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Report No: ICR00005138

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF Number: TF0A2869)

ON A

(GRANT NUMBER: TF0A2869)

IN THE AMOUNT OF US$ 21 MILLION

TO THE
Democratic Republic of Timor-Leste, Ministry of Finance

FOR
Sustainable Agriculture Productivity Improvement Project
July 26, 2025

Agriculture and Food
East Asia And Pacific

CURRENCY EQUIVALENTS

(Exchange Rate Effective {May 20, 2025})

Currency Unit =	US$1
US$ =	SDR 1

FISCAL YEAR
January 1 - December 31

Regional Vice President:	Carlos Felipe Jaramillo
Country Director:	Carolyn Turk
Regional Director:	Julia M. Fraser
Practice Manager:	Paavo Eliste
Task Team Leader (s):	Valens Mwumvaneza
ICR Main Contributor:	Dennis Olumeh

ABBREVIATIONS AND ACRONYMS

CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CLN	Centro Logistico Nasional
DLI	Disbursement Linked Indicators
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ESCOPs	Environmental and Social Codes of Practice
ESMF	Environmental and Social Management Framework
FAO	Food and Agriculture Organization
FCS	Fragile and Conflict Situations
FFS	Farmer Field School
FIRR	Financial Internal rate of Return
GAFSP	Global Agriculture and Food Security Program
ICR	Implementation Completion and Results Report
IFRs	Interim Financial Reports
IPF	Investment Project Financing
IRI	Intermediate Results Indicator
MAF	Ministry of Agriculture and Fisheries
MAFSP	Ministry of Agriculture and Fisheries Strategic Plan
MALFF	Ministry of Agriculture, Livestock, Fisheries, and Forestry
MTR	Mid-Term Review
NPV	Net Present Value
PAD	Project Appraisal Document
PDO	Project Development Objective
PMU	Project Management Unit
SALT	Sustainable Agriculture Land Techniques
SAPIP	Sustainable Agriculture Productivity Improvement Project
SCADP	sustainable community agriculture development plan
SDP	Strategic Development Plan
SLM	Sustainable Land Management
TLAAC	Timor-Leste Agriculture Advisory Council
TLARDI	Timor-Leste Agriculture Research and Development Institute
TOC	Theory of Change
WADP	Watershed/Sub-Watershed Agricultural Development Plan
WOP	Without Project
WP	With Project
WSMC	Watershed/Sub-Watershed Management Council

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DATA SHEET

BASIC DATA

Product Information

Operation ID P155541	Operation Name Sustainable Agriculture Productivity Improvement Project
Product Investment Project Financing (IPF)	Operation Short Name Sustainable Agriculture Prod Improvement
Operation Status Closed	Approval Fiscal Year 2017
Original EA Category Partial Assessment (B) (Approval package - 25 Oct 2016)	Current EA Category Partial Assessment (B) (Restructuring Data Sheet - 27 Jun 2024)

CLIENTS

Borrower/Recipient Democratic Republic of Timor-Leste, Ministry of Finance	Implementing Agency Ministry of Agriculture and Fisheries (MAF), Government of Timor-Leste

DEVELOPMENT OBJECTIVE

Original Development Objective (Approved as part of Decision Package on 25-Oct-2016)

The Project Development Objective (PDO) is to increase the productivity and marketed production of smallholder agriculture in selected geographical locations in Timor-Leste.

FINANCING

Financing Source	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Administered Financing	21,000,000.00	21,000,000.00	21,000,000.00
TF-A2869	21,000,000.00	21,000,000.00	21,000,000.00
Total	**21,000,000.00**	**21,000,000.00**	**21,000,000.00**

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Type	Amount Disbursed (US$M)	Key Revisions
13-Jan-2021	Portal	6.77	• Components • Results • Loan Closing Date Extension • Reallocations
27-Jun-2024	Portal	16.63	• Disbursement Estimates • Loan Closing Date Extension • Implementation Schedule

KEY DATES

Key Events	Planned Date	Actual Date
Decision Review	30-Mar-2016	29-Mar-2016
Authorize Negotiations	29-Jul-2016	14-Sep-2016
Approval	25-Oct-2016	25-Oct-2016
Signing	16-Nov-2016	16-Nov-2016
Effectiveness	16-Nov-2016	16-Nov-2016
Restructuring Sequence.01	Not Applicable	13-Jan-2021
Restructuring Sequence.02	Not Applicable	27-Jun-2024
Mid-Term Review No. 01	03-Feb-2020	28-Feb-2020
Operation Closing/Cancellation	26-Jul-2025	26-Jul-2025
ICR/NCO	26-Jan-2026	--

RATINGS SUMMARY

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Satisfactory	Substantial

ISR RATINGS

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	02-Feb-2017	Satisfactory	Satisfactory	0.00
02	21-May-2017	Moderately Satisfactory	Moderately Satisfactory	2.00
03	07-Dec-2017	Moderately Satisfactory	Moderately Satisfactory	2.00
04	26-Jun-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	2.31
05	16-Dec-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	2.99
06	07-Jun-2019	Moderately Unsatisfactory	Moderately Unsatisfactory	3.70
07	19-Dec-2019	Moderately Satisfactory	Moderately Satisfactory	4.31
08	29-Jun-2020	Moderately Satisfactory	Moderately Satisfactory	5.78
09	08-Jan-2021	Satisfactory	Moderately Satisfactory	6.77
10	21-Sep-2021	Moderately Satisfactory	Moderately Satisfactory	8.50
11	28-Mar-2022	Moderately Satisfactory	Moderately Satisfactory	9.15
12	30-Aug-2022	Moderately Satisfactory	Moderately Unsatisfactory	9.98
13	05-May-2023	Moderately Satisfactory	Moderately Unsatisfactory	11.96
14	25-Oct-2023	Moderately Unsatisfactory	Moderately Unsatisfactory	14.38
15	29-Jan-2024	Moderately Satisfactory	Moderately Satisfactory	15.45
16	26-Sep-2024	Moderately Satisfactory	Moderately Satisfactory	18.15
17	07-May-2025	Moderately Satisfactory	Moderately Satisfactory	20.39

SECTORS AND THEMES

Sectors

Major Sector	Sector	%	Adaptation Co-benefits (%)	Mitigation Co-benefits (%)
FY17 - Agriculture, Fishing and Forestry	FY17 - Crops	9	0	0
	FY17 - Livestock	9	0	0
	FY17 - Public Administration - Agriculture, Fishing & Forestry	38	0	2
FY17 - Industry, Trade and Services	FY17 - Agricultural markets, commercialization and agri-business	44	0	7

Themes

Major Theme	Theme (Level 2)	Theme (Level 3)	%
FY17 - Environment and Natural Resource Management	FY17 - Climate change	FY17 - Mitigation	4
	FY17 - Renewable Natural Resources Asset Management	FY17 - Watershed Management	67
FY17 - Human Development and Gender	FY17 - Gender		34
	FY17 - Nutrition and Food Security	FY17 - Food Security	19
		FY17 - Nutrition	78
FY17 - Urban and Rural Development	FY17 - Rural Development	FY17 - Rural Infrastructure and service delivery	85
		FY17 - Rural Markets	100

ADM STAFF

Role	At Approval	At ICR
Practice Manager	Nathan M. Belete	Paavo Eliste
Regional Director	n.a	Julia M. Fraser
Global Director	Juergen Voegele	Shobha Shetty
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Co-Team Leader(s)		
ICR Main Contributor	Dennis Olumeh	

I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. **At appraisal, while Timor-Leste had made good progress in moving away from conflict and violence after 14 years of independence, the agricultural sector was struggling to feed the population and sustain livelihoods for 75 percent of the population.** The rural environment was under pressure, marred with unsustainable rain-fed small scale subsistence farming. Slash and burn agriculture was prominent with no return of organic matter into the cropping system. Livestock production systems were characterized by over stocking and free-range practices. There was a decline in production of staples that accounted for a deficit of 100,000 metric tons in 2011. High rates of malnutrition and stunting were reported among more than half (58 percent) of the children under the age of five, and food consumption levels of about 40 percent of the population were inadequate.[1] Timor-Leste was still fragile in its economic and social development. There was a decline in economic growth of the oil sector and non-oil sector between 2011 and 2013.

2. **The agricultural sector in Timor-Leste had been facing several challenges.** Low agricultural productivity due to poor agricultural management practices, limited public and private investment in agriculture, poor credit access, and inadequate storage facilities that contributed to post-harvest losses. The Ministry of Agriculture and Fisheries (MAF) was constrained in terms of budgetary allocation and limited staff skills for responding to barriers in the agricultural sector. To address some of these constraints the MAF had developed five programs to address its priorities; (i) sustainably increasing the production and productivity of key crops; (ii) improving market access and value addition; (iii) improving the enabling environment of the agricultural sector; (iv) strengthening the capacity and performance of MAF; and (v) enhancing the capacity of primary producers to use natural resources sustainably.

