Public Disclosure Authorized

Public Disclosure Authorized

Report Number: ICRR0024672

1. Project Data

Project ID	Project Name
P155513	Food Security and Agriculture Productivi
Country	**Practice Area(Lead)**
Bhutan	Agriculture and Food

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
TF-A4224,TF-B6044	30-Dec-2024	12,375,356.15
Bank Approval Date	**Closing Date (Actual)**	
27-Apr-2017	30-Dec-2024	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	12,640,000.00	12,640,000.00
Revised Commitment	12,640,000.00	12,640,000.00
Actual	12,375,356.15	12,375,356.15

Prepared by	Reviewed by	ICR Review Coordinator	Group
Shashidhara Laxman Kolavalli	Avjeet Singh	Avjeet Singh	IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

Identically stated in PAD (para 11) and the project paper on additional financing (page 2), the Project Development Objective (PDO) was to increase agricultural productivity and enhance access to markets for farmers in selected gewogs in south-west Bhutan.

For this review, the PDO is parsed into two subobjectives:

Subobjective one: to increase agricultural productivity of farmers in selected gewogs in south-west Bhutan

Subobjective two: to enhance access to markets for farmers in selected gewogs in south-west Bhutan

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

Did the Board approve the revised objectives/key associated outcome targets?
No

c. Will a split evaluation be undertaken?
No

d. Components
The project had four components.

Component 1: Strengthening Farmer and Producer Groups (Appraised: US$1.08 million; Actual: US$0.740 million)

This component aimed to strengthen farmers' and producers' groups to enable them to sustain project interventions better. It channeled the support through three subcomponents.

Subcomponent 1.1 – Farmer group strengthening and formation: supported the strengthening of existing mechanisms for farmer group (FG) formation and their capacity development

Subcomponent 1.2 – Strengthening Producer Groups: Supported the organization of PGs into clusters of business enterprises to enable them to aggregate products, add value, and market in promising value chains

Subcomponent 1.3 – Contributing to improved nutrition: supported the promotion of nutrition awareness among the targeted population through a Behavior Change and Communications (BCC) approach using the FGs as an entry point.

Component 2: Enhancing Farmer Productivity (Appraised: US$5.21 million; Actual: US$8.369 million)

This component aimed to improve agricultural productivity. The support was channeled through three subcomponents.

Subcomponent 2.1 – Water Use Efficiency: supported the development of four irrigation systems to irrigate 1,346 acres (545 ha)

Subcomponent 2.2: Improved farm management and technical and institutional capacity building: Provided the FGs with training and extension services and technical assistance as needed

Subcomponent 2.3 – Improved agricultural inputs and technologies: Provided FGs with agricultural inputs and farming technologies based on needs, some of which were on a cost-sharing basis.

Component 3: Enhancing Access to Markets (Appraised: US$1.0 million; Actual: US$2.168 million)

This component aimed to develop value chains of selected high-value, nutrient-rich crops. The support was delivered through two subcomponents.

Subcomponent 3.1 – Post-harvest and market infrastructure support: supported farmers in minimizing post-harvest losses, improving commodity shelf life, enhancing product quality, and improving storage, packing, and transport to obtain higher values.

Subcomponent 3.2 – Linkage to Domestic and Export Markets: supported the Department of Agricultural Marketing and Cooperatives (DMAC) for reviewing and upgrading the existing agri-market information system to make it user-friendly.

Component 4: Project Management (Appraised: US$0.71 million; Actual: US$1.091 million)

This component supported all aspects of project management, including management and coordination, monitoring and evaluation, technical assistance, and the grievance redress system.

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

Project cost

The project was appraised to cost US$12.64 million, and its actual cost was US$12.37 million

Financing

The project was financed through two grants of US$8.00 and US$4.64 million

Borrower Contribution

The borrower was expected to contribute US$1.33 million, but actual contribution was US$0.68 million

Dates:

The project was approved on April 27, 2017, and became effective on August 8, 2017. The Mid-Term review was completed on November 5, 2020. The project was scheduled to close on December 20, 2022, but it was actually closed 24 months later, on December 30, 2024.

Additional Financing (FA) and Restructurings:

The project underwent two restructurings:

July15, 2021: to bring AF into the project. It entailed a two-year extension of the project closing date and revisions to the RF.

