Report Number : ICRR0020822

1. Project Data

Project ID	Project Name
P123457	BD Integrated Agricultural Productivity
Country	**Practice Area(Lead)**
Bangladesh	Agriculture

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
TF-10378	30-Sep-2016	63,550,000.00
Bank Approval Date	**Closing Date (Actual)**	
15-Aug-2011	31-Dec-2016	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	46,310,000.00	46,310,000.00
Revised Commitment	46,310,000.00	46,310,000.00
Actual	46,231,015.55	42,867,392.55

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) of the Bangladesh Integrated Agricultural Productivity Project (IAPP) as stated in the Grant Agreement dated September 12, 2012 was “to enhance the productivity of agriculture (crops, livestock and fisheries) in pilot areas”. The IAPP Project Appraisal Document (PAD) dated July 26, 2011 states the same PDO, but specifies that “these areas lie in Rangpur, Kurigram, Nilfamari and Lalmonirhat districts in the North and Barisal, Patuakhali, Barguna and Jhalokathi districts in the South.”

According to IEG practice, the aforementioned PDO of the Grant Agreement is adopted for the purpose of assessing the project's achievements in this Implementation Completion Report Review (ICRR).

b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

No

d. Components

Component 1: Technology Generation and Adaptation (Appraisal estimate: US$7.57 million, Actual Cost as of ICR: US$ 6.83 million). This component was to adapt and release with yield-increasing and production-intensifying technologies and management practices to crop and fish farmers. The main component activities included the generation, adaptation, and release of new technologies for (i) rice, (ii) other crops such as wheat, maize, pulses and oilseeds and (iii) fish. Three national institutions (the Bangladesh Agriculture Research Institute, the Bangladesh Fishery Research Institute, and the Bangladesh Rice Research Institute) were responsible for the development and release of new or improved crop varieties, brood stock improvement and development of pure breed lines in fish, development of location-specific crop husbandry practices, adaptive trials of aquaculture technologies, and training and capacity building in their respective sub-sector (rice, other crops, fish).

Component 2: Technology Adoption (Appraisal estimate: US$35.15, Actual Cost as of ICR: US$ 37.64 million): This component was to incentivize and support targeted farmers in the project area to adopt improved agricultural production technologies and management practices for crops, livestock (milk) and fish production with the aim to increase their productivity and to promote production intensification and diversification. For the respective sub-sector (crops, livestock, fish), the Department of Agricultural Extension, Department of Livestock Services, Department of Fisheries, Bangladesh Agricultural Development Corporation were responsible for farmer capacity building and extension activities, increasing the availability of quality seed/breed, and expanding their productive assets and social capital base through five sub-component focus areas: (i) crop production; (ii) fish production; (iii) livestock production; (iv) enhancement of seed availability; and (v) community mobilization and extension.

Component 3: Water Management (Appraisal estimate: US$11.71 million; Actual cost as of ICR: US$ 11.07 million). This component was to increase the availability of water for irrigation to project farmers and to improve water usage efficiency, with the aim to expand irrigated agricultural land area for enhanced cropping intensity/patterns and to reduce irrigation-related risks in crop production. Regarding the availability of irrigation water, the main component activities included the conservation and utilization of surface water through the rehabilitation of natural water bodies, canals and ponds, existing natural channels as well as rain water harvesting practices in natural water bodies and creeks and at the household level. Regarding the improvement of irrigation efficiency, main component activities included the installation of buried pipe network and the repair of selected deep tube wells.

