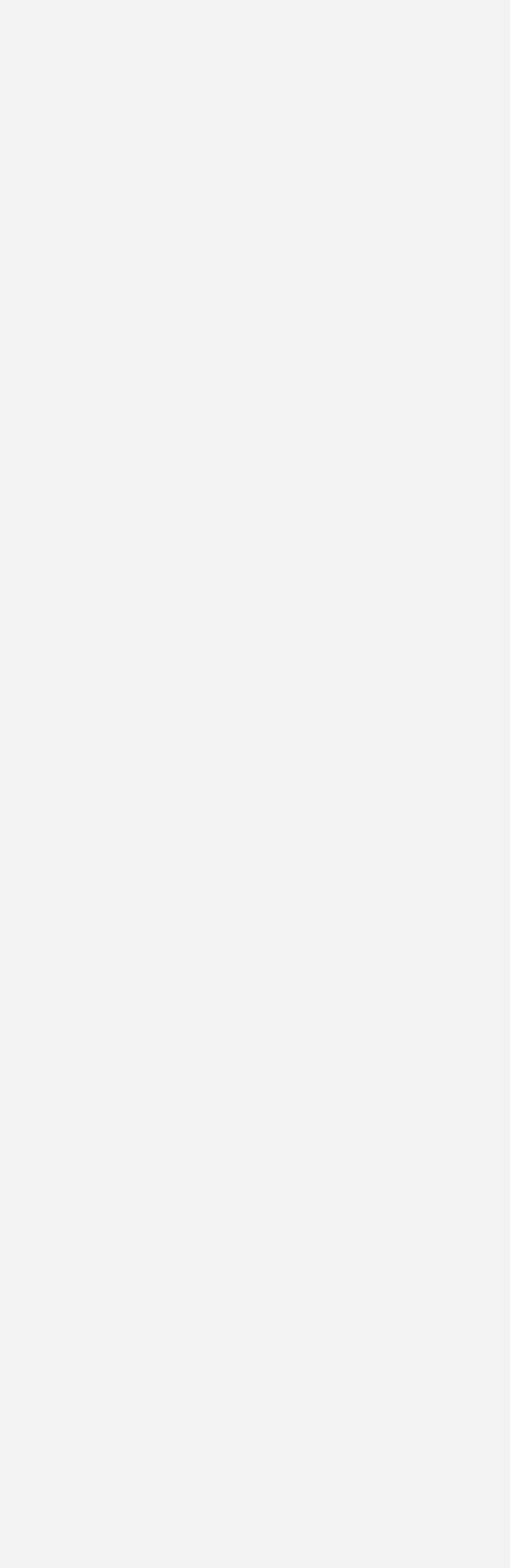
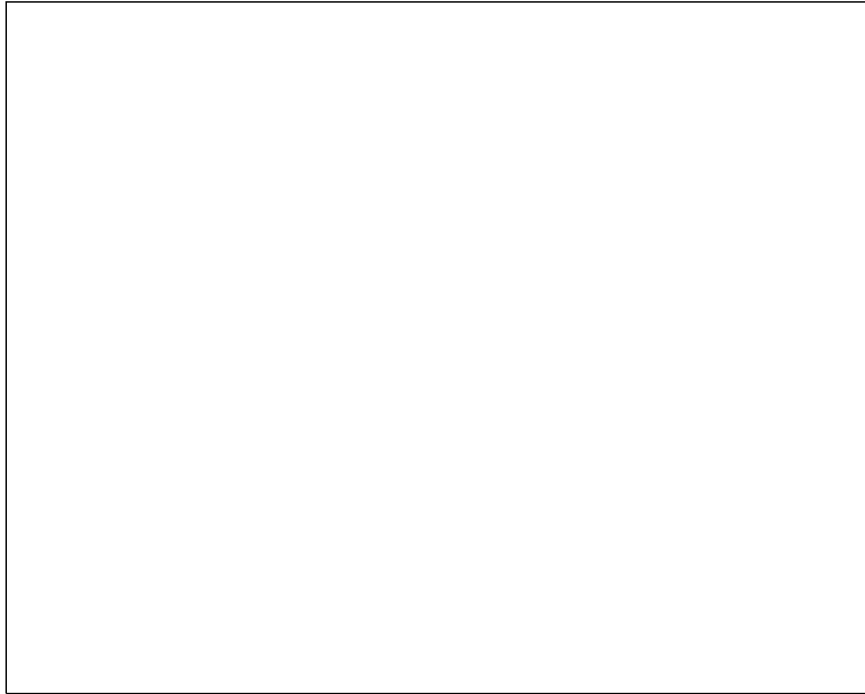
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Table A.4: Freshwater Aquaculture Component - Economic Analysis

	Unit	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2019
I. BENEFITS										
Incremental production	Ton	0	0	10062	10631	11079	11079	11079	11079	11079
Price	Tk/kg	0	0	46	46	46	46	46	46	46
Total Benefits	Tk/m	0	0	460	486	507	507	507	507	507
II. COSTS										
Project costs										
- Extension and Training	Tk/m	3	22	30	32	34	29	23	20	
- Incremental Operating Cost	Tk/m	7	50	67	72	77	65	52	45	
- Beneficiaries production cost	Tk/m	0	0	64	98	119	119	119	119	119
Total Costs	Tk/m	11	73	161	202	230	213	194	183	119
III. NET BENEFITS		-11	-73	299	284	277	294	313	323	388
ERR =		266%		NPV=	1875					

Notes:

- 1) A total of 22,430 ha pond area covered during implementation, out of which 12,599 was considered in economic analysis for incremental production on a conservative basis, as training messages were adopted by farmers in a varying degree (40-70%, i.e. batch 1&2, 70%; batch 3, 50%, and batch 4, 40%). At Appraisal, 7000 ha was estimated for economic analysis.
- 2) Weighted incremental operating costs were loaded in the analysis.



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Table B.2: Inland Openwater Fisheries Component - Financial Analysis

	Unit	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2019
I. BENEFITS										
Incremental production	kg	0	0	670500	4578750	4331250	4137750	4209750	4209750	4209750
Price	Tk	0	0	51	51	51	51	51	51	51
Total Benefits	Tk/m	0	0	34	233	220	210	214	214	214
II. COSTS										
Project costs										
- Community-based stock enhancement	Tk/m	2	17	22	24	25	22	17	15	0
- Pilot fish p./water regulatory structur	Tk/m	1	6	8	8	9	7	6	5	
- Fish Habitat restoration	Tk/m	1	5	7	7	8	6	5	4	
- Pilot Aquatic Sanctuaries	Tk/m	2	12	16	17	18	16	12	11	
- Incremental Operating Cost	Tk/m	11	75	100	107	114	97	77	66	0
Subtotal - Project Cost	Tk/m	16	114	152	164	174	148	117	101	
Beneficiaries costs										
- Fingerling cost	Tk/m	0	0	1	1	1	0	1	1	1
- Fishing cost	Tk/m	0	0	0	0	0	0	0	0	0
- Lease Fee	Tk/m	0	0	0	2	2	2	2	2	2
- Maintenance cost	Tk/m	0	0	0	0	0	0	0	0	2
Subtotal - Beneficiary cost	Tk/m	0	0	1	3	3	3	3	3	3
Total Cost	Tk/m	16	114	153	166	177	150	121	105	3
III. NET BENEFITS	Tk/m	-16	-114	-119	66	43	60	93	109	211
	FRR =	33%		NPV =	520					

Notes:

- 1) For this evaluation, an overall 65% production increase was considered. This is based on recorded increase of 45% in the project waterbodies due to fingerling stocking and observed decline of about 20% in non-managed waterbodies. The baseline yield was 150 kg/ha and considering 65% increase it was 247.5 kg/ha.
- 2) The financial fish price per kg was Tk 50.82 determined through baseline survey by FFP.
- 3) Fishing cost per ha was considered Tk 8 per ha from TFP evaluation.
- 4) Actual lease fees were entered, while there were some waterbodies completely lease free.
- 5) Weighted incremental operating costs were loaded in the analysis.