June 05, 2024: to revise the overly ambitious end-of-project targets for three Intermediate results indicators (IRIs).

Revisions to RF

The revisions involved increasing all the PDO indicator targets in the initial structuring. A summary of the changes to the PDO targets is provided below. The revisions to IRIs involved both increasing and decreasing targets. Key downward revisions included the number of farmers in organized groups and the number of people receiving extension support for nutrition-related counseling.

Indicator	**Original target**	**Revised target**
PDO1. Increased productivity of targeted crops in project areas (percentage)	20	25
PDO 2. Increase in volume of produce marketed (percentage)	20	25
PDO 3. Increase in the value of produce marketed (percentage)	20	25
PDO 4. Number of direct project beneficiaries	10,400	11,938
Female direct beneficiaries (percentage)	30	34

3. Relevance of Objectives

Rationale

Country Context

In the decade before the appraisal of this project (2005 – 1015), Bhutan's economy grew at an average of 7.5 percent, driven by hydropower expansion, infrastructure development, and the service sector, such as tourism. It reduced the poverty rate from 23 percent in 2007 to 12 percent in 2012 and 5.8 percent in 2017 (ICR, para 1). However, nutritional outcomes were less than satisfactory: 27 percent of households consumed less than the daily minimum caloric requirement, 34 percent of children under five were stunted, and 35 percent of households faced annual food shortages.

Developing its agriculture, including livestock and forestry, offered a way to address the challenges, but the sector hadn't developed adequately due to predominantly subsistence farming, low adoption of technologies, limited access to markets, and land fallowing. The country heavily relied on imports of farm products and inputs from India, thereby deepening its trade deficits. Bhutan imported 34 percent of its cereal requirements.

Country Strategy

The PDO aligned with the Royal Government of Bhutan's (RGoB) priority to develop agriculture in its 11th five-year plan, so that it can contribute to the national economy, address food and nutrition security, reduce poverty, and lead to equitable and sustainable development. The PDO remained relevant to Bhutan's agrifood sector strategy 2034 (AFSS 2034) and the Food and Nutrition Security Policy 2023, which aim to increase agricultural exports, raise farmer incomes, and improve self-sufficiency.

Bank Strategy

The PDO aligned with the World Bank Country Partnership Strategy (CPS) (FY15-19), particularly its emphasis on agricultural commercialization as a driver of poverty reduction. The project also helped consolidate and expand on the achievements of bank-supported agricultural productivity implementation projects. The PDO remains relevant to the World Bank's Country Partnership Framework (CPF) for Bhutan (FY25-FY29), which focuses on increasing private investment and jobs, enhancing climate resilience and improving infrastructure.

The level at which the PDO is pitched

The PDO to increase agricultural productivity and enhance access to the market for farmers in selected areas was pitched at outcome levels, which would contribute to increasing agricultural incomes and self-sufficiency.

Summary: Bhutan has grown at modest rates, driven by non-agricultural sectors, reducing poverty significantly, but dietary outcomes remain unsatisfactory. It depends on food imports which adds to its trade deficits. Improving agriculture would address many concerns, but the sector is subsistence-oriented with poor technologies, infrastructure, and access to markets. The PDO is highly relevant to Bhutan's efforts to raise farm incomes, increase exports, and become self-sufficient, and the World Bank's support to the country to increase private investment, enhance climate resilience, and improve infrastructure.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To increase agricultural productivity of farmers in selected gewogs in south-west Bhutan

Rationale

Theory of Change (ToC)

The retrospectively articulated ToC in ICR (para 6) states that project activities, such as organizing new and strengthening existing FGs and PGs, supporting the development of new irrigation systems, including building capabilities to manage them, and supplying FGs with improved agricultural inputs and technologies, would produce outputs, such as the number of farmers groups that received technical training and the area that received improved irrigation services.

The outputs were expected to enable farmers to boost the productivity of the crops they cultivate.

The outcome indicator, percentage increase in the yields of targeted crops, robustly measured the outcome.

The ToC linking outcomes to project activities was plausible. However, some key assumptions needed to hold: farmers could be organized into groups to deliver the services effectively and they would adopt irrigation practices and improved technologies to increase yields.