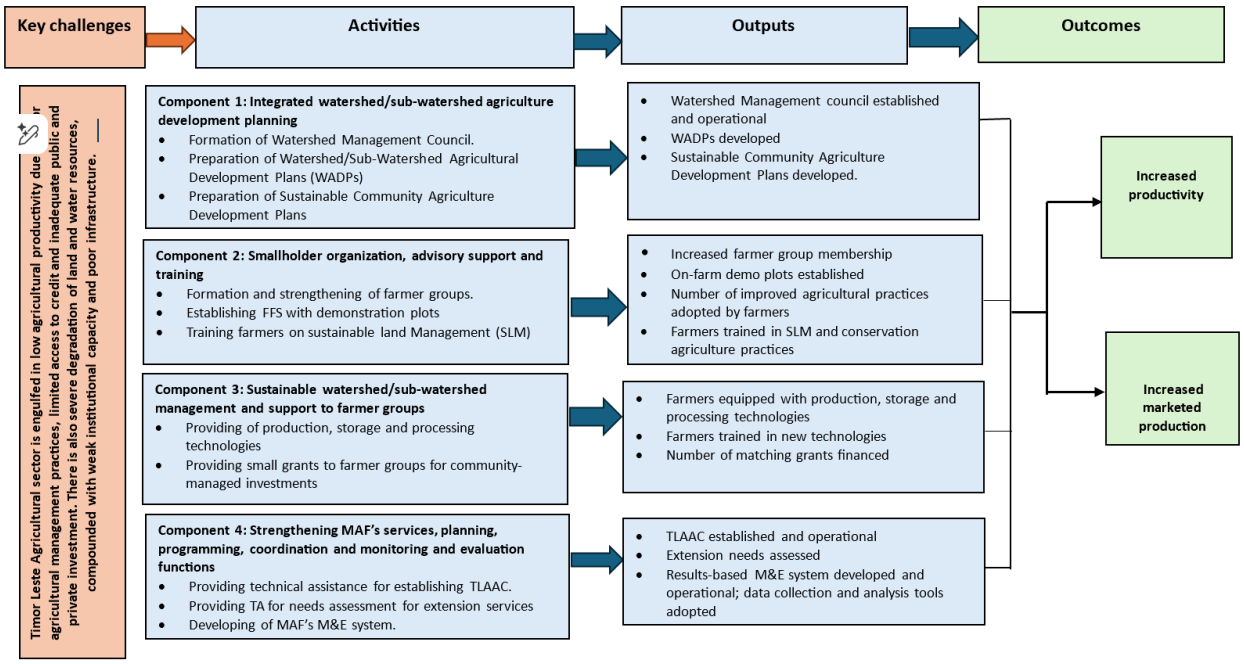
3. **The Sustainable Agriculture Productivity Improvement Project (SAPIP) responded to country needs and government priorities.** It was consistent with the objectives MAF strategic plan (MAFSP), which aimed to increase productivity, improve market access, and strengthen capacity of primary producers. It was also aligned with the priorities of the VIth Constitutional Government (2012–2017) including improving food security and nutrition, promoting value addition in agriculture, fisheries and forestry; enabling sustainable natural resource management; strengthening the trade balance; and increasing rural incomes and employment. [2] In addition, the project supported Pillar Three of the World Bank's Timor-Leste Country Partnership Strategy (CPS) 2012-2017, "supporting the development of a non-oil economy by improving the enabling environment for private sector investment and augmenting the productivity and value-added of agriculture."[3]

4. The proposed project was funded under the Global Agriculture and Food Security Program (GAFSP), to support the objectives for the agriculture sector.

Theory of Change (Results Chain)

[1] Ministry of Health Timor-Leste, UNICEF and DFAT. Timor-Leste Food and Nutrition Survey. Dili, 2013
[2] Democratic Republic of Timor-Leste, Program of the Fifth Constitutional Government 2012 – 2017 Legislature. Dili, 2012
[3] World Bank. 2016. Timor-Leste - Performance and learning review of the country partnership strategy for the period FY2013-FY2017. Washington, D.C. https://documentsinternal.worldbank.org/search/26395727

Figure 1: Theory of change (ToC)



Key Assumptions:

1. Strong institutional coordination
2. Farmer's willingness to participate in project activities

Figure 1 depicts the project's Theory of Change (ToC), developed in alignment with the description presented in the Project Appraisal Document (PAD, Report No. PAD1472). The ToC is based on the premise that targeted investments in Watershed Agricultural Development Plans (WADPs) and farmer training enabled coordinated and geographically targeted investments in soil conservation, water management, and land-use planning, which reduced erosion and improved soil fertility, thereby contributing to sustained productivity gains. The provision of improved storage and post-harvest technologies reduced quantitative and qualitative crop losses, increasing the proportion of harvest retained for sale and thus expanding marketed surplus. Institutional strengthening of MAF-through improved planning, advisory services, and M&E systems-enhanced the continuity and quality of service delivery, improved monitoring and implementation of agriculture activities, supporting sustained adoption of improved practices and the durability of productivity and market outcomes beyond the project period.

Project Development Objectives (PDOs)

5. The objective of the project was to increase the productivity and marketed production of smallholder agriculture in selected geographical locations in Timor-Leste.

Key Expected Outcomes and Outcome Indicators

6. The PDO-level results indicators were the following:
   (i) Increase in farm productivity (yield per hectare) for direct beneficiary households by at least 20 percent for major crops.
   (ii) Share of production that is lost post-harvest will have been reduced by at least 20 percent for major crops.
   (iii) Share of total production sold on the market will have increased by at least 20 percent.

Components

The project components were as follows:

7. **Component 1: Integrated watershed/sub-watershed agriculture development planning** (Original allocation: US$710,000; Actual cost: US$506,892)**.**

(a) **Sub-component 1.1: Formation and Strengthening of Watershed/Sub-Watershed Management Councils (WSMCs)** - (i) establishment and operation of WSMCs in three target watersheds (Belulik, Loes and Tono), and with the continued operation of the Raumoco WSMC; and (ii) provided technical advice to ensure that activities in their watersheds follow community-approved plans and comply with environmental protection practices.

(b) **Sub-component 1.2: Support for the preparation of Watershed/Sub-Watershed Agricultural Development Plans (WADPs)** - WADPs were prepared by the WSMC with the support of municipal level MAF staff and the project. These plans were prepared using existing data and information to identify areas with good production and marketing potential, while considering local infrastructure.

(c) **Sub-component 1.3: Support for the preparation of Sustainable Community Agriculture Development Plans (SCADPs)** - the project leveraged the WSMCs and WADPs developed under sub-components 1.1 and 1.2 to guide more detailed planning, and develop SCADPs and community driven development approaches to identify investments at the community level

8. **Component 2: Smallholder organization, advisory support and training** (Original allocation: US$3.096 million; Actual cost: US$1.41 million)**.**

(a) **Sub-component 2.1: Facilitation of the identification, assessment and formation of farmer groups** - Members of the WSMCs, MAF extension agents and contracted national NGO facilitators identified lead farmers and assisted them to form production and environmental management groups.

(b) **Sub-component 2.2: Support for farmer group development and capacity building** – (i) Facilitated farmer-to-farmer learning through Farmer Field Schools, demonstrations and additional training activities; (ii) provided other trainings on business planning, marketing, financial management, environmental management, and community participation and governance, and promoted uptake of nutritious food.

Component 3: Sustainable watershed/sub-watershed management and support to farmer groups (Original allocation: US$ 9.299 million; Actual cost: US$10.802 million)**.**

(a) **Sub-component 3.1: Rapid roll out of post-harvest storage and processing technology for grains-** (i) financed the rapid and targeted distribution of grain storage and processing equipment to smallholder farmers. The financing under this component was a disbursement linked indicator (DLI), contingent on meeting the targets defined, as assessed by independent verification.

(b) **Sub-component 3.2: Support to farmer groups for production, storage and processing facilities –** (i) procured and distributed seeds and seedlings from community seed production groups; (ii) provided small scale grain drying, storage and processing equipment and equipment for climate-smart conservation agriculture activities; (iv) provided technology for aquaculture using bamboo brackets, small ponds, or rice–fish mixed farming; and (v) promoted livestock control/management infrastructure for controlled grazing, improved livestock feeding and fodder management.

(c) **Sub-component 3.3: Technologies and small-scale works for sustainable watershed/sub-watershed management** – supported technologies and small-scale works, such as investments in water harvesting structures for domestic and agricultural purposes, and erosion control and watershed protection works.

9. **Component 4: Strengthening MAF's services, planning, programming, coordination and monitoring and evaluation functions** (Original allocation: US$3.883 million; Actual cost: US$2.94 million)**.**

(a) **Sub-component 4.1: Institutional support** – (i) provided analytical support for policy reforms through the establishment of Timor-Leste Agriculture Advisory Council (TLAAC), to build MAF's capacity to provide analytical

support for policy reforms; (ii) supported improved adaptive research through financing the technical assistance for the initial analysis and preparation for setting up the Timor-Leste Agriculture Research and Development Institute (TLARDI); and (iii) offered support for improved MAF management strategy and institutional governance through carrying out needs assessment for extension services, as well as training of Suco Extension Officers (SEOs) and lead farmers.

(b) **Sub-component 4.2: Development of MAF's M&E system-** Provided technical assistance through Food and Agriculture Organization (FAO), for the development of a results-based M&E system and strengthening the capacity of MAF to maintain this system

10. **Component 5: Project management and monitoring** (Original allocation: US$ 4.012 million; Actual cost: US$5.34 million)**.** This component financed the coordination team in issues of: (i) project planning, coordination and management; (ii) institutional reform and capacity building; and (iii) monitoring, evaluation and impact assessment. It also supported consultancies for conducting surveys establishing a baseline of household characteristics, agriculture and nutrition status at start-up, mid-term evaluation, and the end-of-project evaluation.

11. **Component 6: Contingency for disaster risk response** (Original allocation: US$ 0 million; Actual cost:0)**.** This component aimed to provide rapid response to disaster, emergency or catastrophic events, as needed.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION

Revised PDOs and Outcome Targets

12. PDO: No change

Revised PDO Indicators

13. PDO indicators were not revised

Revised Components

14. The titles of the components were not changed during implementation; budget reallocations are discussed in the following section.

Other Changes

The project carried out two Level 2 restructurings during implementation, with no revisions to the PDOs or PDO-level indicators. The first restructuring was approved on January 13, 2021 to extend the project closing date by 23 months, from August 31, 2022, to July 26, 2024. Additionally, the disbursement arrangements for Component 3.1 changed from results-based financing to investment project financing, resulting in a reallocation of US$1.155 million allocated to Disbursement Linked Indicators (DLI) expenditures under Sub-component 3.1 under Category 2 to Category 1 (financing goods, works, non-consulting services, consultants' services, training, operating costs, and sub-grants). This followed the decision to discontinue the DLI financing modality and shift to standard IPF disbursement arrangements. The percentage of expenditures financed remained at 100 percent across all categories. The reallocation simplified implementation and improved delivery efficiency without changing the PDO, outcome indicators, scope, or theory of change. The second restructuring was approved on July 2, 2024, to further extend the project closing date by twelve months, to July 26, 2025. The extension was instrumental by leveraging on the progress and ensuring the completion of all planned activities.

Rationale for Changes and Their Implication on the Original Theory of Change

15. **Extension of the closing date:** Due to a slow start in the first two and a half years caused by political instability in the country, limited capacity for implementation, lack of familiarity with World Bank procedures and successive national elections in 2017 and 2018 that led to changes in the Ministry's management and project teams, project activities lagged behind schedule. Consequently, the Ministry of Agriculture, Livestock, Fisheries and Forestry (MALFF) requested at the Mid Term Review (MTR) to extend the project's implementation period, aiming to better achieve its targets.