Component 4: Project Management (Appraisal estimate: US$5.26 million; Actual costs as of ICR: US$ 3.38 million). This component was to ensure the appropriate project planning, coordination, compliance with fiduciary and safeguards standards, and monitoring of implementation and results. For these purposes, a central Project Management Unit (PMU) in Dhaka and two Regional Project Implementation Units (RPIUs) in Rangpur (North) and Barisal (South) were established. The PMU and RPIUs coordinated the activities of various implementing agencies involved in the project, including the respective agricultural sub-sector research institutions (for crops and fish), the extension service line departments (for crops, livestock, and fish), the Bangladesh Agricultural Development Corporation (for seeds and inputs supply), as well as some community level service providers, CSOs/NGOs. Other component activities included (i) the implementation of two independent impact assessments (one with the World Bank's Development Impact Evaluation Initiative, DIME, and one with an external third-party evaluator) to complement project Monitoring and Evaluation (M&E), (ii) the coordination of financial management, procurement, and external audit, and (iii) project staff capacity-building activities.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost. At appraisal, the total estimated project cost for the IAPP was US$63.81 million, with grant financing of US$46.31 million from the Global Agriculture and Food Security Program (GAFSP) and co-financing of US$17.5 million from the Government of Bangladesh (GOB).

Financing. At appraisal, GAFSP grant financing of US$46.31 million for the IAPP was estimated. According to the ICR, actual GAFSP financing disbursed at project closing amounted to US$46.23 million (99.83% of the appraisal estimate).

Grantee Contribution. The GOB financially contributed the full amount of US$17.5 million, as had been estimated at appraisal.

Dates and Restructuring. The IAPP became effective on September 15, 2011 and closed on December 31, 2016. The original closing date was September 30, 2016, which was extended one time by a total of three months upon the request of the GOB to allow for the full completion of a fifth cropping cycle.

The project underwent one Level 2 restructuring in July 2015, which included adjustments for two of the PDO results indicators in the Results Framework (RF) to reflect more adequate baseline values. Specifically, during the Mid-Term Review the baseline values for paddy and milk yields determined at appraisal were deemed too low and were revised upward. In addition, the requested three-months closing date extension was granted. The PDO was not changed throughout the project implementation.

3. Relevance of Objectives & Design

a. Relevance of Objectives

Overall, the IAPP objectives were relevant at the time of appraisal and project closing, and continue to be so at the time of this ICR Review. They were aligned with the GOB's 2009 National Strategy for Accelerated Poverty Reduction (NSAPR), which promoted the use of productive technology and more intensive agricultural practices for improved food security and sustained economic growth. Agriculture was a high priority for GOB, which endorsed the Country Investment Plan (CIP) as part of the application process for the GAFSP grant financing in 2010. The IAPP objectives were linked to the key elements of CIP programs relating to improving food supply and fully aligned with the country needs and government priorities at appraisal. At project completion, the project objectives remained highly relevant to the GOB's prioritization of a sustainable and diversified agriculture through decentralized, integrated, and demand-driven agricultural research and extension services. These objectives were supported by the 2012 National Agricultural Extension Policy and the BARC Act and the current GOB's 7th Five Year Plan for FY16-20, which aim at developing a profitable and sustainable agricultural sector based on improved production, quality, and productivity.

The IAPP objectives are also strongly linked to the World Bank's Bangladesh FY16-20 Country Partnership Framework (CPF), particularly to Focus Area 2 on Social Inclusion and Focus Area 3 on Climate and Environment Management. Under these priorities, IAPP activities are related to "Enhanced Rural Income Opportunities for the poor" (Focus Area 2.4) and "Increased Adoption of Sustainable Agriculture Practices" (Focus Area 3.3).

Rating
High

b. Relevance of Design

Overall, the design of the IAPP was strongly relevant to the project objective "to enhance the productivity of agriculture (crops, livestock and fisheries) in pilot areas" and Bangladesh's agricultural sector needs. It was based on a background sector analysis that identified low productivity, insufficient diversification, and unsatisfactory irrigation efficiency as the three main challenges to agricultural performance in Bangladesh. As a result, the intervention design of the IAPP was built around the intensification of rice-based cropping systems, diversification to high value and less water-intensive crops, and the development of non-crop agriculture (livestock/milk and fish production). The IAPP design also took into consideration lesson from prior and ongoing sector interventions in Bangladesh and the region, leading to the integration of "(i)institutional development and investment in capacities and productive assets of group and community level institutions (component 1); (ii) strengthening research-extension-farmer linkages (component 2); (iii) training and capacity building (component 1 and 2); and (iv) solid implementation procedures (component 4)" (ICR, para 18). The design to introduce new technologies and practices gradually to expand their dissemination in phases was realistic to ensure adequate adoption in the project pilot areas. Finally, the innovative development of a Technology Generation Mechanism, which combined the generation, promotion, and monitoring the use of new technologies into one process led to effective coordination among the various project stakeholders. According to the ICR, this mechanism approach has been adopted in another World Bank agricultural sector

project in Bangladesh.