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Table B.3: Coastal Shrimp Aquaculture Component - Financial Analysis

	Unit	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2019
I. BENEFITS										
Incremental production	ton									
- Shrimp		0	0	0	0	0	0	573	821	821
- Fish		0	0	0	0	0	0	253	363	363
Price	Tk									
- Shrimp		0	0	0	0	0	0	239	239	239
- Fish		0	0	0	0	0	0	51	51	51
Total Benefits	Tk/m	0	0	0	0	0	0	150	215	215
II. COSTS										
Project costs										
- Completion of 3th Fisheries polders	Tk/m	5	36	48	52	55	47	37	32	3
- Development of New Polders	Tk/m	0	1	2	2	2	2	1	1	
- Training of shrimp Fry Collectors	Tk/m	0	1	1	1	1	1	1	1	
- Incremental Operating Cost	Tk/m	3	19	25	27	29	24	19	17	
Cost paid by beneficiaries										
- Shrimp only polders	Tk/m	0	0	0	0	0	0	20	29	29
- Rice-Shrimp polders	Tk/m	0	0	0	0	0	0	30	43	43
Total cost	Tk/m	8	57	76	82	87	74	109	122	75
III. NET BENEFITS	Tk/m	-8	-57	-76	-82	-87	-74	41	92	140
	FRR =	19%		NPV =	160					

Notes:

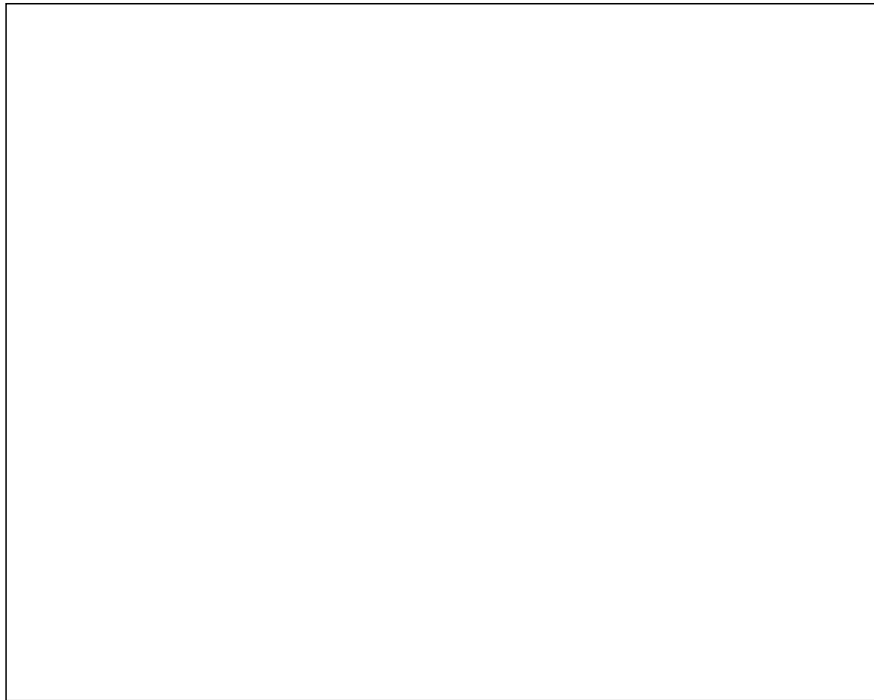
- 1) B/WDB costs include maintenance cost at post-project situation @10% per year.
- 2) Although 'Development of a new Polder' and 'Training of shrimp Fry Collectors' sub-components were dropped, however, undertaking a few studies incurred those costs.
- 3) Weighted incremental operating costs were loaded in the analysis.
- 4) The financial shrimp price per kg was Tk 239.11 and financial fish price was Tk 50.82.
- 5) The baseline production was 167.6 kg/ha for shrimp and 96.4 kg/ha for fish. Average increase of shrimp and fish was 43%.

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Table B.4: Freshwater Aquaculture Component - Financial Analysis

	Unit	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2019
I. BENEFITS										
Incremental production	ton	0	0	10062	10631	11079	11079	11079	11079	11079
Price	Tk/kg	0	0	51	51	51	51	51	51	51
Total Benefits	Tk/m	0	0	511	540	563	563	563	563	563
II. COSTS										
Project costs										
- Extension and Training	Tk/m	4	25	33	36	38	32	26	22	
- Incremental Operating Cost	Tk/m	8	56	75	80	86	73	58	50	
Beneficiaries Costs	Tk/m	0	0	71	108	132	132	132	132	132
Total Costs	Tk/m	12	81	179	224	256	237	215	204	132
III. NET BENEFITS										
	FRR =	-12	266%	-81	NPV =	332	2084	316	308	327
						348	359	431		

Notes:

- 1) A total of 22,430 ha pond area covered during implementation, out of which 12,599 was considered in economic analysis for incremental production on a conservative basis, as training messages were adopted by farmers in a varying degree (40-70%, i.e. batch 1&2, 70%; batch 3, 50%; and batch 4, 40%). At Appraisal, 7000 ha was estimated for economic analysis.
- 2) Weighted incremental operating costs were loaded in the analysis.



Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/Specialty
Lending			
Imtiaz Uddin Ahmad	Consultant	SASAR	Operations and Inst.
Nurul Alam	Sr Procurement Spec.	EAPCO	Procurement
Benson Ateng	Country Manager	EACGF	Economist/Task Team Leader
Gonzalo Castro	Lead Environmental Specialist	GEF	Biodiversity
Henry P. Gassner	Consultant	SASAR	Principal Op. Officer
M. Aminul Haque	Consultant	SARPS	Procurement
M. Mozammel Hoque	Sr. Financial Management Specialist	OPCFM	Financial Mgt.
S. A. M. Rafiqzaman	Irrigation Engineer	SASAR	Civil Engg and Water Mgt.
Mohammad Sayeed	Consultant	SARFM	Disbursement
Lars T. Soeftestad	Consultant	MNSRE	Anthropology
Ronald D. Zweig	Sr. Agric. Ecologist	EASRE	Fisheries
Supervision/ICR			
Imtiaz Uddin Ahmad	Consultant	SASAR	Policy and Inst/TTL
Burhanuddin Ahmed	Sr. Financial Management Specialist	SARFM	Financial Management
Harbans Lal Aneja	Consultant	SARPS	Procurement
Teen Kari Barua	Consultant	SASEI	Social/Resettlement
S. A. M. Rafiqzaman	Irrigation Engineer	SASAR	Operations/TTL
Mohammad Abdullah Sadeque	E T Consultant	SARPS	Procurement
Ronald D. Zweig	Sr Agric. Ecologist	EASRE	Fisheries and Environment

b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY88		0.01
FY89		0.18
FY90		0.27
FY91		0.78
FY92		26.48
FY93		72.76
FY94		198.93

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
FY95		132.32
FY96		7.44
FY97		0.00
FY98		0.00
FY99		0.00
FY00	3	0.00
FY01		0.00
FY02		0.00
FY03		0.00
FY04		0.00
FY05		0.00
FY06		0.00
FY07		0.00
Total:	3	439.17
Supervision/ICR		
FY88		0.00
FY89		0.00
FY90		0.00
FY91		0.00
FY92		0.00
FY93		0.00
FY94		0.37
FY95		0.00
FY96		26.22
FY97		33.08
FY98		34.26
FY99		35.41
FY00	47	32.32
FY01	32	64.21
FY02	32	147.65
FY03	36	13.42
FY04	24	32.32
FY05	38	64.21
FY06	39	147.65
FY07	13	1.53
Total:	261	632.65

Annex 5. Beneficiary Survey Results
(if any)

No Beneficiary survey was carried out for this project.

Annex 6. Stakeholder Workshop Report and Results
(if any)

No stakeholder workshop was organized for this project.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

Government of the People's Republic of Bangladesh
Ministry of Finance
Economic relations Division
Sher-e-Bangla Nagar, Dhaka

No. ERD/IDA-7/FFP/2005/(Vol-4)/159

Date: 22 November 2006

I would like to refer to World Bank's letter dated 19 October 2006 on the above subject. Ministry of Fisheries and Livestock (MOFL) has forwarded the borrower's evaluation report on FFP. I am directed to forward a copy the report for information and necessary action at your end. MOFL has, also, provided clearance for public disclosure of the report.

With kind regards,

Sd/= (Fahmida Akhtar) 22/11/06
Senior Assistant Chief
Phone: (880-2) 911-9415

Enclosure: As stated

Country Director
World Bank, BDO
E-32 Agargaon
Sher-e-Bangla Nagar, Dhaka

cc: Secretary, Ministry of Fisheries and Livestock, Bangladesh Secretariat, Dhaka

**Implementation Completion and Results Report
Bangladesh Fourth Fisheries Project
(IDA Credit 32760-BD)**

Borrower's Evaluation

The Project

1. The Fourth Fisheries Project started in 2000 for duration of five years, and was funded by the Government of the People's Republic of Bangladesh, the World Bank/IDA, DFID of the United Kingdom, and Global Environment Facility (GEF). The original credit closing date was Dec 31, 2004, which was extended up to June 30, 2006 for the IDA credit. The DFID Grant was extended up to June 30, 2005 and GEF-grant closed as scheduled. Following 2004-floods, a new component was included in 2005 for rehabilitation of 31 affected fish farms. The project activities were organized in six components:

- i. Open water fisheries component (also known as Inland Capture Fisheries);
- ii. Shrimp and coastal aquaculture;
- iii. Freshwater aquaculture, extension and training;
- iv. Aquatic Resource development, Management and Conservation Studies;
- v. Institutional support; and
- vi. 2004-Floods Rehabilitation Program

Summary of the Project Outcomes

2. Summary of the project outcomes:

Table 1: Progress against Key Performance Indicators

<i>Key Performance Indicators</i>	<i>Status as of June 2006</i>
1. Community management established in at least 50 sites under open water component, with sustainable methodologies established for production increase of 50% (original 100%) by end of project.	Community based organizations were originally established at 51 sites; after performance monitoring support was withdrawn from 12 sites. At present 39 sites are performing satisfactory with a potential to be sustained after project end. Results of fish catch data received from 33 sample sites are found positive and encouraging; the production increase was 140% (from baseline 120 kg to 289 kg/ha/year). It should be noted that there are questions about the statistical accuracy about assessment method.
2. Clear definition of the role of moderately or extremely poor people in target groups and an inclusive strategy established, delivering at least 75% (original 80%) of project benefits to them on a sustained basis by end of project *	Current assessment suggests that at least 50% of project benefits are likely to accrue to the target group in 39 water bodies at the end of the project. About 20-38% of the shrimp farmers (depends on area) and about 8% fish farmers of Fisheries Villages are poor.
3. Forum for user-group management institutions for project oversight and decision-making established by year 1 and sustained to form Department of Fisheries network for strategy and action plan development. *	Initial work on networking by community based organizations has been started in collaboration with other projects. Regional level networking has been established.