16. **Reallocation of grant proceeds:** The reallocation reflected a shift in the disbursement category (from Category 2 to Category 1) for subcomponent 3.1, which had been recommended as part of the MTR. The use of DLI mechanism had proven inappropriate due lack of 'rectification budget' in 2017' following mid-year parliamentary elections. Further, state budget for 2018 was also not approved, leading to a period in which government operated on the 'duo-decimal' regime with monthly appropriation, hence line ministries had limited budgets, and the MALFF procurement procedures and field verification mechanisms needed for successful implementation of the DLI requirements were inadequate. The DLI mechanism had not previously been implemented in Timor-Leste, and there was no existing experience with this approach. Transitioning from the DLI mechanism to direct project financing of the activities was considered more suitable to meet project results as it helped to reduce the project complexity.

17. **Second extension of the closing date**: After political conditions stabilized in 2019, the pace of project implementation began to accelerate. However, the COVID-19 pandemic caused additional, unforeseen delays since February 2020 as the country was effectively closed off to Implementation Support Missions for 24 months. In March 2020, Timor-Leste declared a formal state of emergency (including restrictions on domestic travel between municipalities), which was prolonged through a series of renewals over approximately two years to manage the ongoing threat of the pandemic. Following the lifting of restrictions in April 2022, the project resumed its momentum but needed additional time to consolidate the gains, achieve development objectives and strengthen the resilience of farmers in Timor-Leste against the impacts of climate change.

II. OUTCOME

A. RELEVANCE OF PDO

Assessment of Relevance of PDOs and Rating; Rating: High

18. **The PDO remains highly relevant to the World Bank Group's strategies for Timor-Leste**. At the time of project closing in June 2025, the PDO related to increasing productivity and marketed production was highly relevant to Timor-Leste's priorities identified in the Country Partnership Framework (CPF) for FY2020 – 2024. The program supported the CPF's Focus Area 1: "Strengthen the Foundation for Private Sector-led Growth and Economic Stability", and its objective 3 aiming to 'promote economic diversification through agri-business and tourism development' by 'Modernization of agriculture through application of good agriculture practices and appropriate technology to help increase productivity' and increasing competitiveness of agricultural value chains. The PDO was also highly relevant to part 4 of the Government of Timor-Leste's Strategic Development Plan (SDP) for 2011 – 2030 detailing economic development where Timor-Leste will build a modern, diversified economy based on the agriculture, tourism and petroleum industries, with a flourishing private sector and new opportunities for all its people. It was also aligned with the priorities outlined in the Program of the VIth Constitutional Government – and its Five-Year Implementation Plan (2024-2029), where the government had committed to 'expand the agricultural sector, improve cultivation practices and agricultural productivity, develop actions to improve the production of specific and systematic crops according to the potential of each region of the country.'

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

Rating: Substantial

19. The project efficacy is assessed based on the original targets and the level of achievement of these targets at the time of project completion. The extent of achievement of the PDO-level indicators (summarized in Table 2) is discussed in the subsequent paragraphs.

Table 1. Summary of the main Project results (PDO level indicators)

Indicator	Target	Achieved	Percent Achieved
PDO1. Increase in farm productivity (yield per hectare) for direct beneficiary households by at least 20 percent for major crops (Percentage)	20	45	225
PDO2. Share of production that is lost post-harvest will have been reduced by at least 20 percent for major crops	20	71	355
PDO3. Share of total production sold on the market will have increased by at least 20 percent (Percentage)	20	15	75

Outcome 1: Increased Productivity

PDO 1: Increase farm productivity for major crops

20. At the time of the project closing, significant progress had been made to increase productivity of major crops through training, access to agricultural machinery, and watershed development and management. Upon completion, the project achieved a 45 percent increase in productivity, surpassing the initial target of 20 percent.. An endline evaluation[4] conducted in July 2025 assessed progress toward key outcomes and overall project implementation. The evaluation used a mixed-methods approach, combining quantitative and qualitative data collection. In total, 722 farmers were surveyed, including 522 SAPIP beneficiaries (treatment group) and 200 non-beneficiaries (control group), to assess project outcomes and impacts. The evaluation reported an average yield increase of 45 percent for both paddy and maize, as presented in Table 3.

Table 2: Productivity Enhancement under SAPIP

	Before SAPIP	At end of SAPIP	Percentage Change
Paddy	1.85 tons/ha	2.6 tons/ha	73
Maize	0.6 tons/ha	0.8 tons/ha	17
Average total	1.22 tons/ha	1.67 tons/ha	45

21. Observed yield improvements were attributed to the adoption of enhanced land management practices, including organic manure application, crop rotation, advanced irrigation systems, and soil conservation measures such as tree planting to reduce erosion (Figure 2). Practices such as conservation agriculture, organic amendments, residue retention, and reduced soil disturbance enhanced soil health and land productivity. Global evidence links higher Soil

[4] It is worth to note that the evaluation mainly employed descriptive and comparative analysis of the baseline and endline data but did not use quasi-experimental techniques to control for observable differences, hence the averages should be interpreted with caution.

Organic Carbon (SOC) levels to increased yields.[5] Collectively, these interventions improved water and nutrient use efficiency and strengthened the biophysical resilience of production systems, supporting sustained yield gains over time

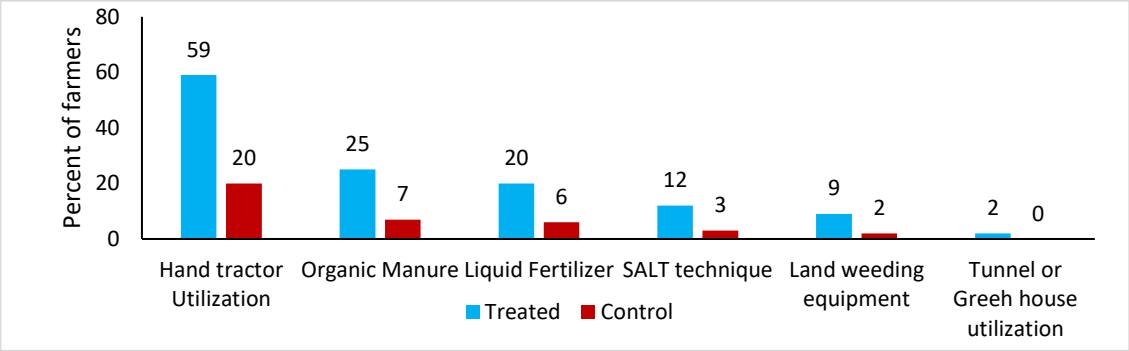


Figure 2: Adoption of improved land management practices

22. SAPIP supported additional value chains beyond maize and paddy, notably horticulture and livestock. Endline evaluation findings show increases in mustard and cabbage production: mustard rose from 12.42 tons in 2016 to 122.6 tons in 2025, and cabbage from 76.7 tons to 206.2 tons over the same period (Table 4). These gains are largely attributed to project interventions, including small grants for improved access to seeds and planting materials, training on enhanced horticultural practices, introduction of new varieties, and promotion of climate-smart agriculture techniques.

23. Livestock production indicators show increases in herd sizes from baseline to endline (Table 4). SAPIP supported cattle, goats, pigs, and poultry through small grants, complemented by deworming, improved housing and feeding, and training in animal husbandry and disease management. The project also financed livestock vaccination campaigns. Vaccinations for cattle and goats were delivered by government officers, with farmer groups reporting good access to these services. Overall, vaccination contributed to lower mortality rates and improved animal health.

Table 3: Horticulture and livestock production

Value chain	Production at baseline (2016)	Production at endline (2025)
Mustard	12.42	122.6
Cabbage	76.7	206.2
Pig	299	1180
Cow	776	1195
Goat	252	2016
Poultry (chicken)	2202	7907

*Horticultural crop units are in tons, livestock units are in terms of herd size

24. At the heart of project implementation was organizing smallholders into farmer groups and providing training to boost agricultural productivity. A total of 550 farmer groups were established to ensure targeted access to project interventions. These groups served as key platforms for knowledge exchange and technology adoption. Approximately 301,703 training days focused on improving productivity. Farmer groups also managed small grants to co-finance investments in land preparation, soil fertility, and climate-resilient cropping systems.

[5] Oldfield, E.E., Bradford, M.A. and Wood, S.A., 2019. Global meta-analysis of the relationship between soil organic matter and crop yields. Soil, 5(1), pp.15-32

Box 1: Group member testimony

> By supporting mostly newly created groups ("SAPIP encouraged us to organize into groups") SAPIP has promoted farmer cooperation ("SAPIP has been norm setting around the collective use of resources"; "They see the benefits of working in groups"). This has involved not only farmer-to-farmer learning and community planning, but also the organization of joint work parties for certain farming activities and the collective breeding

Source: World Bank (2025). GAFSP portfolio evaluation in fragile and conflict situations

25. The project prioritized establishing Watershed Management Councils (WMCs) and developing Watershed Agricultural Development Plans (WADPs) to integrate environmental outcomes with agricultural productivity investments. Four WMCs were formed and are fully operational, supported by WADPs for all four watersheds. These plans identified priorities for enhancing crop and livestock production and outlined complementary small-scale equipment for sustainable land management. An independent impact assessment conducted in July 2025 reported high beneficiary satisfaction, with participants praising the development partners for inclusivity and transparency in forming watershed committees, factors that likely contributed to strong project results.

Outcome 2: Marketed production

26. The project further facilitated an increase in marketable surplus by improving yields through targeted interventions designed to enhance agricultural productivity. Enhanced yields led to greater total output, surpassing household consumption requirements and thereby enabling farmers to offer a larger proportion of their produce for sale.

PDO 2: Reduced post-harvest losses of major crops

27. Reduced post-harvest losses have played a critical role in increasing marketed production. Improvements in post-harvest handling, storage, and processing ensured that there was marketable surplus. The project successfully reduced post-harvest losses among smallholders. At completion, losses decreased by 17 percentage points (24 percent to 7 percent), showing a 71 percent relative reduction compared to the target of 20 percent, largely due to training on post-harvest technologies. Training covered proper harvesting, cleaning, sorting, grading, drying, and storage, and introduced value addition techniques such as sun drying and tent dryers. Farmers also replaced traditional methods with modern technologies such as tarpaulins, silos, tents for in-field storage, and threshing machines for enhancing grain preservation and reducing exposure to pests and environmental damage. Use of improved threshing machines mainly for staple crops, significantly reduced manual labor and post-harvest losses. For example, traditional sorting and threshing required 10 people working for two days, whereas threshing machines reduced this to 2–3 people in one day.