Outputs

The project activities that contributed to increased yields included strengthening farmers' groups, expanding irrigated areas, supplying technologies, and providing modern equipment. The technologies promoted included improved seeds, the use of fertilizers and polyhouses, improved quinoa cultivation, and the use of electric fencing. Some of the technologies were promoted through field demonstrations. The equipment given out on a cost-sharing basis included mini tillers, rice mills, grass cutters, electric fences, power sprayers, and polyhouses.

The indicators were as follows:

Organization and capacity development

- 335 beneficiary groups received technical training and other capacity building support, exceeding the revised target of 310
- 10,076 farmers were members of an association, including producer groups, cooperatives etc., exceeding the target of 5,898 (of them 4,490 were female, exceeding the revised target of 2,005)

Nutrition

- 6,834 individuals received improved nutrition services and products through the project, exceeding the target of 6,000 (of them, 4,856 received nutrition counseling/education, exceeding the revised target of 4,000; 1,978 received extension support for nutrition-relevant techniques, close to the revised target of 2,000; and 3,456 were female beneficiaries receiving nutrition services and products, exceeding the target of 2,400)

Irrigation

- 2,275.12 acres were provided with irrigation, exceeding the target of 2,244 acres (of them, 1,924 acres were by flood irrigation, exceeding the revised target of 1,914 and 351.12 acres were by micro irrigation, exceeding the revised target of 330 acres)
- 2,395 households received new/improved irrigation services, falling short of the revised target of 2,767 households (of them, 761 were new users with flood irrigation, exceeding the target of 744 and 1,634 were new users with micro irrigation, falling short of the revised target of 2,023)

Technology adoption

- 10,794 farmers adopted an improved agricultural technology promoted by the project in the targeted project area, exceeding the revised target of 8,300 (of them, 4,476 were female, exceeding the target of 4,059)

- The land area under cultivation for citrus and cardamom increased by 5.7 percent, falling just short of the target of 6 percent (of the total area changed, cardamom cultivated area increased by 1,211 acres, meeting the revised target of 1,208 acres and citrus cultivated area increased by 3,998 acres, meeting the revised target of 3,968 acres)
- 9,946 individuals were helped to cope with the impact of climate change, exceeding the target of 1,500 (of them, 4,150 were female, exceeding the target of 510)

Outcomes

Baseline and endline studies provided the information for assessing outcomes. The baselines were derived from Focus Group Discussions but were adjusted using official statistics for greater precision. According to an exchange with the team on November 7, 2025, the end of the project assessment collected information from randomly (stratified and proportional) 838 households (422 treatment and 416 control) and 146 farmer groups.

The priority crops included rice, vegetables, potatoes, large cardamom, mandarin, quinoa, and ginger. The vegetables included chili, cauliflower, cabbage, beans, tomato, onion, broccoli, carrot, pea and leafy greens. The information comes from the Impact Evaluation (IE). The yield increments varied among selected crops, with yield improvements being more limited in the case of paddy and cardamom. The improvements ranged from 18.2 percent in vegetables to 138.96 percent in quinoa.

- Productivity of targeted crops increased by 24 percent (from 2,289 kg/acre to 2,884 kg/acre), nearly reaching the revised target of 25 percent
- The project directly benefited 12,916 persons, exceeding the revised target of 11,938 (of them 59 percent were female, exceeding the target of 34 percent)

The project met the targets for the outcome indicators. The adoption of project-promoted technologies is likely to have contributed to yield growth. A survey conducted in 2023 revealed an overall technology adoption rate of 73.18 percent. The technologies adopted included climate-resilient varieties of paddy, black pepper, and potatoes, improved citrus canopy management, direct seeding of paddy, and plant protection. The adoption was higher among project participants compared to non-participants.

The project achieved this subobjective with Substantial efficacy.

Rating
Substantial

OBJECTIVE 2

Objective
To enhance access to markets for farmers in selected gewogs in south-west Bhutan

Rationale
Theory of Change (ToC)

The ToC stated that project activities/outputs, such as supporting farmers in minimizing post-harvest losses and improving storage, packing, and transport to get higher values and helping them improve links to domestic and export markets, producing outputs, such as the number of market and post-harvest facilities built, producer groups that received information, the number of groups receiving market information, and number of farmer groups linked to schools, could be expected to enable farmers to connect with market and increase both the volume and value of products they sell.