<i>Key Performance Indicators</i>	<i>Status as of June 2006</i>
4. Effective strategy to supply quality seed from private / public collaboration which will meet at least 50% of national demands within 3 years after the end of the project using improved stocks supported by the utilization of renovated Department of Fisheries facilities.	Continued to support of improved breeders rearing at 21 Fisheries Extension Centers and in 10 private hatcheries A seven years genetic improvement plan has been incorporated in the proposal for donor-assisted project and a concept not for 18 months support of genetic improvement program has been proposed.
5. Improved knowledge of key biodiversity issues associated with open water fisheries, aquaculture and <i>hilsa</i> fisheries defined, and brought into routine management strategies, and longer-term Department of Fisheries capacity in place.	Government has created a permanent "Head" under Revenue Budget for <i>hilsa</i> fisheries management, development and rehabilitation. Food assistance provided to <i>hilsa</i> fishers. Logistic support to local administration from revenue for <i>hilsa</i> management. For <i>hilsa</i> fishery development and riverine biodiversity conservation, 4 sanctuaries and 10 day fishing ban declared by promulgating a new rule under "Fish Act 1985".
6. Improved, environmentally sound small-holder shrimp production delivering 20% output gains in project polders by the end of the project. *	The community consultation process has resulted in piloting of an approach with voluntary agreements between land owners, lease holders and Block and Polder Committees to resolve land issues in shrimp polders. Procurement actions and construction was almost completed though polder 31 was lagging behind. Department of Fisheries and NGO staffs have received training on participatory water management and environmentally sound small-holder shrimp management.
7. Effective and inclusive aquaculture extension strategy established with partners, with sustained output increased by 50% in target communities of 200 <i>upazilas</i> by the end of the project. *	Aquaculture Extension component covers about 200,000 farmers in 8,000 villages under 211 <i>upazilas</i> . Assessment of 3,600 Fisheries Villages (Batch 1 st and 2 nd) has revealed that trainee's average harvested yield is 3.88 t/ha, about 60% higher than that of untrained farmers. Batch 3 (2,400 Fisheries Villages) showed 49%. Including Batch 4 the average increase was 45%.
8. Effective monitoring and evaluation system for production, value and social impact in place, involving networks of Department of Fisheries, community and NGO staff.	Impact studies for fisher/fish-farmer are making good progress. Participatory Rural Appraisal for Open water and Aquaculture Extension and Training completed and analyzed. Baseline survey of shrimp polders has been completed. There has been good progress in establishing a computer network linking 64 districts with Headquarter. MIS is under development and wide levels of training have improved capacity.

<i>Key Performance Indicators</i>	<i>Status as of June 2006</i>
9. Sub-sectoral strategies developed through consultative processes lead by the Department of Fisheries and linked towards National Fisheries Strategy and action plan, with associated capacity building within the department.	<p>The National Fisheries Strategy and its 8 sub-strategies have been prepared and were approved by the Ministry of Fisheries and Livestock in January 2006. The sub strategies are Inland Capture Fisheries, Marine Capture Fisheries, Aquaculture Extension, Shrimp and Coastal Aquaculture, Monitoring and Evaluation, Human Resources Development, Aquaculture Extension and Quality Control.</p> <p>The Action Plans for three sub-strategies have been finalized. The Government has allocated a budget line for the implementation of the HRD sub-strategy.</p>

(Source: Quarterly Progress Report No. 24 dated June 30, 2006)

Assessment of Output/ Outcomes and Implementation Experiences by Component:

Component 1: Open water fisheries component

3. The open water fisheries management component included fisheries management and enhancement interventions through closed seasons, gear restrictions, stocking of fingerlings, establishment of aquatic sanctuaries and aquatic habitat restoration (re-excavation of canals and floodplains). These have been implemented through a community based fisheries management approach. Community Based Organizations (CBOs) were established at water body level as Fisheries Management Committees for management of fisheries resources. The stakeholders at village level were first identified and a committee was formed in each village. These committees are known as Fisheries Sub Committees. Representatives of these committees at a water body make up the Fisheries Management Committee.

4. NGOs¹⁴ have been employed at each site to mobilize and organize the community with technical assistance from the local Department of Fisheries office. The Fisheries Management Committee with the help of the NGO and local staff of the department prepares an annual fisheries management plan for the water body. The sustainability of the project has been ensured by the formulation of by-laws for the Fisheries Management Committees and they have been registered with the Social Service Department. Annual general meetings have regularly been organized by the CBOs.

5. Community based organizations were originally established at 51 sites. The performance was closely monitored by the project and NGOs, and subsequently support was withdrawn from sites which were not performing well and where there was no scope for improvement. At the end of the project 45 community-based organizations in 39 sites were performing satisfactory with a potential to be sustained.

6. Fishers are classified as being poor or extremely poor (initial surveys by the project). Following the criteria for the classification of sites, which included access rights and representative organizations, it can be concluded that practically all benefits of project interventions in these sites accrue to the target group. The 39 sites comprise more than 41,000

¹⁴ In 2003-04 there were 14 NGOs contracted by the project: BRAC (22 sites), SSS (5), Proshika (6), CNRS (5), TMSS (4), Padakhep (3), GMF (2), GSK (2), ASG, BUK, BUS, DCHDO, ESDO, Nabalok (all one each), working on 55 sites (including 5 sites planned for construction of fish passes and fish friendly regulators).

fishers out of 60,000 in the original 51 sites. Sixty-eight percent of the original target groups thus reap benefits from the project.

7. Results of fish catch data from 33 sample sites for year 2004-05 and 2005-06 (Bangla years 1411 and 1412) were positive and encouraging. The production increase was 140% (from the baseline figure of 120 to 289 kg/ha/year) on average against a target of 100%. However, it should be noted that there are questions about accuracy on the methods used for catch data.

8. Poor fishers were negatively affected by seasonal bans on fishing, which were an integral part of the adopted management measures. As a pilot program, a total of 1475 fishers households were provided with alternative livelihood activities through asset transfer (Cow rearing, goat rearing, Duck rearing, rickshaw/van, fish culture, small trading, etc.).

9. The CBOs at stocking sites (11 out of 14) stocked fingerlings at their own cost after project subsidies were ended. A total of 15 fish sanctuaries were established by CBOs from their own funds. These are positive indications of the sustainability of the approach.

10. The achievements of the open water fisheries management component against the target are given in the table below:

Table 2: Targets and achievements of the open water fisheries component

<i>Targets</i>	<i>Achievements</i>
60% of all selected sites effectively representing the views and interest of professional fishers.	76% (at 39 sites, out of 51). Total 41,000 fishers benefited who are poor, of them 55% are professional fishers
20,000 hectares (original 60,000 ha) brought under community based fisheries management.	About 18,500 ha. in 39 sites
50 fish sanctuaries. (original same)	75 sanctuaries established (15 built from CBOs own fund)
7 rehabilitated fish habitats (original 10nos.)	7 developed; area 18 ha.
fish passes constructed (original 8 nos).	Dropped
fish friendly regulators installed (original 5 nos.)	Dropped

Component 2: Shrimp and coastal aquaculture

11. The project aimed at setting up institutional arrangements for sustainable and equitable development and management of shrimp polder infrastructure, which would lead to improved production by small holders in five polders (four polders, which had been developed during the Third Fisheries Project and one new polder). In 2002, in view of time constraints the new polder was dropped. The target was a 20% production increase. Also, 30,000 fry collectors should be trained in selective fishing methods to reduce by-catch.

12. The initiative by BWDB to carry out feasibility studies for the rehabilitation of infrastructure in the polders had to be deferred because of concerns about social and environmental impact of shrimp farming. The concerns triggered a shrimp sector study on environmental, social, economic, and technical issues. The study took about two years and revealed that there was scope for the project to reach its intended aims.

13. Technical surveys and design as well as social mobilization to introduce community based water management, with the assistance of NGO's, were initiated during 2003.

14. The training of shrimp fry collectors could not be implemented because of the Government's ban on shrimp fry collection in 2000. Instead the project provided alternative livelihoods support to 525 fry collectors through asset transfer (Rearing of cow, goat, and duck, rickshaw/van, fish culture, small trading, etc.).