28. The adoption of improved technologies such as milling machines and modern silos combined with farmer training on best practices will continue to minimize losses in subsequent cropping seasons. These measures create a sustainable system for preserving crop quality and quantity, thereby securing higher marketable surplus and reinforcing resilience against future post-harvest challenges

Table 4: Post harvest losses

	Pre-SAPIP (Percentage)	Post-SAPIP (Percentage)
Paddy	25	5
Maize	22	10
Average	24	7

PDO3: Increased production sold

29. Within project areas, beneficiaries reported a higher proportion of their production being sold on the market. This outcome is linked to improved productivity, which generated marketable surplus, as well as a reduction in post-harvest losses. At completion the increase in produce sold was 15 percent, which was below the project target of 20 percent. Market access advanced substantially for SAPIP supported farmers, with buyers such as Centro Logistico Nasional (CLN), school feeding program, and local market demonstrating significant interest in sourcing local rice.

30. Endline survey results indicate that SAPIP beneficiaries achieved substantially higher sales volumes than non-beneficiaries, reporting 266 kg of paddy and 46 kg of maize, compared to 34 kg and 11 kg, respectively. Analysis of pre- and post-project marketing ratios shows a significant increase in marketable surplus for most commodities, with the exception of maize (Table 6). Improved market engagement is illustrated by a vegetable-producing group in Ainaro municipality that successfully sold produce to a supermarket in Dili. These outcomes are closely linked to the adoption of improved technologies, higher productivity, reduced post-harvest losses, and agribusiness training, which together strengthened entrepreneurial behavior among beneficiary groups. Similarly, livestock sales also increased, with some beneficiaries noting that chicken sales at local markets had doubled following SAPIP interventions (Table 6).

Table 5: Market ratio for different commodities pre and post SAPIP

Produce	Pre-SAPIP Market Ratio	Post-SAPIP Market Ratio	Percentage Change
Paddy	8.8	24	15.1
Maize	2.4	2.1	-0.3
Vegetables	73.8	83.9	10.2
Livestock	19.4	41.0	21.6

31. Although the 20 percent market participation target was not fully met during the project period, SAPIP interventions established a strong foundation for sustained growth beyond project closure. The formation of farmer groups enhanced smallholders' bargaining power, enabling better prices and improved competitiveness in local markets. Investments in improved production technologies and post-harvest management have reduced losses and boosted productivity, creating incentives to market surplus produce. Additionally, durable market linkages with institutions, local markets, and supermarkets provide a platform for commercialization and income generation. Collectively, these measures position beneficiaries for long-term market integration and growth, increasing the likelihood of achieving and ultimately exceeding the original target.

Justification of Overall Efficacy Rating

32. **The overall efficacy of the project is rated as Substantial,** reflecting strong achievement across the PDO's core outcome areas. The project substantially exceeded targets for two of the three PDO indicators: productivity increased by 45 percent against a 20 percent target, and post-harvest losses declined from 24 percent to 7 percent, far surpassing the intended reduction. These results reflect strong gains in production efficiency and surplus preservation. The share of production sold increased by 15 percent against a 20 percent target, indicating meaningful but partial progress toward commercialization. While the marketed production target was not fully achieved, the strong and sustained improvements in productivity and post-harvest management—both foundational to commercialization—demonstrate substantial progress toward the PDO. Overall, the evidence shows significant achievement of the PDO, with moderate shortcomings in fully realizing marketed production outcomes within the project timeframe.

C. EFFICIENCY

Assessment of Efficiency and Rating

Rating: Substantial

33. At Appraisal the financial Internal rate of Return (FIRR) and the Economic Internal Rate of Return (EIRR) were estimated at 11.5 percent and 13 percent, respectively. The project considered five interrelated categories of benefits: (i) an average increase in yields and in cropping intensity on rainfed lands as a result of improved farm practices; (ii) a reduction in agricultural production losses due to improved storage facilities; (iii) increases in marketable surpluses due to increased productivity and reduced production losses; (iv) an incremental income from fish production through investments in fish ponds or adoption of rice-fish farming technology; and (v) an increase in poultry and pig productivity as a result of improved feeding and fodder management and animal husbandry practices.

34. At closing an ex-post economic and financial analysis (EFA) was undertaken to quantify the financial and economic benefits to the beneficiaries and to the economy in general (See annex 4). The EFA was based on ten gross margin models, namely five for crops (paddy, maize, vegetable, legumes and fruits), four for livestock (goat, poultry, beef fattening and pig fattening) and one for fish. The economic internal rate of return (EIRR) for the whole project, was estimated at 17 percent (appraisal EIRR was 13 percent) with the economic Net Present Value (NPV) at US$ 7.6 million (appraisal EFA had US$ 9.5 million) and a benefit to cost ratio of 1.33 (appraisal ratio was 4.0). The financial internal rate of return (FIRR) was calculated at 18 percent, the NPV at US$ 8.64 million and the benefit to cost ratio at 1.35, using a financial discount rate of 10 percent, over a 20-year period.[6] The EFA estimates suggest that the project ultimately generated greater long-term economic value than anticipated.

35. Sensitivity analysis. The sensitivity analysis supports the project's economic resilience. In a scenario of a 10 percent increase in all costs, the EIRR remains strong at 15 percent, and the NPV at US$ 5.2 million. Similarly, if the project benefits were to drop by 10 percent, the EIRR would remain strong at 14.0 percent, and the NPV at US$ 4.5 million.

36. Several design and implementation features contributed to project efficiency. Proactive measures such as shifting from DLIs to direct financing, extending the closing date, outsourcing technical assistance for M&E strengthening, and engaging local service providers to deliver training created synergies and amplified project impact. Conversely, efficiency was reduced by delays in implementation, disruptions caused by COVID-19, procurement challenges, political transitions, and persistent capacity and institutional constraint due to fragility. Despite these challenges, the project substantially achieved its objectives

Justification of Overall Efficiency Rating

37. Taken together, the strong economic returns, cost-effective delivery mechanisms, and efficient use of resources, despite external implementation constraint, support an overall **efficiency rating of Substantial**.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

38. The overall outcome rating is **Moderately Satisfactory**. The PDO remained highly relevant at closing, fully aligned with the Government's priorities and the World Bank's CPF. In terms of efficacy, the project fully achieved and exceeded the productivity and reduction of post-harvest losses objectives, with average yields increasing by 45 percent against a target of 20 percent and post-harvest reducing by 71 percent against the target of 20 percent. These achievements are supported by high adoption rates of improved practices, watershed-level investments, use of improved storage and threshing machines, and improved capacity among farmers. Although one market-related PDO indicator—increase in marketed production was partially achieved, the results represent meaningful improvements and demonstrate positive

[6] The higher EIRR & FIRR observed during the ex-post analysis can be attributed to the inclusion of value chains in the assessment that were not considered during the appraisal stage. These additional value chains contributed to greater benefits than initially projected, thereby increasing the overall economic returns.

direction of change and is expected to be realized over the longer term. Taking these dimensions together—High relevance, Substantial but not full efficacy, and Substantial efficiency, the project achieved its development objectives to a significant degree, albeit with moderate shortcomings in fully attaining all outcome targets. Accordingly, the overall outcome is rated Moderately Satisfactory.

E. OTHER OUTCOMES AND IMPACTS

Gender

39. **SAPIP significantly advanced gender equality in Timor-Leste by empowering women and promoting their active participation in agriculture.** Through consultations, training sessions, and implementation activities, the project ensured women were meaningfully involved and monitored progress using gender-disaggregated data. Women accounted for 37 percent of direct beneficiaries and 59 percent of association members and represented 29 percent of training days, with a strong focus on female participants. This strategic inclusion substantially enhanced women's agricultural productivity and market participation, helping to address persistent gender gaps in economic and social empowerment. Adoption rates for sustainable land management practices were higher among female farmers. This was attributed to the fact that women primarily depended on on-farm employment, whereas male farmers were part-time and frequently engaged in non-farm employment, which limited their application of these practices.

Institutional Strengthening

40. **The project substantially strengthened institutional capacity among smallholders and national agencies, fostering collaboration and sustainable agricultural development**. APIP strengthened smallholder agriculture by organizing farmers into groups and using the Farmer Field School approach to improve efficiency, shared learning, and equitable access to assets, resulting in 550 groups receiving training and investment support. The project also supported sustainable land and water management through the establishment of watershed councils and the preparation of agricultural development plans. While watershed management councils were successfully established, their sustainability was uneven, with several councils unlikely to be maintained beyond the project's life. This experience highlights the importance of leveraging and strengthening existing subnational government structures, rather than creating new institutions, to support the adoption and long-term sustainability of integrated watershed management approaches. At the institutional level, SAPIP enhanced national extension services and M&E systems, and supported the establishment of TLARDI through needs assessments, international technical consultations, and staff training to strengthen agricultural research, food security, and agribusiness development.

Poverty Reduction and Shared Prosperity

41. The project successfully targeted vulnerable smallholder farmers, particularly women, who often face higher poverty rates. Through capacity building, investments, and institutional strengthening, SAPIP directly benefited 14,386 farmers. In Ermera municipality, beneficiaries reported transformative impacts, with one group stating, "It provided us with knowledge and resources we didn't have before… It has been changing our lives." Another group, Hametin, saw significant improvements in food security and farm incomes.

Nutrition

42. The project provided nutritional training through interactive workshops, reaching 546 farmer groups and 3,715 women. Training focused on three essential categories of nutritious foods: body-building foods (proteins), Energy-giving foods (carbohydrates and healthy fats) and Protective foods (vitamins and minerals). In addition, participants received practical guidance on meal planning and preparation, appropriate portion sizes and utilization of locally available ingredients to promote dietary diversity and improve household food security.

Other Unintended Outcomes and Impacts

43. **Youth inclusion in agriculture**. Youths in SAPIP project areas have been able to source employment because of SAPIP activities. For instance, youths have emerged as service providers to machinery that was supplied to the farmers by offering maintenance services.

44. **Crowding in private sector.** The project has boosted demand for service providers, including machinery spare part sellers and storage infrastructure suppliers. SAPIP's provided machinery and equipment have opened new markets for private businesses supplying spare parts, while higher yields from improved production practices have increased the need for better storage facilities.

III. KEY FACTORS AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

45. SAPIP's design drew heavily on lessons from previous and ongoing World Bank projects in Fragile and Conflict Situations (FCS), with a dual focus on strengthening both smallholder farmers and the institutional capacity of the Ministry of Agriculture and Fisheries (MAF). Key interventions included forming farmer groups, delivering training in sustainable land management practices, establishing watershed management councils, providing grants and machinery for rice production, and promoting nutrition-sensitive value chains, particularly in vegetables and fish to enhance food and nutrition security through diversified, protein-rich diets. The program's strategic alignment with Timor-Leste's national development priorities ensured its relevance and impact, addressing critical gaps in agricultural productivity, resource management, and nutrition.