The two outcome indicators —percentage increases in the volume and value of agricultural products sold — robustly measure the outcomes, provided there is evidence of improved market access. Farmers could be expected to sell more when they increase production, even with no changes in market access.

The ToC was plausible, and the outputs could be expected to contribute to achieving the outcomes, provided that certain assumptions held. For example, market information made available through the project would enable producers to market more of their produce or obtain higher values.

Outputs

The project activities that contributed to increase in the volume and value of produce marketed by beneficiaries included improvements to project infrastructure, provision of market information, linking farmers to buyers, such as schools or through buyer-seller meets (BSM), and the building of post-harvest facilities.

The indicators were as follows.

- 64 farmer groups benefited from project-supported market infrastructure, exceeding the revised target of 59 farmer groups
- 78 producer groups received market information, exceeding the revised target of 40
- 23 farmer groups were linked to schools, falling short of the revised target of 25
- 28 post-harvest facilities, including markets, agro-processing/storage/quality control facilities, were constructed and or rehabilitated, nearly meeting the target of 32
- 83.73 percent of beneficiaries had medium or high (>7) Dietary Diversity Score, exceeding the target of 70 percent

Outcomes

The outcome was measured by percentage changes in the volume and value of produce sold by the households. The indicators were as follows.

- Volume of produce marketed increased by 28 percent (from 389 kg to 499 kg), exceeding the revised target of 25 percent
- Value of produce marketed increased by 35 percent (from BTN24,069 to BTN32,592), exceeding the revised target of 25 percent
- 11,938 individuals benefited directly from the project, falling marginally short of the revised target of 12,916 (of them, 59 percent were women, exceeding the target of 34 percent)

The project benefited nearly the targeted number of individuals. Not included among the PDO indicators, household dietary diversity increased among households. The ICR attributes it to nutrition-related extension activities, including behavioral change communication (BCC) related to nutrition and efforts to support home gardening, as reported under the outputs that contributed to increasing productivity.

The project met the targets. Project activities include linking farmers with institutional buyers, such as schools, and repairing critical road segments to improve connectivity to markets. The efficacy with which the objective is achieved is rated Substantial.

Rating
Substantial

OVERALL EFFICACY

Rationale
The ToC stated that organizing and strengthening farmer organizations, developing new irrigation systems, and supplying farmers with productive assets and technologies would help farmers increase the productivity of selected crops. Additionally, assisting farmers in improving post-harvest practices and connecting them with buyers would enable them to increase the volume and value of their produce.

The project increased productivity with substantial efficacy, as the yield targets of selected crops were almost met with more than the targeted number of farmers adopting the recommended technologies, and the project reached the targeted number of people. The project also increased the volume and value of produce marketed by farmers by improving their access to markets and connecting them with buyers.

The overall efficacy is also rated Substantial.

Overall Efficacy Rating

Substantial

5. Efficiency

Economic efficiency

Ex ante

The estimated Economic Rate of Return (ERR) was 15.5 percent at AF and 22.8 percent at appraisal. The estimated Net Present Value (NPV) was US$2.9 million at AF and US$4.9 million at appraisal.

Ex post

The quantified benefits included a net increase in productivity of targeted crops among participating farmers, driven by increased cropping intensity, adoption of Climate-Smart Agriculture (CSA) technology, reduced losses from wildlife damage, value addition, and reduced post-harvest losses. Net benefits were estimated as the difference between" with" and "without" scenarios, over 20 years, discounting at 10 percent.

The estimated ERR was 18 percent, with an NPV of US$3.9 million. Adding the greenhouse gas (GHG) and nutrition benefits, the ERR increased to 23.1 percent.

The sensitivity analysis indicated that the ERR would reduce to 17.5 percent when anticipated benefits are reduced by 20 percent (Para 43).

Administrative Efficiency

Several factors contributed to inefficiency (ICR, para 44):

- COVID-19 significantly affected project implementation; group-based capacity-building activities had to be postponed
- Construction works were delayed due to labor constraints
- High turnover of Task Team leaders (TTLs) (four in seven years) undermined continuity in dialogue and overall project support, although great care was taken to ensure extended overlaps
- High turnover of government staff

The actual rates of return were lower than the expected but still well above the cost of capital. The project was delayed by two years, but with AF, it achieved more stringent targets. The project met its objectives with substantial efficiency.