The geographic targeting design of the IAPP adequately focused on eight selected poor and vulnerable districts in the North and South, where the incidence of malnutrition was one of the highest in the world and agricultural productivity in crop, livestock and fish production were considerably below the national average. The targeted areas were prone to various environmental stress factors ("seasonal droughts, cold snaps and flash flood submergence in the North; varying levels of salinity, tidal and saline submergence in the South", ICR para 20), which the project aimed to address by generating and promoting suitable, location-specific technologies and production practices through a strengthened national research and extension system.

The implementation design of the IAPP determined the World Bank as a supervising entity and the Food and Agriculture Organization (FAO) as an implementing agency for technical assistance. This combination allowed the project to benefit from the Bank's sector and country expertise and FAO's advice on M&E design and implementation. Furthermore, the Bank project team involved the Development Impact Evaluation Initiative (DIME) from early on in the IAPP design to ensure solid M&E data collection and analysis throughout project implementation.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1

Objective
Objective: Enhanced productivity of agriculture (crops, livestock, and fisheries)

Rationale

The IAPP Results Framework measured the achievement of the PDO through the following PDO indicators:

1. the number of targeted farmers with increased productivity (i.e., yields) in crops/livestock/fisheries
2. the change in productivity of crops (represented by paddy), livestock (represented by milk), and fish

Additionally, the intermediary outcome indicators measured:

1. the number of technologies/improved varieties released for farmer use in in crop and fish production
2. the number of improved production packages released for farmer use in crop and fish production
3. the adoption of improved varieties by farmers in crop/livestock/fish production
4. the amount of certified seed processed (in tons)

5. the change in areas under improved irrigation

At project completion, all PDO and intermediary indicator targets were either fully achieved or exceeded (also for milk and paddy, whose baseline and target values had been increased at MTR). These results are based on the IAPP M&E system, which collected data from all project beneficiaries. General project achievements are described by component below, followed by a detailed overview of Results Framework outcomes and outputs achieved. Finally, additional impact results from other sources (DIME and third-party evaluation) are presented.

Technology Generation and Adaptation. IAPP focused on modernizing Bangladesh's agricultural research system to be more participatory and demand-driven. It supported the implementation of more than 3000 field trials and demonstrations (on station and on farm), provided training to scientists and extension agents through field days, workshops, and south-south exchanges. When adapted or technologies were developed, IAPP supported the release and dissemination of those varieties (improved and new) and improved production packages for crop, livestock, and fish farmers in collaboration with the respective extension service providers to stimulate technology adoption. At project completion, 51 varieties/packages were released and all target values on the number of technology generated/adapted were fully achieved, as listed in the overview below.

Technology Adoption. IAPP led to the adoption of new and improved production packages as well as improved water management by crop, livestock and fish farmers. These packages and related practices were introduced and farmers trained through so-called Livelihood Field School (LFS). In total, 7,246 LFS of 25 members each were established, exceeding the target of 180,000 farmers (about 33% were women farmers). In addition, the project promoted the production of quality seeds on IAPP demonstration farms/seed villages. A total of 246 seed villages were established to promote farmer-to-farmer seed exchange, with quality controls and field inspections conducted by the Bangladesh Seed Certification Agency. Over 3,500 tons of IAPP seeds were processed by the Bangladesh Agricultural Development Corporation, as listed in the overview below.