B. KEY FACTORS DURING IMPLEMENTATION

Factors subject to the control of Government

46. **Start-up delays.** Although the project was approved on October 25, 2016, and became effective on November 16, 2016, progress towards implementation was slow. The project experienced initial delays due to political instability in Timor-Leste, limited capacity for implementation, and a lack of familiarity with World Bank procedures.

47. **Political environment.** The project was implemented under four different governments across the periods 2015–2017, 2017 – 2018, 2018 – 2023, and 2023 – 2025. The changes affected the selection and retention of the Project Management Unit (PMU)- contributing to delays in project implementation, postponing payments and disbursements, increased turnover rates within the PMU, and longer onboarding times for new team members. During election periods, political events impacted project activities, through affecting continuous participation of beneficiaries in training workshops.

Factors outside the control of government

48. **Poor infrastructure:** During the rainy season implementation and monitoring of the project activities was always limited due to poor road conditions.

49. **Covid-19**. The Covid-19 pandemic hit Timor-Leste in 2020, causing significant mobility restrictions at the national and district levels and disruption of government procedures at all levels. This affected the implementation of all project activities, as uncertainty regarding movement restrictions effectively closed the country to physical implementation support missions for 24 months, and poor internet connectivity hindered virtual communication.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

50. **The M & E system was based on a results-oriented framework meant to track the progress of the project**. The PDO level indicators were well aligned with approaches used to track sustainable agriculture improvement activities such as productivity, commercialization, and reduction in losses. The PDO level indicators and intermediate indicators were well formulated, straightforward, and attributable to the project objective. To maintain consistent monitoring of project outcomes, the PMU appointed an M&E specialist responsible for ensuring systematic data collection, accurate tracking of results, and providing guidance to the project team.

M&E Implementation

51. Monitoring the project, progress across the components was consistent and timely as shown by semi-annual Bank reports. The definition and measurement of indicators remained unchanged throughout the project, ensuring a consistent database. The project hired an M&E consultant to train the PMU on standardized templates, consistent indicator definitions, PDO calculation methodologies, and collection of gender-disaggregated data. The M&E specialist conducted annual surveys to assess activity progress, which were supplemented by independent impact evaluations at baseline and end line for tracking overall project progress. The project utilized a six-month reporting period, whereby all the indicators were updated in a web-based management portal, that consistently tracked the progress of various indicators relative to their targets. It is, however, important to note that in some instances there was erroneous data reporting that was done in different indicators[7], which led to slight inconsistencies, even though these were corrected during the final reporting before completion.

52. The project went beyond internal M&E requirements by significantly strengthening MALFF's capacity for data management, resource allocation, and utilization through the establishment of a comprehensive monitoring infrastructure. This was achieved with technical assistance led by FAO, which included developing customized M&E software and delivering training to MALFF staff on its effective use. In addition, the project procured and deployed essential hardware, enabling the ministry to capture and analyze data across key indicators at both national and decentralized levels.

M&E Utilization

53. The project effectively utilized an M&E web-based portal, where all the indicators were updated on a semi-annual basis. The information gathered through the project's M&E system was regularly used to track the progress of the project and used as guidance to agree on the necessary adjustments and changes for effective project implementation.

Challenges and lessons learned

54. The project encountered challenges related to limited reporting capacity, resulting in data inconsistencies during certain reporting periods. Constraints in monitoring and evaluation (M&E) expertise within the country also created difficulties in sourcing an experienced consultant for independent impact evaluations. To address these issues, the project hired an M&E specialist consultant who worked with the PMU to streamline reporting processes and provided training on tracking and reporting key indicators. This experience highlights the need for capacity support in countries with weak institutional capacity, to aid in effectively implementing and utilizing the M&E system.

Justification of Overall Rating of Quality of M&E

55. The **overall quality of M&E is rated 'substantial'** due to a well-designed result framework, that was consistently updated, and the indicators were well defined and relevant to the project goals. Despite modest shortcomings of limited

[7] In some instances, the total number of beneficiaries reported under certain indicators exceeded the overall number of beneficiaries.

capacity and initial data inconsistencies, measures were put in to ensure the M&E system provided relevant data for tracking the project progress and provided guidance for decision making.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

56. **Environmental Safeguards**. The project was classified as Category B, it was expected to generate moderate, site-specific environmental and social impacts that could be effectively managed. It triggered several safeguard policies, including OP4.01 (Environmental Assessment), OP4.04 (Natural Habitats), OP4.09 (Pest Management), OP4.10 (Indigenous Peoples), OP4.11 (Physical Cultural Resources), OP4.12 (Involuntary Resettlement), OP4.36 (Forests), and OP4.37 (Safety of Dams). To guide implementation, an Environmental and Social Management Framework (ESMF) was developed and publicly disclosed. A Project Implementation Manual (PIM) translated the ESMF into actionable steps, including exclusion list screening, Environmental and Social Codes of Practice (ESCOPs), a Voluntary Land Donation (VLD) protocol, and a feedback mechanism. The project's safeguard performance at closure was rated Satisfactory. Most environmental risks stemmed from physical activities under small grant proposals, such as plantation, animal husbandry, aquaculture, and small-scale infrastructure. Risk mitigation was embedded in participatory planning at watershed and Suco levels, including zoning of production and conservation areas and promotion of sustainable agricultural practices.

57. **Social**: The targeted communities at the group level were culturally and linguistically homogenous, with no significant social identity differences. No social safeguard issues were reported during implementation. The project did not involve major infrastructure or land acquisition. A screening procedure was used to assess land-related risks, and all activities were implemented on land voluntarily provided by farmer group members.

58. **Procurement**: Procurement activities under SAPIP were conducted in accordance with WB guidelines (Procurement of goods, works, and non-consulting services and Selection and Employment of Consultants under IBRD loans and IDA credit and grant) and benefited from technical supports from the Bank technical hands-on supports. The project procurement activities also adhered to Government internal planning, review and clearance procedures and maintained compliance with the applicable Bank and procedures throughout its implementation. However, the project experienced recurring issues in documentation, oversight, and timeliness that required minor corrective actions. Documentation and record-keeping presented persistent challenges. Many procurement records were incomplete or not systematically uploaded to the STEP system, complicating oversight and audit processes. Payment records and contract administration documents were often maintained separately by the Finance officer, further hindering verification and transparency. This rating reflected several implementation delays[8], primarily caused by weak institutional capacity, frequent staff turnover, and the absence of a clear delegation framework. At project close, procurement implementation was rated as Moderately Satisfactory (MS).

59. **Financial Management**. From 2018 to 2023, the project's financial management (FM) compliance was consistently assessed as moderately satisfactory. In 2023, integration of the project's financial systems with the government's Free Balance platform enhanced financial oversight. While disbursement rates improved significantly, challenges persisted regarding timely submission of Interim Financial Reports (IFRs) and audit reports, settlement of outstanding cash advances, and instances of staff promotions that did not adhere to established criteria. The project's 2023 audit report was delayed due to late provision of supporting documentation to auditors, resulting in a downgrade of the FM performance rating to Moderately Unsatisfactory during the closing period. These setbacks were primarily attributed to limited capacity among financial management personnel and high staff turnover.

[8] Routine procurement actions often required Ministerial approval, resulting in bottlenecks even for minor expenditures. Additionally, limited internal coordination between the PMU and ministry technical teams contributed to delays in providing technical specifications for procurement.

C. BANK PERFORMANCE

Quality at Entry

60. The Bank team provided strong support during project identification, preparation, and appraisal, ensuring alignment with development objectives. The project design was consistent with government priorities and the Country Partnership Strategy, and institutional arrangements facilitated collaboration between MALFF and the PMU during implementation. The objectives were realistic, and the results framework was well-structured; however, the design was ambitious given Timor-Leste's status as a new client with capacity constraints and institutional barriers. Incorporating an IPF with performance-based conditions introduced complexity and contributed to implementation challenges. Delays in execution may have stemmed from insufficient assessment of implementation readiness. Despite these challenges, the Bank maintained regular engagement with the client throughout preparation and appraisal, demonstrating commitment to project success.

Quality of Supervision

61. The Bank's task team conducted regular implementation support missions and consistently responded to the needs of the client. It provided a team of local and international staff and consultants to advise the client throughout the project lifecycle. Regular support was provided through supervision missions complemented with frequent technical missions to help address any challenges the client faced. The client acknowledged the Bank's continuous support despite four changes of the Task Team Leader. Missions' Aide Memoires, Management Letters, and ISRs were candid in highlighting implementation issues and proposed actions to address them. The Bank missions also guided project restructurings to cope with implementation realities and to ensure that the project objectives were realized.

Justification of Overall Rating of Bank Performance

62. **Based on the above justifications, the overall rating for World Bank performance is Satisfactory**. There were moderate shortcomings in quality at entry. The project was also highly relevant to national priorities and the World Bank's strategic objectives. Considering the capacity limitations, institutional challenges, volatile political environment, unprecedented changes within the PMU, and natural constraints such as COVID-19, achieving the project's goals and objectives demonstrates rigor project design at inception and consistent implementation support.

D. RISK TO DEVELOPMENT OUTCOME

63. **The project outcomes that have been achieved could be affected if the government is unable to commit financial resources to the development of the agricultural sector**. To ensure sustainability of the approaches that have been promoted under SAPIP, there is need for the government to invest in agriculture transformation activities and technologies.

64. **Market Access Risk.** Several factors continue to pose significant risks to sustaining the produce marketing outcome. High transaction costs and low mark-ups, combined with consumer preference for imported rice due to lower prices, have constrained the competitiveness of local paddy. Information asymmetry, particularly regarding price transparency, further limits farmers' ability to make informed marketing decisions. Moreover, a substantial share of marketed produce has relied on public procurement programs such as CLN and the school feeding initiative. If these programs are discontinued, market participation could decline sharply, undermining the long-term viability of commercialization efforts and posing a critical risk to the development outcome.

65. **Climate and environmental risks**. Timor-Leste is highly vulnerable to climatic risks and shocks. SAPIP focused on training farmers on agricultural productivity and land management practices including climate-resilient and sustainable agricultural practices. However, sustaining these gains requires continuous training and follow-up with farmers for the adoption of these techniques. Continuous support by the extension officers can be instrumental in mitigating this risk.