Efficiency Rating

Substantial

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	✓	22.80	0 ☐ Not Applicable
ICR Estimate	✓	18.00	0 ☐ Not Applicable

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

6. Outcome

The PDO, to increase agricultural productivity and enhance access to market for farmers in selected areas of Bhutan, was highly relevant to the government's efforts to raise farm incomes, become self-sufficient, and increase exports. The project achieved the objectives with substantial overall efficacy. The beneficiaries increased the yields of selected crops, adopting the recommended technologies. They also increased the value and volume of their produce they sold, benefitting from improvements in infrastructure and efforts to link them with buyers. The objectives were also met with substantial efficiency, as the estimated returns were well above the cost of capital and lower than projected returns. The project met more stringent targets, albeit with a two-year delay.

High relevance, substantial efficacy, and substantial efficiency warrant an overall outcome rating of Satisfactory

a. Outcome Rating

Satisfactory

7. Risk to Development Outcome

Although several measures have been taken to ensure the project's activities are sustained and integrated into regular operations, there are risks to development outcomes (ICR para 70).

Farmer group capacity: The Department of Agricultural Marketing and Cooperatives (DAMC) will integrate the project-developed curriculum into its national program for strengthening farmer groups and cooperatives. Trained community resource persons (CRPs) are expected to continue their services, supported by the five FSAPP administrative units, which plan to include CRP activities in their budgets, while ARDC nutrition focal persons oversee ongoing training. However, the uncertainty about whether the actors will receive adequate support poses a risk to continuity.

Maintenance of irrigation infrastructure: The project constructed four irrigation schemes and transferred them to the water users. Water user associations will handle routine maintenance, while major repairs will be incorporated into local government plans, as is currently practiced. However, weak group management and limited local government capacity pose risks to sustaining the infrastructure.

Supply of CSA technologies: ARDC has committed to maintaining the supply of CSA technologies; however, whether they will continue to receive the needed resources presents another risk.

Institutional market risk: Local governments have agreed to facilitate connections between schools and FGs to ensure a stable supply of nutritious food for students while supporting local agriculture. Their inability to do so poses another risk.

Linking buyers and sellers: The DAMC, the Ministry of Agriculture and Livestock (MOAL) staff at both the central and local levels, aim to bring together producers and buyers through buyer-seller meetings (BSM). Their ability to do so poses another risk.

Infrastructure maintenance risk: Although most of the infrastructure has been handed over to the groups, the lack of an O&M plan in many cases, combined with the groups' inexperience in managing such investments, poses a risk to sustainability. The project has developed a plan to transfer responsibility for managing and monitoring the use of these infrastructures to local governments, research centers, and the

Economic Development and Marketing Officer of DAMC. Proper use of these assets, however, depends on effective local management and the allocation of appropriate resources.

8. Assessment of Bank Performance

a. Quality-at-Entry

The project was well-suited to help the government of Bhutan implement its strategies to increase farm incomes, boost exports, and achieve self-sufficiency. The design incorporated lessons from previous projects: emphasizing ownership and management of assets as much as infrastructure development; centralizing procurement to reduce delays in rural infrastructure development; and providing irrigation to promote double cropping and diversification. Several technical assessments of value chains and market links guided the design of the intervention. The project also engaged a wide range of stakeholders and leveraged the work of other development agencies.

The components of the project, which focused on organizing farmers, providing them with infrastructure and technologies to increase productivity, and helping them link with buyers, could be expected to achieve the project objectives.

The procurement plan for the entire project was finalized and approved in the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) before the project's commencement, which facilitated the immediate kick-off of the project.

Recognizing local government capacity and resource constraints, the project allocated adequate resources to guide and support local governments and train local government staff assigned to project activities.

The M&E was adequate, with appropriate and measurable indicators; however, the methods planned for collecting and analyzing data proved to be inadequate.

Based on lessons and preparatory work, the project design was suitable to achieve the objectives. With appropriate implementation arrangements, risk mitigation, and an M&E framework, the quality at entry was satisfactory.

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

The Bank team provided regular support through 14 missions, including an MTR. The team visited project sites and interacted with beneficiaries and local implementing units. The ISRs documented the project's progress and shortcomings, while Aide Memoires and technical notes included agreed actions and the next steps.