Water Management. IAPP established 605 Water User groups (WUGs) and increased the area under improved irrigation to 27,750 hectares, benefiting a total of 51,690 farmers. The adoption of improved water management by IAPP beneficiaries helped farmers to increase cropping intensity, diversify their production systems, and reduce variability in crop production and other irrigation-related risks. Moreover, the ICR reports a 49% reduction in water losses (ICR Annex 2, page 35).

As a result of the abovementioned IAPP Technology Generation/Adaptation, Technology Adoption and Water Management activities, the PDO target productivity (i.e. yield) increases were largely exceeded for all farmers (crop, livestock, fish) by project completion, as listed in the overview below.

Overview outcomes (PDO indicators):

- **Total farmers whose productivity increased (Number).** Baseline: 0; Target: 236000; Achieved:

250829 (138% of target)
- **Farmers whose productivity increased in Crops (Number).** Baseline: 0; Target: 140000; Achieved: 152000, of which 33% women (109% of target)
- **Farmers whose productivity increased in Fisheries (Number).** Baseline: 0; Target: 48000; Achieved: 48177, of which 25% women (109% of target)
- **Farmers whose productivity increased in Livestock (Number).** Baseline: 0; Target: 48000; Achieved: 50652, of which 89% women (106% of target)
- **Incremental increase in productivity of Crops – paddy rice (Kg/Ha).** For Boro variety - Baseline: 5450; Target (revised upward): 5950. Value achieved: 6300 (106% of target). For T-AUS variety - Baseline: 2700; Target (revised upward): 3300. Value achieved: 4650 (141% of target). For Amon variety - Baseline: 2700; Target (revised upward): 3300. Value achieved: 4560 (138% of target).
- **Incremental increase in yield in Fish (Kg/Ha).** Baseline: 2700; Target: 3400. Value achieved: 5420 (159% of target).
- **Incremental increase in yield of milk (l/day/cow).** Baseline: 1.6; Target (revised upward): 2.2. Value achieved: 2.86 (130% of target).

Overview outputs (Intermediate Outcome Indicators):

- **Improved varieties released for Crop farmers (Number).** Baseline: 0; Target: 14; Achieved: 15 (107% of target)
- **Improved varieties released for Fish farmers (Number).** Baseline: 0; Target: 9; Achieved: 9 (100% of target)
- **Improved production packages released for Crop farmers (Number).** Baseline: 0; Target: 13; Achieved: 18 (138% of target)
- **Improved production packages released for Fish farmers (Number).** Baseline: 0; Target: 9; Achieved: 9 (100% of target)
- **Adoption of improved varieties by Crop farmers (Number).** Baseline: 0; Target (revised upward)*: 144,000; Achieved: 152,000, of which 33% women (109% of target)
- **Adoption of improved aqua-culture by Livestock farmers (Number).** Baseline: 0; Target: 60000; Achieved: 60000 (100% of target)
- **Adoption of improved aqua-culture by Livestock farmers (Number).** Baseline: 0; Target: 60000; Achieved: 60000 (100% of target)
- **Certified seed processed by BADC in new facilities (Tons).** Baseline: 0; Target: 3500; Achieved: 3546 (101% of target)
- **Area under improved irrigation (Hectare).** Baseline: 0; Target: 25000; Achieved: 27750 (111% of target)
- **Adaptive trials and demonstration for existing technologies (Number).** Baseline: 0; Target: 1080; Achieved: 1080 (100% of target)
- **Adaptive trials and demonstration for new technologies (Number).** Baseline: 0; Target: 2206; Achieved: 2206 (100% of target) *Target assumed 80% sustainability rates of intervention by adopting

farmers.

Additional impacts measured. In addition to its monitoring system, the IAPP procured two impact assessments, one led by DIME and one by a third-party evaluator. DIME conducted three surveys (a 2012 baseline, a 2014 midline, and a 2015 endline) leading to a panel data set of 1,732 households. Its analysis focused on crop and fisheries activities using a randomized control trial method. The third-party evaluation conducted one endline survey with 17,250 farmers (8,750 crop farmers, 3,000 fish farmers, 3,000 livestock farmers and 2,500 water users), using a stratified random sampling method. It reconstructed a baseline using a recall method.