66. **Farmer group sustainability risk**. For continuous functionality there is a need for farmer groups to have regular meetings, financial support, and access to information. Without this support, there is a risk that these groups may collapse and fail to achieve their goals.

V. LESSONS AND RECOMMENDATIONS

67. **Organization development of smallholders through formation of farmer groups is necessary but not sufficient for agricultural transformation in Timor-Leste.** Formation of farmer groups has been instrumental in achieving economies of scale among smallholders. It has also proven to be a cost effective and efficient mechanism of aggregating farmers for accessing training, inputs, and aggregation services. However, there needs to be incentives beyond membership that encourage group cohesion and sustainability. For example, the Office of the Secretary of State for Cooperatives (SECOOP) could utilize existing farmer groups to integrate them into the cooperative movement in Timor-Leste. This integration may be accomplished by supporting these groups with financial access and capacity-building initiatives. Institutionalizing new farmer groups within the state cooperative system has the potential to promote formality and strengthen sustainability.

68. **Simplicity and robustness in design are critical for successful implementation**. The initial design was overly ambitious given the client's limited capacity and institutional constraints. While joint preparation with the client is essential, even when the client is highly ambitious, the design must realistically reflect capacity limitations and anticipated country-specific challenges, such as frequent shifts in priorities. Future projects should incorporate political economy considerations and establish safeguard mechanisms to ensure implementation remains on track and is not unduly influenced by political changes.

69. **Institutional changes and weak implementation capacity can significantly affect project outcomes.** The implementation of the Project's activities was affected by changes in the minister for Agriculture and the PMU. Ministerial changes led to delays in approval and longer duration to inform the new minister of the project - new ministerial appointments needed to be at least three months in office before they could duly sign on disbursement of project funds. These political changes were also associated with changes in the PMU, which led to delayed implementation of activities since the new staff had to be oriented on project objectives and processes. Weak implementation capacity among the PMU also delayed the implementation of some activities; although this was mitigated by hiring consultants to support areas where the PMU was limited, it is important to consider these setbacks during the project design. The project also demonstrated that while establishing watershed management councils is feasible within the project timeframe, ensuring their sustainability requires stronger institutional anchoring. It is important to embed integrated watershed management functions within existing subnational government structures; hence, future operations should prioritize strengthening and leveraging these existing structures to enhance ownership, continuity, and long-term sustainability of watershed management interventions

70. **Participatory approaches to agriculture extension through such methods as farmer-to-farmer peer learning and/or lead farmers are efficient as they are based on farmers' individual involvement and own circumstances**. Using the lead farmer approach, where farmers could learn from each other, was at the core of the implementation of many project activities. It should certainly be retained as a central feature in any future operation involving participatory Community Driven Development and nutrition/ climate sensitive agriculture

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS FRAMEWORK

PDO Indicators by Outcomes

1). Percentage increase in productivity of selected major crops for direct beneficiaries;								
Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
Increase in productivity of selected major crops for direct beneficiaries (Percentage)	0.00	Oct/2016	20.00	Jul/2024	20.00	Jul/2024	45	Oct/2025
	Comments on achieving targets		Measures farm productivity as indicated by production per hectare of major crops. These crops will be identified during the baseline survey and may include grains, legumes, vegetables and coffee.					
2). Decrease in share of production that is lost post-harvest;								
Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
Share of production that is lost post-harvest (Percentage)	30.00	Oct/2016	10.00	Jul/2024	10.00	Jul/2024	71.00	Oct/2025
	Comments on achieving targets		Measures the proportion of production that is lost after harvesting					
3). Increase in the share of total production sold on the market.								
Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
Share of total production sold on the market (Percentage)	0.00	Oct/2016	20.00	Jul/2024	20.00	Jul/2024	15.00	Oct/2025
	Comments on achieving targets		Tracks the proportion of crop and livestock production that is marketed.					

Intermediate Indicators by Components

Integrated watershed/sub-watershed agriculture development planning

Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
Direct project beneficiaries (Number)	0.00	Oct/2016	85,000.00	Jul/2024	85,000.00	Jul/2024	70,121	Oct/2025
	Comments on achieving targets		The figure of 80,562 that was reported in the previous ISR was erroneously calculated based on the number of households multiplied by 5.6 members per households as per the census data of that time. This is the real data from the clients M&E system.					
Female beneficiaries (Percentage)	0.00		30.00		30.00		37.00	
	Comments on achieving targets		Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.					
Direct project beneficiaries (farmers) (Number)	0.00		16,500.00		16,500.00		14,386.00	
	Comments on achieving targets		Direct beneficiaries that are farmers, mostly members of farmer groups.					
Watershed/Sub-Watershed Management Councils established and operational (cumulative) (Number)	1.00	Oct/2016	4.00	Jul/2024	4.00	Jul/2024	4.00	Apr/2025
	Comments on achieving targets		Four Watershed Management Councils. Three watershed management committees in the Loes watershed (Emera, Liquica, and Bobonaro municipalities) and two watershed management committees in the Belulik watershed (Ainaro and Covalima municipalities).					
Watershed/Sub-Watershed Agricultural Development Plans prepared and in use (cumulative) (Number)	1.00	Oct/2016	4.00	Jul/2024	4.00	Jul/2024	4.00	Apr/2025
	Comments on achieving targets		Measures the cumulative number of Watershed/Sub-Watershed Agricultural Development Plans that have been prepared and are in use					
Sustainable Community Agricultural Development Plans prepared and in use (cumulative) (Number)	4.00	Oct/2016	40.00	Jul/2024	40.00	Jul/2024	44.00	Aug/2024
	Comments on achieving targets		Raumoco watershed: 9 SCADPs completed. Tono watershed: 6 SCADPs completed. Loes watershed: 16 SCADPs completed. Belulik watershed: 13 SCADPs are completed.					

Smallholder organization, advisory support and training

Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
	0.00	Oct/2016	100.00	Jul/2024	100.00	Jul/2024	100.00	Oct/2025

Targeted clients who are members of an association (percentage) (Percentage)	Comments on achieving targets	The figure of 87.20 that was reported in the previous ISR was erroneously calculated based on the number of households multiplied by 5.6 members per households as per the census data of that time. This is the real data from the clients M&E system.						
Targeted clients who are members of an association - male (number) (Number)	0.00	Oct/2016	11,550.00	Jul/2024	11,550.00	Jul/2024	9,063.00	Oct/2025
	Comments on achieving targets	Measures the number of male beneficiaries who have become members of a relevant association as a result of project activities						
Targeted clients who are members of an association – female (number) (Number)	0.00	Oct/2016	4,950.00	Jul/2024	4,950.00	Jul/2024	5,323.00	Oct/2025
	Comments on achieving targets	Measures the number of female beneficiaries who have become members of a relevant association as a result of project activities						
Targeted clients - male (number) (Number)	0.00	Oct/2016	11,550.00	Jul/2024	11,550.00	Jul/2024	8,974.00	Apr/2025
	Comments on achieving targets	The total number of male direct beneficiaries						
Targeted clients - female (number) (Number)	0.00	Oct/2016	4,950.00	Jul/2024	4,950.00	Jul/2024	5,291.00	Apr/2025
	Comments on achieving targets	The total number of female direct beneficiaries						
Client days of training provided (number) (Number)	0.00	Oct/2016	528,000.00	Jul/2024	528,000.00	Jul/2024	498,181.00	Oct/2025
	Comments on achieving targets	This indicator measures the number of client days of training provided i.e. the number of clients who completed training multiplied by the duration of training expressed in days.						
Client days of training provided - Female (number) (Number)	0.00	Oct/2016	158,400.00	Jul/2024	158,400.00	Jul/2024	185,914.00	Oct/2025
	Comments on achieving targets	Measures the cumulative number of training days provided to female clients						
Client days of training to raise agricultural productivity (number) (Number)	0.00	May/2016	396,000.00	Jul/2024	396,000.00	Jul/2024	301,703.00	Apr/2025
	Comments on achieving targets	This is a GAFSP core indicator. Measures the client days of training on raising agricultural productivity.						
Client days of training on better post-harvest storage, transportation, and/or management practices (number) (Number)	0.00	Oct/2016	99,000.00	Jul/2024	99,000.00	Jul/2024	110,072.00	Apr/2025
	Comments on achieving targets	This is a GAFSP core indicator. Measures the client days of training on improving post-harvest storage, transportation and/or management practices						
Client days of training on nutrition (number) (Number)	0.00	Oct/2016	33,000.00	Jul/2024	33,000.00	Jul/2024	33,016.00	Jul/2024
	Comments on achieving targets	Measures the client days of training on improving nutrition practices						
Sustainable watershed/sub-watershed management and support to farmer groups								

Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
Farmers adopting improved land management practices (number) (Number)	0.00	Oct/2016	16,500.00	Jul/2024	16,500.00	Jul/2024	9,586.00	Apr/2025
	Comments on achieving targets		The practices are being adopted, but results have not yet been measured.					
Female farmers adopting improved land management practices (number) (Number)	0.00	Oct/2016	4,950.00	Jul/2024	4,950.00	Jul/2024	5,732.00	Apr/2025
	Comments on achieving targets		Measures the number of female farmers adopting improved land management practices such as conservation agriculture techniques, improved grazing practices, etc., facilitated through investments/infrastructure under component 3.					
Clients who have adopted an improved agricultural technology being promoted by the project (Number)	0.00	Oct/2016	16,500.00	Jul/2024	16,500.00	Jul/2024	14,386	Oct/2025
	Comments on achieving targets		Measures the number of farmers adopting improved agricultural technologies such as those related to post-harvest processing and storage					
Female clients who have adopted an improved agricultural technology being promoted by the project (Number)	0.00	Oct/2016	4,950.00	Jul/2024	4,950.00	Jul/2024	5, 240	Oct/2025
	Comments on achieving targets		Measures the number of female farmers adopting improved agricultural technologies such as those related to post-harvest processing and storage					
Strengthening MAF's Services, Planning, Programming, Coordination and Monitoring and Evaluation Functions								
Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
National strategy for the government extension services is updated to reflect extension needs assessment (Yes/No)	No	Oct/2016	Yes	Jul/2024	Yes	Jul/2024	Yes	Oct/2025
	Comments on achieving targets		Measures whether the national extension services strategy has been updated based on the results of the extension needs assessment undertaken as part of sub-component 4.1.					
M&E system of MAF is developed and functional (Yes/No)	No	Oct/2016	Yes	Jul/2024	Yes	Jul/2024	Yes	Apr/2025
	Comments on achieving targets		Measures whether the MAF M&E system under sub-component 4.2 has been established and is in use.					
Project management and monitoring								
Indicator Name	Baseline		Closing Period (Original)		Closing Period (Current)		Actual Achieved at Completion	
	Result	Month/Year	Result	Month/Year	Result	Month/Year	Result	Month/Year
	No	Oct/2016	Yes	Jul/2024	Yes	Jul/2024	Yes	Apr/2025