15. The institutional set-up for water management in the polders comprised Block Committees (60) and an apex Polder Committee for each polder (in total 4). In addition a Landless Committee was formed to enable the landless to influence and be heard in issues related to infrastructure development and water management. The feasibility studies, initial identification and prioritisation of block and polder wise interventions were carried out in consultation with the committees.

16. The Polder Committees constituted more than 100 'participatory monitoring sub-committees' at each construction site. They operated in accordance with a memorandum of understanding with BWDB and contractors.

17. The baseline survey showed that 20 – 38% of shrimp farmers were classified as poor and that the yield was about 250 kg/ha/yr. This was considerably lower than estimates (350 kg/ha/yr) during the project appraisal.

18. The infrastructure development was completed at the closure of the project. It was therefore not possible, during the project period, to determine the impact on water management and yield. However, anecdotal evidence suggests that the production increase could be 30 – 40%, compared to the 20% target.

19. Almost all planned civil works was completed except jetties and forestations which were dropped due to the delayed start. Following table shows the rehabilitation works:

Table 3: Targets and achievements of civil works at shrimp polder

Rehabilitation works	Targets	Implemented
New sluices	43	42
Repair sluice gates	111	110
Canal excavation	103 km.	99 km.
Landing platform	4	4
Jetties	25	Dropped
Forestations	200 km.	Dropped
Culverts	11	6

Component 3: Freshwater aquaculture, extension and training

20. The aim was to train 200,000 farmers in 8000 villages in 211 upazilas, through an extension approach based on the village model, called the 'Fisheries Village'. In each Fisheries Village a group of 25 farmers was selected. In total 40 groups were formed in each selected

upazila. The 'Fisheries Villages' were brought into the training program in four batches to spread the work load for the extension staff. The groups were given 6 days training the first year and follow up visits by extension staff the following year.

21. The targets were that (i) 40% of the trained farmers would fully adopt the training messages, (ii) that they would attain 50% incremental fish production, and (iii) at least 25% of the farmers should be women. The overall project objective that at least 75 % of project benefits should accrue to moderately and extremely poor households was valid also for this component.

22. The production target was almost reached with an average production increase of 45%. It was noticeable that while Batch 1 and 2 attained a 60% increase, the impact fell in the following two batches. The target of women participation was numerically reached, although women benefited less from training than men. Women have less access to ponds and less control over resources which could be inputs in fish farming. The poverty targeting was not achieved for obvious reasons, since fish farming requires access to a pond. An attempt was done during the last two batches to improve this through farmer selection through PRA methods. This did not improve the targeting of poor.

23. For smooth transfer of field activities to the Department of Fisheries at the end of the project period and to ensure sustainability, an exit plan was elaborated. The plan included: (i) supervision and monitoring of Fisheries Village activities and (ii) piloting of Local Extension Agents for Fisheries (LEAF), selected from the Fisheries Village groups.

24. To strengthen extension there was a need for linkages between prospective extension service providers. To that effect, training was given to one science/agriculture schoolteacher, one NGO extension staff and one fry trader from each project upazila.

25. The numerical target of 25% women in the Fisheries Village Groups was almost reached (24.8%). However, the benefit gained by women from the training fell far short of men's. Men improved their harvest by 45%, trained women gained only 23.6%. The shortfall seems to be due to a combination of poorer technical knowledge and lower inputs. The women had less control over the use of household resources (for example to finance inputs) and less physical access to ponds (women cannot manage ponds remote from the homestead and in more conservative areas they are confined to the homestead).

26. The poverty targeting failed. The criteria for selection as trainees included access to a sizeable ponds, which automatically excludes the moderate and extremely poor. Further the technical package which was selected for extension demanded a minimum pond size to be effective. The sample survey also showed that the moderately and extremely poor who participated benefited less than other groups in terms of production. The training had least impact for moderately and extremely poor women trainees. An assessment showed that poor could benefit from broadening the range of aquaculture technologies. Poor people often have micro-ponds of a few square meters in which they are fattening African *magur*. Even if they had been selected, these farmers could not have benefited from FFP training, which did not cover technologies suitable for such small water bodies.

27. The initial results of the piloting of LEAF were positive. The LEAFs, which were selected by the groups, are in general well-suited for the post, being younger and better-educated than the average pond farmers, and economically secure). Their technical knowledge is well above the general level of trained farmers. The Department of Fisheries has decided to expand the LEAF programme funded from the revenue budget.

28. Summary of targets and achievements and additional activities

Table 4 A: Targets and achievements of freshwater aquaculture component

<i>Activities</i>	<i>Targets</i>	<i>Achievements</i>
Upazila covered	211	Covered
Farmers trained	200,000	Approx. 200,000 farmers trained
Female Farmer	25%	24.6% are female farmer
Production increase	45% over baseline	45% increased over baseline (after two years of operation)
Adoption of Training Messages	40% of Trained Farmers	40-70% of training messages adopted, but accurate adoption was about 5%.
Regular Farmers' Group meeting	50% of groups	Target partially achieved.

Table 4 B: Additional Activities

<i>Activities</i>	<i>Achievements</i>
Officials Trained	2,100
NGO staff trained	176
School Teachers Trained	167
LEAF trained (Local Extension Agent for Fisheries)	90
Training Manuals developed	12
TV spots developed	3
Overseas study tour	190

Component 4: Aquatic resource development, management and conservation studies

29. Biodiversity, including species, genetic, and habitat diversity, has been affected by human interventions in the Ganges-Brahmaputra basin with loss of species. At present there are 56 endangered species, some of them critically, out of the 256 recorded species in the country (IUCN 1998).

30. The 'Aquatic Resources Development, Management and Conservation Studies' component of the FFP, had three subcomponents:

- (a) *Aquatic Biodiversity Conservation:* The inland aquatic ecosystem and the impacts of stocking and the introduction of exotic fishes on biodiversity were studied. The studies recommended that biodiversity conservation measures should be included in future inland open water projects..
- (b) *Hilsa Fisheries Management:* Knowledge on conservation of hilsa fishery was improved through training and awareness building. Four sanctuaries and seasonal fishing bans were established to protect breeding and nursing grounds of hilsa.

The Government has declared 10-days fishing closure for jatka protection and other riverine biodiversity. Besides, a line item under revenue budget for hilsa

management and food assistance to affected fishers has been included from FY 06.

Hilsa production has increased about 38% (75,000 tons in 2005) over 2002-03 at 2005 worth Tk. 15,000 million. The export earning from hilsa has also increased considerably.

- (c) *Genetic Improvement:* A 'Brood stock management and breeding plan' was developed, including recommendations to conserve aquatic biodiversity in the wetland ecosystem, from likely genetic damage by escapes/stocking of domesticated aquaculture stocks. The results indicated that biodiversity-safe stocking of exotics is possible by reducing their reproduction capacity. Further a method for short term milt preservation was developed and tested.

Seventy-five sanctuaries were established in open water project sites, to protect over-wintering populations of indigenous fish's species. Hilsa production increased with 38% (75,000 tons in 2005) over 2002-03 at 2005 worth Tk. 15,000 million. This was achieved a 10-days fishing ban on *jatka* and other riverine species. A line item under revenue budget for *hilsa* management and food assistance to affected fishers has been included from FY 06.

Habitat restoration: Fish habitat was rehabilitated in seven sites, through excavation of silted bees and canals.

Component 5: Institutional support

31. The project assisted the Department of Fisheries to examine key issues for the fisheries sector and formulate the National Fisheries Strategy, with eight sub-strategies (aquaculture extension, aquaculture, inland aquaculture, marine fisheries, monitoring and evaluation, shrimp, inland capture fisheries, human resources development, and quality control). The strategies were formally adopted by the Ministry of Fisheries and Livestock in January 2006. They followed general principles which were common for all sub-sectors. The principles are based on the need to devolve decision making to field levels through decentralization of authority; the desire to be more responsive to the needs of the stakeholders and ensure that they have greater say in the management of the resource through community participation and co-management; the need for an improved central co-ordination, planning, management and advocacy function; the need to be better informed about the status of the resource and the impact of activities; and the desire for more dedicated staff resources who have the depth of skills and knowledge to perform the task. The strategies were developed through a consultative and participatory process involving all relevant stakeholders.

32. An Action Plan for the detailed implementation of the National Fisheries Strategy was drafted with support from the project following the same consultative and participatory approach.

33. During the work on the strategies, the need for a re-orientation of the Department of Fisheries and strengthening of future core functions were defined, leading to a draft proposal.

34. During the last year the support offered by the Department of Fisheries has increased and institutional development activities were actively promoted by the Director General, who chaired the Participatory Planning Team, leading the preparation of the National Fisheries Strategy. The ownership of the process by the department will ensure that the recommendations will be

implemented. The improved ownership of the process was further manifested during the year with the appointment of a senior member of the department as chair of each of the sub-strategy groups. The process of strategy formulation was also actively supported by other development projects (MACH and CBFM-2) as well as the DANIDA supported programme. These will continue supporting the implementation process.