Main findings from the DIME impact evaluation show that -compared to farmers in control villages- IAPP crop farmers were more likely to (i) adopt paddy varieties promoted by IAPP, (ii) diversify crop production away from rice, (iii) earn higher income from crops, and (iv) obtain greater surplus of rice. Similarly, IAPP fish farmers (i) had higher fish production, (ii) cultivate in a greater pond area, and (iii) earn greater income from fisheries. Also, IAPP livestock farmers were found to (i) have higher milk productivity of cows, (ii) consume more milk, and (iii) earn higher income from milk sales. Also, IAPP promoted new, less water intense crops among beneficiary farmers, such as pulses, oilseeds, wheat, potato and maize. The third-party evaluation found that 93 percent of IAPP farmers reported increases in production because of such promoted changes in cropping patterns.

Overall, the results from the IAPP M&E system, the DIME impact evaluation and the third-party impact assessment are similar and demonstrate an overall positive project outcomes.

Rating
Substantial

5. Efficiency

At appraisal, the Economic Internal Rate of Return (EIRR) of the project investment was estimated at 21.4 percent, with a Net Present Value (NPV) of US$35 million. At closing, the calculated EIRR was 37.9 percent with a NPV of US$138 million, based on constant 2016 prices, an assumed discount rate of 10%, and an assumed project lifetime of 20 years (with technology adoption starting at year three). The ex-post EIRR is relatively insensitive and remains higher than the appraisal estimate, in that a sensitivity analysis showed that a 20 percent price decline would lead to a fall in return to 30.4 percent. The sensitivity analysis further estimated that if both output prices and the adoption rate dropped by 20 percent, the EIRR would fall to 26 percent.

The ex-post economic and financial analysis methodology for the IAPP is based on 26 crop/activity models (for crops, livestock, fisheries, and water management) fed with data from beneficiary farms in all eight project districts from the IAPP project monitoring information system. These data (on yields, adoption, etc.) were

validated with other available sources like the third-party impact assessment, interviews with local officials and beneficiaries, and a 2013 FAO study. An incremental financial costs and benefits analysis was conducted to analyze the "with project" and "without project" scenario. Overall, the ex-post methodology appears sound.

The ICR highlights that several economic benefits were not considered in the economic and financial analysis (both ex-ante and ex-post), which would lead to even higher EIRR. These benefits the reduction in waterlogging from re-excavation of canals, ground water recharge and salt water intrusion prevention from buried pipes, enhanced climate change resilience from new rice varieties, and better soil health from the reduction of agri-chemicals, vermi-composting, and green manuring.

Finally, the ICR reports that actual costs for project management (Component 4) were lower than assumed at appraisal (US$3.38 million compared to US$5.26 million), indicating higher than expected administrative efficiency (ICR, para 70). Also, the project was close to fully disbursed at the closing date, suggesting substantial operational efficiency.

Based on the sound rates of return and the generally strong operational efficiency, overall efficiency is rated Substantial.

Efficiency Rating
High

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	21.40	0 ☑Not Applicable
ICR Estimate	✓	37.60	0 ☑Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The Relevance of Objectives is rated High, as IAPP objectives were relevant to both the former and current national priorities and Bank sector strategies. The Relevance of Design is rated Substantial, as IAPP design was aligned to the PDO and sector circumstances. The achievement of the PDO to enhance agricultural productivity in crops, livestock, and fisheries in selected pilot areas is rated Substantial, given that all targeted project outcomes were either fully achieved or exceeded at project completion and additional impact evidence has been demonstrated. Efficiency is rated High, given the project's sound rates of return and strong operational efficiency.