Annual work plans and progress reports are prepared and submitted on six-monthly basis by the PMU (Yes/No)	Comments on achieving targets		Measures whether work plans (annual) and progress reports (six-monthly) are being prepared and submitted by the PMU					
The project monitoring and evaluation system is established and functioning (Yes/No)	No	Oct/2016	Yes	Jul/2024	Yes	Jul/2024	No	Apr/2025
	Comments on achieving targets		Measures whether the project-specific monitoring and evaluation system has been established and is in use					
Beneficiary assessments are conducted annually for participatory planning processes (Yes/No)	No	Oct/2016	Yes	Jul/2024	Yes	Jul/2024	Yes	Apr/2025
	Comments on achieving targets		Measures whether beneficiary assessments are being conducted on an annual basis to inform participatory planning processes					
Grievances registered related to delivery of project benefits addressed (%) (Percentage)	0.00	Oct/2016	80.00	Jul/2024	80.00	Jul/2024	100.00	Apr/2025
	Comments on achieving targets		There were 11 grievances reported so far and all have been resolved. Therefore, the percentage of the grievances addressed is 100%.					
Grievances related to delivery of project benefits that are addressed-(number) (Number)	0.00		30.00		30.00		48.00	
	Comments on achieving targets		Measures the number of registered grievances that are addressed by the project.					

B. KEY OUTPUTS

Objective/Outcome: To increase the productivity and marketed production of smallholder agriculture in selected geographical locations in Timor-Leste;	
Outcome Indicators	2. Increase in farm productivity (yield per hectare) for direct beneficiary households by at least 20 percent for major crops (Percentage). 3. Increase in productivity of selected cropy by 16 percent , which was marginally below the target of 20 percent. 4. Share of production that is lost post-harvest will have been reduced by at least 20 percent for major crops
Intermediate indicators	1. Number of Watershed/Sub-Watershed Management Councils established and operational 2. Number of Sustainable Community Agricultural Development Plans prepared and in use 3. Organization development among farmers through group formation 5. Farmers adopting improved land management practices (number) 6. Clients who have adopted an improved agricultural technology being promoted by the project 7. Targeted clients who are members of an association (percentage) 8.Client days of training provided 9. M&E system of MAF is developed and functional 10. Annual work plans and progress reports are prepared and submitted on six-monthly basis by the PMU
Key Outputs by components (linked to the achievement of the Objective/Outcome)	**Component 1:** Integrated watershed/sub-watershed agriculture development planning 1. 4 Watershed/Sub-Watershed Management Councils established and operational 2. 44 Sustainable Community Agricultural Development Plans prepared and in use 3. 4 Watershed/Sub-Watershed Management Councils established and operational **Component 2:** Smallholder organization, advisory support and training

	1. 86 percent of target clients were members of an association 2. 8, 974 male target clients and 5, 291 female target clients were mebers of an association. 3. 380, 661 Client days of training provided, out of which 110, 098 client training days mainly focussed on females, 12, 112 were on training to raise agricultural productivity, and 5, 884 client training days were on better post-harvest storage, transportation, and/or management practices. **Compoenent 3:** Sustainable watershed/sub-watershed management and support to farmer groups 1. 9, 586 Farmers adopting improved land management practices, out of which 36 percent were female

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Valens Mwumvaneza	Team Leader
Christina I. Donna	Financial Management Specialist
Manuela Da Cruz	Procurement Specialist
Bonnie Frances Cavanough	Environmental Specialist
Jose Paulo Angelo Salustiano Da Silva Pinto	Environmental Specialist
Jaya Ketaren	Environmental Specialist
Krisnan Isomartana	Environmental Specialist
Naimah LNU	Social Specialist
Francisca Melia. N Setiawati	Social Specialist
Duangrat Laohapakakul	Counsel
Loren Jayne Atkins	Counsel
Vikas Choudhary	Team Member
Chau-Ching Shen	Team Member
Eligito Dos Santos	Team Member
Etelvina Araujo De Jesus Moniz	Team Member
Nizia Maria Sarmento Lopes da Cruz de Deus	Team Member
Cipriana Teresa Tita De Jesus E Sousa	Team Member
Maria Isabel Alda Da Silva	Team Member
Aisha Lanette N. De Guzman	Financial Management Specialist
Unggul Suprayitno	Financial Management Specialist
Gayatri Acharya	Team Member
Ir Mariam Rikhana	Team Member
Olivio Dos Santos	Team Member
Marjorie Mpundu	Team member
Sri Hastuti	Procurement Specialist
Robert Gilfoyle	Financial Management Specialist
Jan Nijhoff	Team Member

Cornelio De Carvalho	Team Member
Ross James Butler	Social Specialist
Claire Marion Forbes	Social Specialist
Eric Vitale	Team Member
Brenna Moore	Team Member
Nicholas Valentine	Social Specialist
Rachel Nunn	Social Specialist
Inacia Aleixo Dos Santos	Team Member
Alkadevi Morarji Patel	Team Member
Maria Joglekar	Social Specialist
Jaya Ketaren	Environmental Specialist
Tessa Koppert	Team Member
Etelvina Araujo De Jesus Moniz	Team Member

B. STAFF TIME & COST

Stage of Project Cycle	Staff Time & Cost	
	No. of Staff Weeks	US$ (including travel and consultant costs)
Preparation		
FY16	11.619	122,748.69
FY17	9.046	135,350.67
FY18	0.000	-2,313.34
FY19	0.000	141.13
Total	20.66	255,927.15
Supervision/ICR		
FY15	0.000	19,889.80
FY16	5.884	36,786.71
FY18	21.321	227,176.04
FY19	11.759	130,910.12
FY20	20.446	186,960.76
FY21	17.268	156,733.69
FY22	8.074	60,296.66
FY23	15.970	122,578.91
FY24	24.206	164,183.65
FY25	27.338	157,473.88
FY26	3.500	39,339.85
Total	155.77	1,302,330.07

ANNEX 3. PROJECT COST BY COMPONENT

Component	Amount at Approval (US$M)	Actual at Project Closing (US$M)
Integrated watershed/sub-watershed agriculture development planning	0.7	0.50
Smallholder organization, advisory support and training	3.1	1.41
Sustainable watershed/sub-watershed management and support to farmer groups	9.3	10.80
Strengthening MAF's Services, Planning, Programming, Coordination and Monitoring and Evaluation Functions	3.9	2.94
Project management and monitoring	4.0	5.34
Contingency for disaster risk response	0.0	

ANNEX 4. EFFICIENCY ANALYSIS

Scope of the EFA

1. The ex-post Economic and Financial Analysis (EFA) was conducted as part of this report to estimate the net economic impact of the project by revisiting the ex-ante EFA conducted during project design stage in 2016. The ex-post EFA was based on the observed project results. The EFA re-estimated the project worth in financial and economic terms.

Methodology and Data

2. The EFA is based on the cost-benefit evaluation methodology. Based on the observed project results in the Implementation Completion Report, July 2025 and Endline Evaluation Final Report July 2025, the ex-post EFA used the following models: paddy, maize, horticulture (vegetable, and legumes), fruit trees, livestock (poultry, beef fattening, goat, and pig fattening); and pond fisheries. Multiple sources were utilized to acquire data for the EFA. The following project reports served as data sources: (i) Mid Term Review Report, 2020, Ministry of Agriculture and Fisheries; (ii) Implementation Completion Report, SAPIP, July 2025; (iii) Endline Evaluation Final Report, SAPIP, July 2025; (iv) Project Appraisal Document, SAPIP, Report No: PAD1472; (v) GAFSP Portfolio Evaluation in FCS, Final Report, Volume 1, APRIL 9, 2025; and (vi) Aide Memoire, Implementation Support Mission, SAPIP, April 8 – 12, 2024. Additional information that was required to formulate farm modes was collected from several research papers, published articles pertaining to Timor Leste and internet-based literature. These are listed under references. The national publications referred to were (i) Timor-Leste Population and Housing Census 2015, Analytical Report on Agriculture, Volume 12; (ii) Annual External Trade Statistics: https://www.laohamutuk.org /DVD/DGS/TradeStats2018.pdf?utm; (iii) TIMÓR-LESTE IN FIGURES, Instituto Nacional de Estatística Timór-Leste, I.P, 2023.

3. The Project Management Unit (PMU) also collected a substantial amount of field level information responding to a questionnaire to be used in the EFA. The information included (i) the 2025 market prices of all the inputs and outputs of all the farm and the livestock models considered in the ex-post EFA; (ii) number of beneficiaries of crops and livestock; (iii) grant distribution details, and (iv) macro level information that were used to estimate parity prices of paddy and fertiliser.

4. **Analytical focus of the EFA** was the project beneficiary households. Costs and benefits accruing to households in farming have been estimated by formulating crop and livestock based gross margin models. The profitability of these models was estimated to indicate the financial benefits to the project participants. Thereafter household level benefits were aggregated over all the households to estimate project level benefits which provide the project level financial and economic viability indicators.

Actual Project expenditure

5. The total project expenditure was USD 21.0 million which was 100% of the total project cost. **Error! Reference source not found.** summarises the component wise expenditure during the project implementation period. The last line of the table shows the percentage distributions of the expenditure. This distribution was used as a proxy to estimate the distribution of the beneficiary outreach by the project years. The EFA used that distribution for the computation of aggregated project benefits which is presented below.