Despite frequent changes in TTLs, the team provided uninterrupted support and offered practical recommendations and technical solutions to address the challenges that arose. The team proactively supported the government's request to restructuring the project and ensured that FAO supported the team. Through regular communication, the team maintained a strong working relationship with its counterparts.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design
The M&E design was appropriate for monitoring project activities, assessing outcomes, and testing the links in the ToC. The PDO indicators, including the increase in productivity of selected crops, the increase in volume and value of produce marketed, and the number of people reached by the project, robustly measured the outcomes, and they were all measurable.

The M&E included 13 IRIs. Ten of them indicated project outputs, such as the targeted are provided with irrigation. The remaining three related to intermediate outcomes, such as the number of farmers who had adopted an improved agricultural technology.

The Project Management Unit (PMU) was assigned overall responsibility for managing the monitoring and evaluation (M&E), regular reporting, and dissemination of project results. Since the previous project indicated that not having dedicated M&E offices made data collection and management difficult, both the PSU and the Project Support Team (PST) were required to have individuals designated for M&E.

The plan included provisions for a baseline study, mid-term evaluation, and end-of-project evaluations, which were intended to be conducted by a third party.

b. M&E Implementation
The M&E activities started with an Excel-based data reporting system that gathered basic information for each project outcome or result indicator. However, the data collected was often incomplete, and the methodology or tools used for data collection and analysis were unclear. The M&E system was insufficient for accurately counting beneficiaries and tracking interventions at the gewog level. The project then hired an M&E/IT firm through the TA contract to develop a system for tracking the number of unique

beneficiaries at the gewog level by intervention type. This was a multi-user project management information system (PMIS) that replaced the Excel-based management and evaluation (M&E) database.

Although the project conducted a baseline survey, productivity data were collected through focus group discussions rather than the usual household surveys, and these data did not align with other sources. The project used official RGoB statistics to recalculate the baseline.

The project conducted two case studies, learning notes, annual outcome surveys, a market infrastructure survey, a technology adoption report, a school linkage case study, and an impact evaluation.

Some of the targets that were too ambitious were revised down during the second restructuring.

c. M&E Utilization

Automated, standardized reports were generated from the PMIS for each mission. The information generated from the system informed the restructuring.

MOAL utilized the project data to report on the achievement of targets, including the adoption of CSA technologies and other key objectives.

Summary: The M&E system had clear and measurable indicators and well-defined responsibilities, but implementation revealed that some data collection and analysis methods were unsuitable. Corrective measures were taken, including conducting baseline and endline studies, as well as other studies, to guide decision-making. The M&E quality is rated Substantial.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

Categorized as ‘B’ (partial assessment), the project triggered several policies: Environmental Assessment (**OP/BP 4.01**), Forests (**OP/BP 4.36**), Pest Management (**OP 4.09**), and International Waterways Policy (**OP7.50**).

OP 4.09 was triggered as a precaution to address potential unforeseen pest and pesticide issues. OP 4.36 was also triggered due to possible vegetation clearing for irrigation and market infrastructure. However, none of these safeguard issues materialized. Additionally, the International Waterways Policy (OP 7.50) was activated due to the project's development of new micro-irrigation schemes, which involved water withdrawal from the streams and tributaries of the Brahmaputra River. The RGoB notified India and Bangladesh, the riparians of the river, in March 2016. The World Bank received a response in November 2016 indicating no objection to the project's implementation.

An Environmental and Social Management Framework (ESMF) was established and publicly disclosed by the Ministry of Agriculture and Forestry in April 2016, with training provided to project implementers. The project also developed an Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), and a Grievance Redress Mechanism (GRM) Manual.