a. Outcome Rating
Satisfactory

7. Rationale for Risk to Development Outcome Rating

The overall risk to the DO is considered modest. Sustainability of outcomes can be expected to result from improved institutional capacity in Bangladesh's agricultural sector, improved technical skills and practices of farmers, and improved collaboration between various sector stakeholders. The project's approach of fostering a strong interaction between a considerable number of research institutions, extension service providers, and farmers and promoting a participatory "training of trainers" culture at the local level is likely to sustain the stakeholder capacity and productivity increase built through the IAPP in the short and medium term. However, two main challenges to sustaining the DO in the longer term are (i) maintaining the coordination and governance in Bangladesh's agricultural technology system across the various sector institutions and (ii) the need for continued budget to support activities established by the IAPP, especially on the local level (for example, the continued role of the community facilitators).

In terms of scale-up, the ICR highlights the Bangladesh Ministry of Agriculture's interest in a follow-on operation of the IAPP. For that, it has submitted a proposal to the GAFSP 2017 Public Sector Window, but the ICR does not report and IEG cannot find evidence that this proposal has been approved at the time of this review. However, the ICR reports that the International Fund for Agricultural Development (IFAD) already committed funding for a follow-on operation in Bangladesh similar to the IAPP.

a. Risk to Development Outcome Rating
Modest

8. Assessment of Bank Performance

a. Quality-at-Entry

The World Bank task team ensured that the design of the IAPP and its PDO were fully aligned with the GOB's agricultural sector priorities and the World Bank's strategic focus in Bangladesh at the time. Lessons from relevant Bank research and extension projects as well as findings from a sector background study were taken into account. Priority areas where the project interventions would focus on were identified based on a preparatory needs assessment.

Moreover, the World Bank task team put emphasis on designing an effective coordination mechanism to ensure adequate implementation by the numerous agencies involved in the IAPP. The anticipated risks and

respective mitigation measures identified by the Bank were adequate.

Quality-at-Entry Rating
Satisfactory

b. Quality of supervision

During implementation, the World Bank's focus on a solid project preparation paid off, as the project was implemented largely according to its design – all in terms of its activities, time and budget plan. At completion, the project fully achieved or exceeded all targets as measured by the Results Framework. There were no significant delays or changes to the PDO and project components, demonstrating solid design and supervision management.

Supervision missions took place on a regular basis, which included site visits and interactions with various project stakeholders. The project was led by only two task team leaders throughout its lifetime (one based in Bangladesh), which ensured continuity and a responsiveness to the client implementing agencies. Overall, the World Bank task team was proactive to new information during supervision. For example, the Mid-Term Review (MTR) recommendations were taken seriously by the task team, leading to upward adjustments in the Results Framework target values and the procurement of an independent third-party impact assessment.

Quality of Supervision Rating
Highly Satisfactory

Overall Bank Performance Rating
Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

The Government of Bangladesh (GOB) demonstrated a strong commitment to the IAPP and took on a solid sense of ownership throughout project preparation and implementation. It fully complied with the counterpart co-financing of about 27% of total project costs, as agreed at appraisal. According to the ICR, the GOB was proactive in solving challenges regarding the legal registration and expansion of the project-supported livelihood field schools. Also, it took on advice and acted upon results from analyses and studies of the IAPP. Overall, the working relationship with the World Bank and other partners (FAO, DIME) was effective.

Government Performance Rating
Satisfactory

b. Implementing Agency Performance

The project involved several implementation agencies, given its diverse focus on crop, livestock, and fish production. Thus, five respective state-level departments and three national research institutions were responsible for specific project implementation activities. A central Project Management Unit (PMU) in Dhaka and two Regional Project Implementation Units (RPIU), one for the South and one for the North region, coordinated project implementation. Given the various agencies, the PMU guided and interacted with them through various committees for effective and continuous oversight.

According to the ICR, the PMU was proactive and responsive to arising challenges and circumstances. For instance, after initial implementation delays due to procurement issues, it appointed a qualified consultant who resolved the situation. Also, the use of modern technology (such as mobile phone applications for data collection and subproject management) and use of several results monitoring activities (DIME and third-party impact assessments) was welcomed by the local teams.