35. The National Fisheries Strategy, its sub-strategies and Action Plans proved to be instrumental in guiding the Department of Fisheries and Ministry of Fisheries and Livestock in prioritizing and programming for future interventions under the revenue budget, the Annual Development Programme, and for discussions with potential donors on development cooperation. The documents were also extensively used by the Ministry of Fisheries in its preparation of a Road Map for the implementation of the poverty reduction strategy.

36. The National Fisheries Strategy, the sub-strategies and the Action Plan, were published on CD-ROMS and in printed form.

Component 6: 2004-Floods Rehabilitation Program

37. Following 2004-floods, at the request of the Government, the Bank agreed to include a new component under the Flood Recovery Assistance program and it was effective from March 2005. This new component covered rehabilitation of 31 fish farm under DOF, including one (Raipur RTC) earlier repaired under the project. As of June 2006, rehabilitation of all 31 farms had been completed, and the farms were in operation.

Major factors affecting the implementation

Open Water Fisheries Component

38. There was insufficient understanding in the design phase of the time, which would be required during the inception phase of the project, to review debate and reach an understanding of the form of community organizations needed for community based fisheries management. This led to a delay in launching the component.

39. There were significant delays in handing over of water bodies from the Ministry of Land to MOFL for the project implementation.

40. The NGOs capacity and capability to handle community based natural resources management were not fully understood. There was initially no provision for capacity building for NGO staff. Resources (not least project manpower) had later to be allocated for this purpose.

41. There was limited experience, knowledge and commitment to community based management among DOF staff. The project initiated training of DOF staff, at central and local levels. The attitude, understanding and knowledge were enhanced through these interventions and DOF staff could efficiently and effectively support the processes.

42. There were predetermined interventions not compatible with the concept of community based management, which builds on participatory processes to reach agreements on interventions and insufficient understanding of the time needed to establish functioning, strong and representative community organizations and to reach agreements on interventions.

Shrimp and coastal aquaculture

43. The shrimp and coastal aquaculture component was seriously delayed because of mounting concerns about social and environmental impacts of shrimp farming. The components work plan was thus revised to include a two year comprehensive study and survey phase. This phase was followed by a debate before it was decided to go ahead with infrastructure development. The 18 months extension of the project could not compensate for the initial delay, causing the community management processes put in place to be weaker than anticipated when they should take over operation, management and maintenance of structures. The anticipated extension activities to complement infrastructure development could not be implemented, which may impact on reaching the target for sustainable increase in production.

Freshwater aquaculture, extension and training

44. This component built on the strengths of DOF and its long successful experience of aquaculture development and aquaculture extension. This familiarity, competence and capacity were major factor leading to an efficient, effective and successful implementation of the component.

45. Extension Officers were hired for the duration of the project. Uncertainties about their future role in DOF lead to a lack of motivation during the latter part of the project.

Aquatic resource development, management and conservation studies

46. There was a two years delay in hiring GEF-funded consultant. The period for consultant supported implementation of the component was reduced. In spite of the delays the component managed with a somewhat reduced scope to finalize most of the scheduled studies.

Institutional support

47. There was a considerable delay in initiating the work of the component. There were also uncertainties about the scope of the component as to its focus. Strategy development was initially limited to aquaculture extension. During the mid-term review the scope was vastly expanded to cover eight sub-strategies and the National Fisheries Strategy. Later reviews and agreements added the preparation of action plans for the implementation of the strategies. These additions and changes led to frequent needs to change plans and focus.

48. There was initially not a common understanding between development partners, DOF and the project of the concept of institutional development. Thus, there was no proper institutional analysis carried out as a basis for proposals of institutional reform and strengthening.

49. There was no counterpart staff allocated for institutional development and no natural home in the department for these activities. It took time to find a suitable *modus operandi*, including the Participatory Planning team and Working Groups for the preparation of strategies and action plans.

50. During the last two years of the project the drawbacks identified above were overcome. DOF increasingly took ownership of the strategy processes and was actively driving them. The liaison with and support for strategy development from MOFL was a positive factor for the successful outcome.

General

51. Significant changes in focus and scale were agreed during the mid-term review. The subsequent revision of the Project Proforma, confirming these changes in approved and sanctioned actions and spending, and the approval procedures for the Project Proforma were time consuming, causing uncertainties about and delays in implementation.

52. There was a lack of continuity as to the composition of review teams, especially with regard to socio-economic aspects, leading to *ad hoc* proposals and demands for new data, new surveys and studies, which impacted on the work planning.

53. The different closing dates for grants and IDA credit necessitated a shift in contractual arrangements for consultants, leading to delays in field work during the last, crucial year of operation.

54. The increasingly positive attitude towards and understanding of the project in DOF and MOFL lead to significant support to its implementation. This considerably helped in mitigating the factors identified above.

Future Operation Plan and Sustainability

55. The National Fisheries Strategy (NFS) provides the foundation for sustainability of the gains in this project. The Government has operationalised the strategy through action plans, which were prepared with support from the project, to guide further development and conservation work. MOFL has prepared a “Road Map” aligned with the Government’s PRSP, which builds on the NFS, its sub-strategies and action plans. Various lessons from the experiences of FFP and other ongoing projects have been mainstreamed in the sectoral programs such as conservation aspects an co-management of open water fisheries, aquaculture extension through ‘fisheries village’ approach, scaling up of LEAF, improved brood stock management, implementation of the *Hilsa* management plan, and marine fisheries development. To implement the NFS, the DOF will require re-organization and strengthening and a HRD plan has been prepared.

56. DOF adopted before the closure of the project an Exit Strategy defining areas to be taken over and carried forward by the department. The Director General appointed committees to promote and monitor the implementation of the Exit Strategy. The strategy includes for example new roles for the Upazila Fisheries Officers in promoting community based fisheries management, continued support and extension for inland fish pond culture, the carrying forward of the *Hilsa* management and brood stock management plans, as well as mechanisms for the further implementation of the National Fisheries Strategy. The Exit Strategy was instrumental in ensuring sustainability of activities initiated by the project.

Performance Evaluation

57. *Bank Performances:* The project was prepared by a government team in consultation with various stakeholders including the World Bank, and DFID. The project with its original five components was a very complex and challenging one. During implementation, it was felt that the development objective of benefit distribution is fully compatible with inland open water component only and not with shrimp aquaculture and freshwater aquaculture components. Targeting 80% of the beneficiaries among poor in these two components were unrealistic. Flexibility in project execution was limited and restricted, to some extent.

58. Monitoring and supervision by the Bank was satisfactory. Regular monitoring and effective support and flexible and positive attitude of the Bank, along with the efforts of executing agencies, lead the project to a reasonable success. Realizing the deficiency in the project design and complexity of implementation, the Bank agreed to adjust implementation approaches in most cases as appropriate. In spite of Bank's efforts, however, the implementation had slowed down and target of area coverage and amount of money allocated could not be spent due to various issues, which include initial controversy over the type of community organization, handing over of public water bodies by the ministry of land, controversy over shrimp aquaculture, and lack of appreciation for a national fisheries strategy. Periodical implementation review by the Bank in association with DFID was helpful to identify issues and overcome those. Joint mid-term review of the project in June 2002 by the Bank, and DFID provided useful guidelines in order to overcome some outstanding problem and to take some decision, particularly the reduction in the project coverage, cancellation of surplus loan money. Relation between the Bank and the GOB was satisfactory and very helpful for project implementation.

59. *Performance of Cofinanciers:* Co-operation and assistance of Cofinancier (UK's DFID), was excellent and very helpful in project management, training in undertaking useful studies, research monitoring including other support services

60. *Borrower's Performance:* Overall, the borrower performance was satisfactory. Aquaculture and biodiversity component performances were more than satisfactory. The government showed exemplary commitment in *hilsa* management through enforcement of various conservation measures. In case of inland open water component, there was no prior arrangement for bringing Government owned public water bodies (Jalmohals) of floodplains for community management under the project. However, due to continuous efforts made by the executing agency and actions taken by the Government, the project could cover 18,500 ha in 39 jalmohals under inland open water component, against the original target of 60,000 ha. The shortfall in coverage is due to cumbersome procedures for handing over public water bodies (Jalmohals) for the purpose, lack of experience among NGOs and DOF to work on community-based resources management programs, *overly* centralized management and deficiencies in the component design (such as access to soft credit for lease fee, AIGAs during the ban period). Target fisher community, belonging to the lowest strata of our society contributed to and shared in the stocking cost, which is encouraging. In case of shrimp component, unilateral decision by the development partners.

Key lessons learned

General

61. The Fisheries sector is important for the development of Bangladesh and crucial for food security. All sub-sectors offer opportunities for further development, provided proper management, conservation of natural resources and biodiversity, with positive impact on the rural economy and for the generation of export earnings.

Inland capture fisheries

62. Inland open water fisheries offer an appropriate vehicle for pro-poor development and provides as safety net for poor and marginalized groups.

63. Community based fisheries co-management is an effective way for sustainable fisheries management, provided sufficient time and resources are allocated to establish inclusive, strong and transparent organisations, representing the genuine resource users.

64. Long term user rights of water bodies are a pre-requisite for conservation and sustainable management of natural resources. The present lease system, which is revenue based, does not promote sustainable management, and should be replaced with a lease system to control access and ensure sustainable management. To benefit poor fishers affordable lease values and long term access should be guaranteed.