To ensure compliance with E&S policies, the PMU hired a short-term E&S expert through the FAO-TA, and E&S focal persons at the PMU were supported by three E&S focal persons at the project support teams. A detailed periodic report on E&S issues was prepared and shared with the World Bank. The GRM successfully resolved 39 grievances reported under the project. By project completion, the overall safeguards performance was deemed Satisfactory.

b. Fiduciary Compliance

Procurement

The project encountered several challenges, including staff turnover, weak procurement capacity (especially in field offices), a lack of understanding of the World Bank's procurement and Systematic Tracking of Exchanges in Procurement (STEP) systems, improper contract packaging, and confusion between operating and procurement expenses. Although the RGoB used the World Bank-supported electronic Government Procurement (e-GP) system for procurement, the World Bank required the use of traditional procurement methods until the fifth year of project implementation. This resulted in a Moderately Unsatisfactory rating for procurement performance during the early and middle phases of the project. To address these issues, the project emphasized proper record-keeping, accurate and timely updates to STEP (delegated to field-level implementing agencies), and ongoing training to build capacity at the field offices. During this period, the Project Director took direct responsibility for procurement management. As a result of these efforts, procurement performance greatly improved, culminating in a Satisfactory rating by the project's completion.

Financial Management

Financial management (FM) performance was rated as Moderately Satisfactory in most ISRs due to delays in submitting the internal audit documents. Although the PMU made efforts each year to have the project activities reviewed by internal auditors, the Internal Audit Unit under MOAL was unable to meet the PMU's needs because of a staffing shortage, except in the last two years of the project. As the project progressed, fiduciary performance improved and was upgraded to Satisfactory, thanks to the timely submission of the internal audit report, adequate FM staffing, and better compliance with financial reporting and other covenants.

c. Unintended impacts (Positive or Negative)

---

d. Other

Financial inclusion: The beneficiaries contributed US$0.68 million, against the target of US$0.24 million. An IE survey showed that financial inclusion improved among project beneficiaries: 92.6 percent had bank accounts, compared to 87.5 percent in the control group; 47 percent had availed loans, compared to 36.1 percent among non-beneficiaries (ICR, para 50).

Improved incomes: The IE also showed that beneficiary farming households had 24% higher incomes than non-beneficiary households. Their farm incomes (crops and livestock) were 48 percent higher than those of non-beneficiaries, while off-farm incomes and remittances had remained the same.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The ICR identified five lessons. Those grounded in project experience and likely to be widely applicable are presented below with some modifications.

Investing in irrigation infrastructure and efficient water management can likely deliver quick benefits, especially in areas where supplementary irrigation is needed or increasingly required to raise productivity and cropping intensity, thereby potentially enhancing climate resilience. The project focused on developing and rehabilitating community irrigation infrastructure while promoting more efficient water management practices. These efforts were complemented by the construction of low-cost water harvesting and storage structures, as well as the introduction of efficient irrigation techniques such as drip systems.

Buyer–Seller Meetings (BSMs) can potentially be an effective tool for fostering connections between producers and buyers, particularly in situations where information gaps, poor road connectivity, limited trust, or import availability are likely to hinder the development of such linkages. The project created a platform for direct engagement among stakeholders, facilitating buyer identification and providing technical support to producers, enabling them to negotiate sales agreements and meet market requirements. This, in turn, made it easier for buyers to source products from local producers.

Offering technological packages that amplify potential benefits, coupled with on-farm demonstrations, can increase the likelihood that farmers will adopt them. Technologies offered as integrated packages—combining improved seeds, fertilizers, irrigation, and crop management practices—and those demonstrated directly in farmers' fields, such as improved potato and quinoa cultivation or electric fencing using high-density polyethylene (HDPE) poles, were adopted more readily than other technologies.

Behavioral Change Communication (BCC) initiatives aimed at improving dietary practices are more likely to be effective when supported by facilitating factors such as repeated reinforcement of messages and households' ability to make the recommended changes.

Practical, hands-on nutrition education and cooking demonstrations made the advice more actionable and relevant. Delivered through community resource persons (CRPs) working closely with farmers' groups, these activities also encouraged peer learning. Importantly, support for establishing kitchen gardens and increased food availability through project investments in agriculture enabled households to improve their diets.

13. Assessment Recommended?

---

14. Comments on Quality of ICR

The report provides a comprehensive overview of the project. Using various assessments conducted by the project as well as information from the M&E, it presents detailed information; annex 4 on efficiency is particularly thorough. It adopts a solid approach to connecting project outputs to outcomes. It clearly defines outputs and outcomes, highlighting the potential pathways through which the outcomes are likely to have been achieved. It is candid in noting the challenges the project faced, such as the initial stages of M&E. The writing is clear, and the lessons it identifies are both relevant and practical.

The quality of ICR is substantial.

a. Quality of ICR Rating
Substantial