Implementing Agency Performance Rating
Satisfactory

Overall Borrower Performance Rating
Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

Overall, IAPP's M&E design and strategy was well-developed along the project's theory of change (new technologies/adapted varieties developed by research intuitions and disseminated to farmers through extension services lead to increased adoption and eventually higher yields; expansion of improved irrigation systems lead to more intense and/or diversified agricultural production). For the PDO of aiming to "enhance the productivity of agriculture (crops, livestock and fisheries) in pilot areas", the mix of outcome (focused on changes in yields) and output indicators (focused on technologies released and adopted) for the different targeted sub-sectors (crops, livestock, fish) in the IAPP Results Framework seems appropriate. The ICR criticizes the inadequate specification of baseline and target values for paddy and milk based on national average productivity figures at appraisal, which were adjusted upward after the Mid-Term Review. However, with the specific subprojects to be supported unknown at appraisal, such approximation based on best available data seems reasonable and the project's efforts to adjust these figures during implementation are commendable.

The project M&E design emphasized the implementation of periodic assessments and strong community participation through input-output score cards for enhanced accountability and oversight. Moreover, the early

involvement of the World Bank's Development Impact Evaluation Initiative (DIME) ensured the ability to rigorously assess project results in terms of technology adoption for crops and fisheries based on baseline, midline and endline survey analyses.

b. M&E Implementation

The PAD clearly outlined M&E responsibilities in terms of data collection, monitoring, and analysis across the various implementation agencies. The general responsibility for M&E management and reporting lied with the central PMU, but each individual implementing agency had its own M&E unit to plan, monitor, and evaluate project activities and report progress on key performance indicators.

The Mid-Term Review highlighted the need to increase a couple of PDO indicator baseline and target values (milk and paddy) based on new data, which was done through a project restructuring. As a result of the MTR, the project also made some adjustments to overcome some identified weaknesses in data collection. Specifically, it developed a web-based Project Management Information System (PIMS) for M&E that allowed the collection of real time information using "input-output cards" filled out by beneficiaries through a mobile application. Moreover, the project procured a third-party impact assessment to validate the M&E data collection and monitoring activities conducted through the project's Results Framework and the DIME impact studies.

In sum, M&E implementation of the IAPP went largely smoothly during implementation given its clear design and the proactivity of the project team with regards to M&E.

c. M&E Utilization

The ICR of the IAPP differs from many ICRs reviewed by IEG in that it reports on M&E utilization. Specifically, the PMIS developed by the project supported the central PMU and other implementing agencies to monitor the project progress on key activities and milestones. The real-time information available from all levels (local, regional, central) enhanced project management decision-making processes. Data from the PMIS was used for the ex-post Economic and Financial Analysis. Moreover, the results and recommendations from the different impact studies helped project M&E reporting and served as key input to the ICR.

M&E Quality Rating

Substantial

11. Other Issues

a. Safeguards

Environmental Safeguards. The project was classified as environmental Category B, as it was not expected to lead to any significant negative environmental changes. It triggered Environmental Assessment (EA) 4.01, Natural Habitats 4.04 and Pest Management 4.09 Operational Safeguard Policies. The PAD states that during project preparation an Environmental Management Framework (EMF) was drafted and disclosed on the Bangladesh Ministry of Agriculture website and the World Bank InfoShop. Also, public consultations were held with stakeholders, potential beneficiaries, indigenous peoples and NGOs at national and local levels. Annual reports on subproject activities were planned to capture the implementation experience of the EMF procedures to identify and address potential environmental performance issues. The ICR reports very little on the management of environmental safeguards during implementation, but states that all subproject proposals were screened for environmental impacts and that the Environmental Safeguards Specialist regularly reviewed a random sample of the environmental screening forms.