65. Well functioning institutional arrangement are crucial for good impact of technical fisheries management. Sanctuaries were found to be an effective entry point resulting in visible improvements in catches and biodiversity.

66. When attempting a community based co-management system there should not be any pre-determined interventions as a standard package. Interventions should be decided by community groups after proper participatory facilitation by the project and adapted to the locality.

67. Site selection for OWF interventions should be based on a detailed study and screening of potential sites.

68. High-cost and risky interventions, like stocking, should initially be avoided and decided upon only when inclusive, strong and representative organizations have been established. Also, stocking is an enhancement intervention more suited to smaller, closed water bodies with effective control, than larger, semi-closed or open water bodies.

69. Implementation of management measures, like closed seasons, lead to reduced income for fishers in the short term. There is little capacity among fishers, belonging to the poorest in the society, to absorb and cope with the lean season. Community-based fisheries management interventions should be accompanied with interventions to mitigate such negative short term impacts. Also, fisheries management and access control inevitably lead to exclusion and restricted fishing effort. Interventions to establish alternative income opportunities are effective in reducing fishing effort.

Shrimp culture

70. Inclusive community organizations are a pre-requisite for sustainable shrimp aquaculture by small holders.

71. DOF need to focus on ensuring an arrangement for disease free fry (seed), improved extension services including better disease management and reliable quality assurance for the exportable products.

72. The fragmentation of the big shrimp ghers into smaller units results in reduced management capacity and there is a need for improved extension in shrimp polders through private-public sector collaboration.

Aquaculture Extension

73. An intervention which is based in the basic strengths of the implementing organization is likely to be immediately efficient and effective. The aquaculture extension component

demonstrated that DOF, provided it is allocated adequate resources, is capable of large-scale, logistically complex, operations covering the whole country in aquaculture extension.

74. If technical messages are clear and simple, traditional top-down methods work well. However, for future interventions more participatory, demand led, methods will be required, including private-public partnership arrangements. This change in approach demands capacity building in DOF.

75. The project demonstrated that the approach, which was chosen, could target small-scale farmers. However, the ultimate target groups of the project, poor and extremely poor groups, lacking access to ponds were not reached. Targeting poorer households with micro-ponds require sufficient attention and resources. The costs of such interventions and the likely limited impact on income for the poorest groups should be weighed against interventions for possible other income generating activities.

76. The project was effective in targeting women. However, women had less benefit from the training provided, depending, among other factors, on having less influence on the use of household resources than men. To gain the full benefit for women participating in aquaculture will require effort and resources spent on awareness building and longer term support.

77. To ensure quality brood stock, selected DOF-owned fish farms may be used and for quality fish seed. DOF-owned fish-farms may be used through public-private partnership as recommended by IMED in its evaluation.

Aquatic resource development, management and conservation studies

78. The *Hilsa*-management plan demonstrated positive results (conservation of the resource and increased subsequent catches) of a proper management system, backed by political support and associated measures to mitigate the short term negative impact on fishers in terms of reduced income during closed periods.

79. The project demonstrated effectively how improved brood stock management can be implemented.

80. The project demonstrated a low-cost, intermediate technology method for milt preservation and transportation.

Institutional development

81. The participatory process for the formulation of sub-strategies, the National Fisheries Strategy, and the Action Plan, was effective in increasing the understanding of strategic issues for fisheries conservation and management in DOF and among other stakeholders. The process itself rose awareness and created commitment to future approaches in the sector.

82. The national Fisheries Strategy, the sub-strategies and Action Plan, have demonstrated their effectiveness in focusing debate on future interventions and will serve as a tool for MOFL and DOF to focus its support and facilitate discussions with potential donors. DOF needs to regularly review and revise the strategy, sub-strategies and action plans to keep them up to date. This is a pre-requisite for them to be useful instruments to guide development interventions.

Implementation arrangements

83. A project, executed by a PIU within the implementing agency, may not be the most efficient vehicle for sectoral institutional reform program. FFP initiative to facilitate the preparation of national fisheries strategy was initially viewed as a project-driven activity instead of a sector-driven one. For future interventions a full integration in the department's organization should be considered.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

No comments received from Co-financier (UK- Department for International Development). Implementation Completion Memorandum (ICM), prepared for GEF-funded Aquatic Biodiversity Conservation Project (Component 4 of the FFP), is attached to the ICR.

IMPLEMENTATION COMPLETION MEMORANDUM (ICM)

TF Name: Bangladesh: Aquatic Biodiversity Conservation Project
TF Number: TF022832-BD
Report Date: June 15, 2005
Program: Coastal, Marine and Freshwater Ecosystem

Net Grant Amount: US\$ 5.00 million (Original); US\$3,748,886.5 (Revised)

Grant Amount utilized: US\$3,304, 444.00 [as of May 31, 2005]

Donor(s): Global Environment Facility (GEF)
Approval Date: July 20, 1999
Closing Date: December 31, 2004

A. GRANT OBJECTIVES

Original Statement of Grant Objectives

The project objective was to support the conservation of globally important wetlands and aquatic related biodiversity in Bangladesh by mainstreaming biodiversity and aquatic ecosystem conservation within the inland and coastal fisheries sector.

Changes to Grant Objectives

If original objectives have been changed, explain the nature of the revisions and the justification for them.

No Change.

Achievement of Grant Objectives

Discuss and rate the extent to which the activity achieved its relevant objectives.

The Aquatic Biodiversity Conservation Project (project) was a companion project to the Fourth Fisheries Project (FFP) funded by IDA and DFID. The objective of the project was to support the conservation of globally important wetlands and aquatic biodiversity through Grant-supported activities. The project achieved most of its objectives and is expected to achieve a satisfactory development impact, once the national fisheries strategy, with a reasonable coverage of biodiversity and conservation aspects, is approved and its implementation begins. FFP closing date has been extended to June 30, 2006 and the approval of national fisheries strategy is expected during 2005.

B. OUTPUT

Achievement of deliverables

1. Discuss and rate the actual output or deliverables completed, compared to the expected output, for each component of the grant.

The project (Aquatic Biodiversity Conservation Project) refers to component 4 of the companion Fourth Fisheries Project (FFP) and consists of five sub-components: (i) management of *Hilsa* fisheries areas; (ii) assessment of ecosystem integrity and sustainability; (iii) ecological relations to exotic species; (iv) action plans and aquatic database; and (v) studies to develop future projects. (Ref. FFP-Project Appraisal Document, Annex 2, page 46). In addition, the project envisaged co-financing the establishment of 50 aquatic sanctuaries. The outputs completed, in association with FFP, and their ratings are the following:

Originally, the project under the first three subcomponents/ themes envisaged 19 research studies: *Hilsa* Conservation (5), Aquatic Biodiversity Conservation (10) and Genetic Diversity (4). Given reduced time from about five to about three years to implement the project, the number of studies was reduced to 15 in an Updated Work plan of October 2002. This was further reduced to 14 studies in September 2003, as one study, the study on movement/ migration pattern of *Hilsa* was dropped. The final numbers of research studies are: *Hilsa* (4), Aquatic Biodiversity (6) and Genetic Diversity (4). The outcome of the research studies has been documented in twelve reports (see the titles in Consultant's Final Report no. 38.24, table at page 7).

Management of *Hilsa* fisheries areas (Theme 1- *Hilsa* Conservation): The project team has completed four studies on: (i) reproductive biology, (ii) population dynamics of *Hilsa*, (iii) management & conservation of *Hilsa*, and (iv) improvement of the *Hilsa* catch monitoring system. In addition, social issues in the *Hilsa* fishery due to the seasonal ban in a particular section of the river has been studied, and a separate report on social issues has been prepared to assist the Government in developing an appropriate mitigation plan through consultation with affected groups for minimizing the impact on the affected communities.

Assessment of ecosystem integrity and sustainability (Theme 2: Aquatic Biodiversity Conservation): Altogether six research studies under this theme has been carried out – four for inland and two for coastal biodiversity aspects as below:

Inland Aquatic Biodiversity: There have been four studies on: (i) biodiversity of FFP floodplain & riverine habitats, (ii) biodiversity studies of FFP sanctuaries and habitat restoration, (iii) studies on impacts of stocking, and (iv) livelihoods aspects of biodiversity in inland waters.

Coastal Aquatic Biodiversity: Two research studies were carried out on: (i) environmental issues in shrimp polders, and (ii) ecological studies of wild shrimp larvae.

Ecological relations to exotic species (Theme 3: Genetic Biodiversity): The project carried out four research studies on the following areas: (i) assessment of the impact of exotic introductions, (ii) framework for the import and use of exotic organisms, (iii) genetic status of exotic and endemic brood stock, and (iv) improvement of brood stock management techniques.

Action Plans and Aquatic Database: The project envisaged that the studies would facilitate the formulation of six Action Plans under three themes. This has also been modified due to the fact that the FFP, in parallel to the GEF Action Plans, is developing strategies and action plans to be

incorporated as a part of the National Fisheries Strategy. Thus, this project focused on the recommendations on biodiversity conservation aspects and incorporating those into the various action plans developed by the FFP, instead of making separate action plans as an agreed approach to ensure 'mainstream' planning. The key recommendations on biodiversity aspects have been incorporated in the inland open water and coastal fisheries (see part C).