Social Safeguards. The project triggered the Indigenous Peoples 4.10 and the Involuntary Resettlement 4.12 Operational Safeguard Policies, as it targeted landless, poor, women and ethnic minority farmers in marginalized and economically disadvantaged areas. The project prepared a Social Management Framework (SMF) as guidance for socially inclusive design and used a participatory approach with beneficiaries. The ICR reports that social safeguards screening was not fully adequate in the first implementation year and, thus, a safeguards operational manual and an ethnic minority development plan for three project districts with tribal communities were developed. There were no apparent private land acquisitions, displacement from public lands, or adverse impact on peoples who belong to the Small Ethnic Groups during implementation. Similarly, no major complaints or grievances on environmental or social management were filed.

Other Safeguards. The project also triggered the International Waterways 7.50 Operational Safeguard Policy, given that at appraisal it was unclear whether subprojects might involve waterways that drain into the Bay of Bengal or shared groundwater aquifers. However, given the “low likelihood and the minor and insignificant impact on water quality and quantity going to neighboring riparians, notification exception 7(a) was granted” by the Regional Vice President (PAD, para 55).

b. Fiduciary Compliance

Financial Management. The PMU capacity for financial management was adequate and provided timely interim unqualified financial reports. Similarly, all audit reports were unqualified (note that one qualified audit opinion was given by external auditors for fiscal year 2015/6, but was later clarified to be erroneous by the auditors and resolved). The final audit report for fiscal year 2017 is expected in December 2017. Moreover, actual disbursements were highly consistent with the disbursement plan and in compliance with disbursement guidelines.

Procurement. The PMU capacity for procurement was largely satisfactory and led to a timely completion of all planned procurement activities. There were initial delays, which were resolved through the appointment of a procurement consultant. The PMU switched to electronic tendering in the last couple of years of implementation, which raised efficiency and transparency of procurement activities. Overall, no large procurement issues were identified throughout implementation.

c. Unintended impacts (Positive or Negative)

n/a

d. Other

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12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	---
Risk to Development Outcome	Modest	Modest	---
Bank Performance	Satisfactory	Satisfactory	---
Borrower Performance	Satisfactory	Satisfactory	---
Quality of ICR		High	---

Note
When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR lists several lessons, of which three key ones are summarized below with adjusted language:

Planning and adopting a central mechanism that combines the generation, promotion, and monitoring the use of new technologies into one process is a good way to stimulate effective supervision and coordination among the various project stakeholders. Such a mechanism can significantly contribute to improving linkages between researchers, extension agents, farmers, and other project stakeholders through coordinated decentralization of activities and strong community involvement.

Active target beneficiary involvement in the decision-making on adequate technologies and varieties for agricultural cultivation are key to encouraging their participation in outreach activities with other farmers. Farmer group structure, technical guidance from extension agencies, and in-kind project support promoted by a project can lead to notable spillover effects and a more rapid, sustainable spread of new technologies.

Input-Output cards filled out by farmers along with Activity Diaries kept by community facilitators assisting those farmers can serve as a self-monitoring tool to achieve greater accountability in M&E. With the adequate training of its users, a unified M&E online information system based on these monitoring tools can provide real time project information at all levels (local, regional, central) for better decision-making and monitor the achievement of key milestones.

14. Assessment Recommended?

Yes

Please explain

The project shows a well-prepared design and best practice use of various complementing M&E activities, both which could be beneficial to inform similar projects in other countries.

15. Comments on Quality of ICR

The ICR is comprehensive and well-presented. It shows a good understanding of the technical content of the project activities and the logic of the project is explained well to the reader. The arguments presented in the ICR are based on a substantial amount of evidence from several sources, including the project's M&E system/Results Framework, a DIME impact evaluation and a third-party impact assessment. Critical issues were clearly identified and openly discussed, such as the lacking initial baseline and the need to increase two PDO-level indicator target levels during implementation.
Reporting on environmental safeguards is quite limited and could have been more elaborate. Also, while not required as part of the ICR reporting, it could have been beneficial to include an Annex summarizing the key findings of the DIME impact evaluation and the third-party impact assessment. This could have made the ICR even more solid, as more details on the IAPP results would have been provided and complemented the information of the main text.

a. Quality of ICR Rating
High