An "Atlas of Biodiversity Issues", synthesizing results from the studies with particular emphasis on their implications for development planning, fisheries and biodiversity conservation, has been produced. The main target audience is planners, policy- and decision-makers at various levels.

Finally, an outline for an Aquatic Biodiversity Information System (ABIS) has been developed in cooperation with the Center for Environmental and Geographic Information Services (CEGIS). This seems to be an important tool for biodiversity conservation and natural resource management in the future. This project has initiated the process of establishing this system and it will take a sustained effort on the part of the Government in order to make it work.

Studies to develop future projects: The project team has prepared concept papers for four projects. These are: (i) establishment of sustainable management of flowing jalmahals (rivers) through community-based fisheries management; (ii) sustainable management of artisanal and mechanized commercial fishing in the coastal areas of Bangladesh; (iii) establishment and management of aquatic sanctuaries, and impact monitoring of sanctuaries established under FFP; and (iv) protection and conservation of juvenile and gravid *Hilsa*. These concept papers are under review by the Department of Fisheries (Implementing Agency).

Establishment of aquatic sanctuaries: This project co-financed the establishment of 48 sanctuaries, against 50 originally planned and introduced the community based management system including control of fishing efforts and other measures. The sanctuaries are of: riverine 29, floodplains 13 and closed water bodies 6. With regard to the lease status of the sanctuaries, 36 are non-leased and 12 are leased water bodies. The project carried out a qualitative assessment, based on interviews with the community representatives, in six riverine sanctuaries. In all these six study areas, there has been increase or re-emergence of species, ranging from 19 to 40 in numbers.

2. *Discuss and rate as to how well the grant output met the quality standards of the recipient and the beneficiary.*

Although the project had a late start, having been delayed by about two years, it has delivered the defined deliverables/outputs and those can be rated moderately satisfactory. Generally, the study reports are of satisfactory quality. Particular mention may be made of: (i) Common Carp, *Cyprinus carpio* (L), as an alien invasive species in Bangladesh, with an assessment of its future use in stocking; (ii) environmental Issues in Shrimp Polders: the effect of shrimp farming on the Coastal Environment, and (iii) Hilsa Management and Action Plan. The project's contribution on biodiversity and conservation aspects in finalizing the national biodiversity strategy and drafting national fisheries strategy is well acknowledged.

For activities where the output is a report or a dissemination event such as a workshop, conference, training, or study tour, discuss and rate the following aspects:

3. *Quality:*

N.A.

4. *Presentation:*

N.A.

5. *Dissemination:*

N.A.

6. *Overall Success:*

N.A.

Discuss and rate the overall success of the output or dissemination event

N.A.

Attach Report or applicable document

1. December 2004 Aide-memoire and Annexes
2. Consultants Final Report, December 2004
3. QAG Report dated August 02, 2004 as a part of QSA6 (Re. Mr. Prem Garg's email dated October 6, 2004)

C. OUTCOME

1. Achievement of developmental results

Discuss and rate the actual developmental results, compared to the expected outcomes, for each component of the grant.

1. *Hilsa Management Development Plan:* Hilsa remains the most important capture fishery in Bangladesh. In the years 1999-2002, the Hilsa fishery showed precipitous declines that could in the long term have resulted in its collapse. Based on project recommendations, the Government of Bangladesh (GOB) and Department of Fisheries (DOF) established and protected sanctuaries enforced closed fishing during the breeding season and mitigated impacts on poor fishers among other actions. Those steps taken by the Government, based on management recommendations of the DOF and the FFP, are likely to help lead to improvement of the fishery. Attention has also been drawn to the short and long-term socio-economic costs to some fishing communities, particularly those that fished the *jatka*, or juvenile hilsa, for which recommendations were made for introducing Government programs for the development of alternative livelihoods for impacted and most vulnerable groups. From consultation with the affected groups, it was found that the importance to establish a seasonal ban on fishing of *jatka* was fully understood due to the direct impact that over-fishing on stocks of these juveniles had been having over the past several years. The affected groups also recommended that the ban should be extended to all of Bangladesh and not only in those areas where *jatka* fishing was a major activity. The complicating factor is that the main fishing grounds for *jatka* and that of *hilsa* differ, making access to the *hilsa* fishery by the *jatka* fishers difficult due to more distant location and territoriality of the differing fishing groups. However, the TA team also suggested that the closed season be for a period of three months that could allow more access to the *jatka* fishery, reducing impact on fishers' livelihood, while at the same time assuring adequate survival. The

GOB imposed a five-month closed season. The December 2004 mission recommended that follow-up research be conducted to determine and/or confirm the optimal period.

2. *Aquatic Biodiversity Conservation - Inland waters:* The findings from the inland study of five inland water bodies showed that the greater the connection to rivers and open waters the more diverse and productive the aquatic life within those water bodies becomes. These are preliminary findings from the study of five water bodies (*beels*) with a variety of interventions – establishment of sanctuaries, stocking, and/or habitat restoration – *thus the results are more indicative than conclusive about a particular intervention.* Open water systems in Bangladesh are affected by a range of natural and anthropomorphic factors that can vary significantly from one year to the next, depending upon climate – rainfall and flooding, in particular – pollution, flood control, etc. Under extreme cases of flood such as in 2004, there was an enormous infusion of cultured fishes that escaped from aquaculture due to flooding of ponds. Therefore, the findings and significance of the results of the study would need to be further examined. From a biodiversity and production standpoint, the combination of sanctuaries with effectively timed closed seasons and ban of the use of inappropriate gears are likely the most effective combination of interventions. All management actions should be decided and implemented via a participatory process involving all stakeholders in the vicinity

3. *Aquatic Biodiversity Conservation - Coastal waters:* There were two major findings from studies on biodiversity in coastal polders and the impact of shrimp fry collection on marine biodiversity and fisheries production. Concerning the study on biodiversity in polders, the main finding basically evaluated several points along a transect in the south-west part of Bangladesh (Khulna area) from northern more freshwater areas to southern marine areas found that the intermediate brackish water area contained the highest productivity and diversity of naturally occurring organisms in the area. From productivity standpoint and considering that the biodiversity was largely comprised of small worms, crustaceans, and mollusks, there could be some matching of the feeding preferences of stocked organisms so as to exploit effectively these naturally occurring and rapidly regenerating populations of organisms. An important finding is that fully protected polders that are no longer seasonally brackish are less diverse biologically and less productive than polders where seasonal shrimp culture takes place. This is an important finding. *While social issues remain, where small holders are not directly involved in year around operation of their lands, polders with shrimp culture more closely resemble natural systems with the seasonal sequencing of freshwater during the rainy season followed by brackish water in the dry season.* The main finding of the study on shrimp fry collection is that at present (not necessarily in the past) PL collection is likely to be having an insignificant impact on coastal biodiversity. However, from recall information, the biodiversity shown in these studies is significantly lower than those shown in past studies. Past studies noted larger numbers of fish – loss of fish fry in the catch could indicate that the impact on these species had already occurred possibly through a combination of factors including over-fishing in the Bay of Bengal, shrimp fry collection, and the loss of seasonal brackish water habitat due to closing polders to water exchange during the dry season.

4. *Genetic Biodiversity:* The project focused on two broad areas – an evaluation of the impacts of exotic introductions on biodiversity and the degradation of genetic quality of fishes in Bangladesh. Overall, the project found that the impacts of exotic introductions on aquatic biodiversity have, with some exceptions, been limited. Specifically in the case of common carp, though subject to a lot of attention, their introduction has not been shown to cause serious damage to tropical rivers and floodplains with diverse fauna-as is the case in Bangladesh. The project has reviewed and detailed the declining quality of the country's freshwater aquaculture brood stocks particularly the Major Indigenous and Chinese Carps. This is an issue of national concern

to the GOB and the country's fish farmers. The project developed detailed 10-year management and breeding plans for the improvement and maintenance of brood stocks at twenty one GOB fish seed farms designated as "Brood Banks" to abate the declining quality of cultured and propagated freshwater fishes in Bangladesh.

Practical research and implementation of genetic improvement of breeders could not be completed within the short time frame of the project. Furthermore, many research results were achieved but could not be disseminated to the field. Genetic diversity issues in brood stock and hatchery management are complex and generally little understood and they require a sustained technical input on genetic biodiversity over a longer period than was available. Nevertheless, the project has significantly raised the awareness of the Government and private sector hatchery operators over the issue, and there is rapidly increasing interest in producing good quality seed.

5. *Mainstreaming of Biodiversity Aspects:* The findings and recommendations of the research studies on biodiversity and conservation aspects have been incorporated in finalizing various sub-strategies for the National Fisheries Strategy. The key features are: (i) establishment of aquatic sanctuaries for inland open waters; (ii) regarding the *Hilsa* fishery in Bangladesh, establishment and protection of sanctuaries, enforcing closed fishing season including mitigation for impacts on poor fishers to address the critical conservation and habitat issues; (iii) more cautious and selective approach in introducing exotic species; (iv) improvement of brood stock management; (v) seasonal shrimp culture with brackish water in the dry season followed by freshwater during the rainy season to enhance productivity as well as biodiversity in coastal polders, provided the social issues can be managed appropriately; and (vi) inclusion of biodiversity as one of the key element in M&E sub-strategy/framework.

2. Relevance

Rate how well this activity was consistent with the development priorities of the country, the Bank's country assistance strategy (CAS) and the Bank's sector strategy.

The project was consistent with the development priorities of the country and Bank's country strategy. The companion Fourth Fisheries Project has supported rural development by increasing fish production with emphasis on sustainable resources management principles with community participation, rural poverty alleviation, employment generation, and conservation of aquatic biodiversity. This project has satisfactorily carried out research studies and made strategy recommendations on biodiversity and conservation aspects of the aquatic resources, specifically oriented toward mainstreaming these principles in national development and management strategies.

3. Efficacy

Rate how well the activity achieved its stated grant objectives.

Aquatic biodiversity mainstreaming is a continuous process, which was initiated under the project. The exit strategy addressed the need for ensuring that the process continues after the closing of the Grant. Through the incorporation of biodiversity issues into the National Fisheries Strategy (including various sub-strategies), this process stands a good chance of being sustained beyond the project duration, provided that the strategies and their associated action plans are implemented. For the genetic and hatchery management issues, in particular, the concept is taking hold among hatcheries in the country with clear understanding and directions set to address the problem.

4. Efficiency

Rate the results of this activity relative to its associated costs, implementation times and economic and financial returns.

Given the initial delays by about two years and type of activities, the project in about 39 months (original about 58 months) has satisfactorily delivered all the agreed outputs.

D. IMPACT

1. Capacity Building Impact

Rate how well this activity contributes to capacity building.

The impact of the project on awareness building at the national/country level on the importance of aquatic biodiversity conservation is satisfactory, while the capacity at the level of implementing agency (DOF) is nominal and less than satisfactory. The project had a team of international consultants with counterpart national consultants in each area of specialization, which was useful in exchanging and transferring knowledge and technology. In addition, this project (biodiversity research) is very complex and time-consuming and little can be achieved through a single project or organization, without linking and cooperating with other relevant stakeholders. This project, in course of implementation, established important linkages among many institutions positioned to advance aquatic biodiversity conservation such as Bangladesh Fisheries Research Institute (BFRI), Bangladesh Agriculture University (BAU), Institute of Marine Science (Chittagong University) and Khulna University.

2. Sustainability

Rate how likely the results will be sustained.

Through the incorporation of biodiversity issues into the National Fisheries Strategy (including various sub-strategies), the chance of the results being sustained beyond the project duration is likely, provided that the strategies and their associated action plans are implemented.

With the project having concluded at the end of December 2004, the MOFL and DOF agreed and assigned one of its officers to be the biodiversity/environmental coordinator, possibly within the Fisheries Resources Survey Section (FRSS) unit for the short-term until the Monitoring and Evaluation Unit is established, as suggested in the draft Monitoring and Evaluation Strategy. Further, until such time as the DOF completes the National Fisheries Strategy (NFS) process, DOF also assigned an officer in each of its departments to serve as “focal point” for the implementation of the various studies, management and action plans developed by the project.

3. Follow-up Activities and/or Investment

Provide a description of any follow-up activities or investments resulting from the original activity.

Check, if applicable:

Investment:

_____ Recipient/Other Investment; _____ Grant Project/Program; FFP Bank Project; _____ IFC Financial Project/Activity

Other Results:

X Transferability of Know-How, Knowledge Base/Key Concepts; _____ Replicability, Modeling, Best Practices; _____ New Sectors or Products; _____ New Forms of Cooperation with Other Development Institutions/NGOs.

E. PERFORMANCE

1. Bank

Discuss and rate how well the Bank carried out specific responsibilities assumed by the Bank for this trust-funded activity.

The Bank assisted the Government in identifying and preparing the Fourth Fisheries Project including this GEF-assisted companion project and accessing the GEF resources. One strength of the Bank's performance lay in considerable staff continuity. QAG carried out a Quality of Supervision Assessment (QSA6) in August 2004 and rated the overall supervision quality during FY 2003-2004 as Moderately Satisfactory. Overall, the Bank performances can be rated as Satisfactory.

2. Recipient

Discuss and rate how well the Recipient fulfilled the different tasks that were expected as part of the trust funded activity.

On balance, allowing for the special nature of the project, the Borrower's performance may be judged as Moderately Satisfactory. "Procurement of technical assistance to undertake the studies took about 21 months, which not only put everything behind the schedule, but also disrupted implementation of FFP" (Re. QSA6, 2004). Although the aquatic biodiversity TA team had a late start, the project has completed its agreed tasks satisfactorily. The one area where this project could have further benefited with regard to mainstreaming biodiversity conservation in the DOF's ongoing activities would have been to have at least one DOF officer at a minimum assigned in each of the specialty area to work with the team. The GOB initiatives on establishing and protecting sanctuaries, enforcing closed fishing season, and mitigation for impacts on poor fishers among other actions, are likely to help lead to improvement of the fishery for all interest groups; for they address the critical conservation and habitat issues that pertain to the *hilsa* and inland fishery in Bangladesh (see Section C on Outcome). The findings and recommendations of the studies on biodiversity and conservation aspects have been incorporated in the draft sub-strategies, which will lead to the preparation of National Fisheries Strategy. Therefore, the Project, at this point, is likely to accomplish its objective to mainstream the biodiversity and conservation aspects to the National Biodiversity Strategy and National Fisheries Strategy through its studies. The Government demonstrated commitment and support to the project at all stages, once the TA team was onboard, although at times biodiversity and conservation aspects were not fully understood. The Borrower generally complied with the major Grant covenants. As a follow-up, the Government has been committed to carry out the *Hilsa* management and improved broodstock for inland aquaculture through FFP till June 2006.

F. LESSONS LEARNED / RECOMMENDATIONS

Discuss the most significant positive and negative lessons learned from the success or failure of the grant activity and make recommendations for different stakeholders.

Recommendations for the Bank

- Biodiversity issues take time to study and gain adequate understanding to propose effective and realistic management options. The complexity of the subject and the dynamic nature of aquatic ecosystems in the Bangladesh context require studies and implementation activities for the long-term. The effective time-line, that this project had available (3 years), only provided understanding of the issues with few steps toward mainstreaming effective actions. This project should therefore be considered as a starting point to address the important aquatic biodiversity issues.
- Collaborative arrangements with different research institutions and partnerships with advocacy type NGOs are necessary for effective dissemination and implementation of the core concepts of the project.

Recommendations for the Recipient (Client)

- Implementation of the *hilsa* management and conservation plan by the Government showed that political will, coupled with strong support by the MOFL/DOF, can bring about cooperation among Ministries (including the Navy and Coast Guard); and accurate management information from the project and the communities in the area was essential for successful management of fishery and other natural resources. [Other examples are ban on polythene bags and lead-based fuels for three-wheelers.]
- This project has managed to bring biodiversity issues onto the fisheries agenda within DoF and has initiated some activities to establish linkages between various stakeholders. For long-term sustainability, there is a need to build on the momentum started with the project. Accordingly, the DOF needs to commit itself to continue to promote aquatic biodiversity and take related actions within and beyond the fisheries sector where aquatic resources are impacted.

Recommendations for the Donor(s)

- Integrated study/program for natural resources management at the national level is necessary, followed by well-coordinated implementation of sectoral study/program.

Recommendations for the Development Community

- Biodiversity conservation is not a luxury. Inland and coastal fisheries in Bangladesh depend directly on high and sustained biodiversity of the ecosystem, species and genetic level. At the same time, the value and sustainability of fisheries and its inter-linked dependency on aquatic biodiversity is the best argument for its conservation.

G. PROCESSING

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Date Submitted: April 25, 2005.

Comment:

Manager: Gajananand Pathmanathan (SASAR)

Date Cleared/Approved: April 29, 2005

Comment: With my suggestions it is cleared with me. Please have Christine/David clear it and once it goes to the Trust Funds Office please update SAP.

Annex 9. List of Supporting Documents

1. World Bank, June 1999. Project Appraisal Document (Report No. 19334-BD)
2. DFID Bangladesh, June 1999. Project Memorandum.
3. World Bank, September 5, 1999. Development Credit Agreement (DCA) and its amendments
4. GEF, Sep 5, 1999. Grant Agreement (Trust Fund 022832-BD).
5. World Bank, 2000-2006. Supervision Reports - aide Memoires and PSRs/ISRs
6. World Bank/QAG, August 2004. QSA6: Assessment of Supervision Quality of GEF-funded Aquatic Biodiversity Project
7. FFP/DOF, 2001-2006. M&E Reports
8. GOB/IMED, June 2005. In-depth Monitoring of the Fourth Fisheries Project
9. DFID Bangladesh, June 2005. Project Completion Report for Fourth Fisheries Project.

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