Table 6: Project expenditure during the project implementation period and total at completion

Component	Project Budget (USD)	Annual Expenditure (USD)									
		2017	2018	2019	2020	2021	2022	2023	2024	2025	Total at completion
1	710,583	-	14,216	245,983	88,304	47,808	5,313	36,780	20,442	48,046	506,892
2	2,616,296	-	10,963	159,996	271,718	237,302	156,853	114,050	0	456,114	1,406,996
3	8,966,250	0	0	79,522	347,265	1,126,628	1,835,951	2,635,102	4,187,695	589,861	10,802,024
4	3,493,772	-	313,991	736,193	98,503	161,371	257,338	392,190	65,832	914,609	2,940,027
5	5,213,099	170,071	747,470	904,264	767,210	567,766	547,740	574,175	404,008	661,018	5,343,722
Total: Nominal Values - for financial analysis	21,000,000	170,071	1,086,640	2,125,958	1,573,000	2,140,875	2,803,195	3,752,297	4,677,976	2,669,648	20,999,660
% annual exp. Out of total		1%	5%	10%	7%	10%	13%	18%	22%	13%	100%

Source: Records of the PMU

Outreach of beneficiary households during the implementation period

6. The total outreach of beneficiary households was 14,386 at project completion out of the target of 16,000. As mentioned above, actual farm and livestock production activities commenced in 2019. Group formation and training etc started earlier. However, production improvement is the main requirement for the EFA. Various reports listed above provided information to conclude that the starting year was 2019, and Table 6 presents this information. Table 6 presents two types of important information that were used for the EFA: (i) total benefited households distributed by the type of farm and livestock activities; and (ii) the distribution of the households by five years from 2019 to 2023. The PMU provided total beneficiary households distributed by farm and livestock activities. The aggregation of the total households is 16,171 which is 1,785 (Table 6) more that the total outreach of 14,386. This is because some households have undertaken more than one activity, and such households have been double counted. Reliable information is lacking to estimate combinations of activities that have been undertaken by the households. The overlap is not a limitation for the EFA, because the aggregation of benefits was carried out over individual product type.

Table 7: Total benefited households and their distribution by year

Crops and Livestock used for the EFA	2019	2020	2021	2022	2023	Total benefitted HHs
Total Nb of HH	578	800	1,597	2,261	9,150	14,386
Paddy	107	148	294	417	1,687	2,653
Maize	63	88	176	249	1,009	1,585
Vegetable	50	69	139	196	794	1,248
Legumes	22	30	61	86	350	549
Fruits trees	0	0	0	170	686	855
Goat	33	47	92	131	529	832
Poultry	184	254	508	719	2,911	4,576
Cattle	75	104	208	294	1,191	1,872
Pig	53	74	147	208	843	1,325
Fish	27	38	75	106	430	676
Total HH (multiple activities)	614	852	1,700	2,576	10,430	16,171

Main assumptions of the EFA

7. The general assumptions, which are based on the findings of ICR and the Endline Evaluation, are presented below.

8. **Project attribution:** The farm enterprises namely, paddy, maize, vegetable, legumes, and fruit trees included in the EFA were already being cultivated by the project beneficiaries as expected in the WOP scenario. Similarly, the beneficiaries were raising goat, poultry, cattle and pig before the project. The beneficiaries have improved productivity, reduced post-harvest losses, and increased the proportion of many crop and livestock products that were marketed, as noted in the Endline Study. The contribution of the project to these achievements include: (i) farmer group formation, strengthening and training (training include sustainable land management techniques, use of organic fertiliser, conservation agriculture etc; (ii) provision of small grants (the grants were used for co-financing investments in land preparation, soil fertility management, post-harvest improvements); (iii) provision of farm implements, machineries and composting tools; (iv) better extension and training through Farmer Field School model and making linkages with farmers and municipal extension structures, (v) sustainable watershed /sub-watershed management support to farmer groups; (vi) Integrated watershed /sub-watershed agricultural development planning; and (vii) veterinary services. Considering the attribution, all farm and livestock models included in the EFA under "with project (WP)" scenario have higher productivity, and lower post-harvest losses in comparison to WOP scenario.

9. **Duration of WOP scenario**: It is assumed that all the crop and livestock activities enhanced productivity only after 2021, although the project started in 2017. This was due to the predominance of activities related to implementing social mobilization, watershed management planning, agricultural development planning, and capacity building, etc. during the period from 2018 to 2021. Therefore, the WOP scenario prevailed from 2017 to 2021 for all models.

10. **WP scenario**: WP scenario, which will be detailed under each model, continued till 2037, a total of 20-year analytical period from 2022. Under the WP scenario, it is assumed that the cultivated areas under crops and flock size of livestock have increased very marginally in comparison to the WOP scenario. The Endline study provided evidence for such increases.

11. **Model size**: For all farm models, the cash flows were generated for 1 ha unit and thereafter the cash flows were scaled up or down to represent the cultivation sizes of the crops in the farm. The adjusted extents were used in the aggregated level analysis for farm sizes of crops and livestock).

12. **Financial discount rate:** The discount rate of 10% was used which is recommended by World Bank.

13. **Domestic use**: The beneficiaries will use a portion of the production of crops such as vegetables, paddy, legumes, and livestock such as poultry and fish for domestic consumption. However, the total production of all these products has been valued at market price and included in the analysis.

Results:

14. The Table 7 below summarizes the preliminary data for the crop models, the higher NPV of these crops indicates the transformational nature of the project and captured in the farm models, where the cropping pattern changes. The farm model captures the interventions that improved crop performance, in particular, increased productivity of paddy and maize was due to use of organic fertilizer, better planting techniques, and reduction in post-harvest losses. While in vegetables, increase in productivity was driven by provision of quality seeds, land management practices, biological pest control, tunnel and plastic mulch for soil conservation.

TABLE 8: CROP MODELS SUMMARY TABLE

Indicator	Yields (Ton/ha/Year)			Net Income (US$/ha/Year)			NPV @ 10 (US$/ha)	BC ratio
	WOP	WP	increment	WOP	WP	increment	WP	WP
Paddy (rice)	1.85	2.6	40.5%	783	1685	115%	11,871	2.95
Maize	0.6	0.8	33.3%	91	179	96%	1,617	1.59
Vegetable	2	4	100%	2,440	5,985	145%	40,089	5.50
Legumes	1	1.25	24.7%	201	503	150%	6,589	2.02
Fruit crop	0	7.5		0	8,838		26, 960	6.59

Aggregated Financial Analysis

15. The aggregated financial analysis was undertaken by aggregating household level cost and benefits flows of each crop and livestock model over total households practicing each model. The incremental cash inflows and incremental outflows (i.e. WP – WOP) was used for the aggregation. The financial internal rate of return is 18%, net present value of costs and benefits with 10% financial discount rate and for 20-year period is USD 24 million and USD 33 million respectively. As such the benefit-cost ratio is 1.35. The financial viability indicators suggest that the project at completion was financially viable, and project investments have generated positive benefits.

Economic analysis at completion

16. An ex-post economic analysis was carried out by adjusting the cost and benefits flows of the gross margin models that were used in the financial analysis to reflect their economic values. All models were adjusted to express cash flows in economic values using the Standard Conversion Factor and parity prices. The EIRR of the project at completion reflects that the project had contributed to positive economic benefits. The project investments are economically justified with an 17% economic internal rate of return, which is 7% above the opportunity cost of capital, a NPV of US$ 7.6 million, and a benefit-cost ratio of 1.33.

Sensitivity Analysis

17. Two sets of sensitivity analysis were modelled to test the robustness of the project's efficiency under changing conditions. The analysis reveals that even in the most severe scenario, where costs increase by 10 percent, and benefits decrease by 10 percent, the EIRR maintains a positive return, of 15 percent and 14 percent, respectively (Table 8).

Table 9: Sensitivity analysis

Economic viability indicator	EIRR	NPV-Cost (USD mn)	NPV-Benefits (USD mn)	NPV (USD mn)	B/C Ratio
10% increase in All Costs	15%	25	31	5.2	1.21
10% decrease in all benefits	14%	23	28	4.5	1.19

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

ANNEX 6. SUPPORTING DOCUMENTS (IF ANY)

Project and Financing Documents

Aide Memoires for Project Supervision Missions, World Bank. 2016 – 2025.

Project Implementation Status and Results Reports (ISRs). 2016 – 2015. World Bank.

Project Appraisal Document, Report No. PAD1472 World Bank, 2016.

Grant Agreement, Number. TF0A2869

Restructuring Paper, Report No. RES40771. World Bank

Restructuring Paper, Report No. RES00187. World Bank

Other Documents

Ministry of Health Timor-Leste, UNICEF and DFAT. Timor-Leste Food and Nutrition Survey. Dili, 2013

Democratic Republic of Timor-Leste, Program of the Fifth Constitutional Government 2012 – 2017 Legislature. Dili, 2012

World Bank. 2016. Timor-Leste - Performance and learning review of the country partnership strategy for the period FY2013-FY2017. Washington, D.C. https://documentsinternal.worldbank.org/search/26395727

Akter, S., Erskine, W., Spyckerelle, L., Branco, L. V., & Imron, J. (2020). The impact of women's access to agricultural extension on cropping practices in Timor-Leste. Food Security, 12(2), 449-463

SAPIP (2024). End line evaluation report. Sustainable Agriculture Productivity Improvement Project

World Bank Group (2020). Country Partnership Framework for the Democratic Republic of Timor-Leste: Period FY20–FY24 (English). Report No. P134792 - TP. Washington, DC: World Bank Group.

World Bank Group (2025). GAFSP Portfolio Evaluation in Fragile and Conflict Situations. Report No: 2009048

MAF (2020). Mid Term Review Report for Sustainable Agriculture Productivity Improvement Project (SAPIP).

ANNEX 7. Success Story

What follows is a selection of Project success stories presented in the Borrower ICRR; these were edited for brevity and clarity.

Vegetables and Fish farming through SAPIP support

Bento Viana Mota, 32 years old, is married and has two children. Since 2019, Bento has served as treasurer of the *Hametin Agrikultura* farmer group. He lives in Batu-Eru, Batumano village, Atsabe Administrative Post, in Ermera municipality. In his garden, Bento grows a variety of vegetables, such as beans, mustard greens, bok choy, onions, garlic, eggplant, chili, lettuce, and kangkung. He routinely prepares seedbeds and rotates crops based on seasonal changes. Bento noted that after receiving support from SAPIP in 2019, he began horticultural activities in his garden, which have since provided income for his family. In addition to horticulture, he has established fishponds for aquaculture. He explained, "We faced challenges before SAPIP intervened. I had bought various seeds; tomatoes, mustard, lettuce, and eggplant from the local market, but they didn't grow due to poor quality." Since March 2019, Bento has benefited from SAPIP by receiving equipment such as pellet and coffee powder machines and agricultural training to enhance his skills. He completed an agriculture course at a local institution and credits SAPIP for providing knowledge in horticulture, fish farming, pellet production, group management, as well as seeds and tools.

On market days, Bento and his wife transport their vegetables to sell at the market by motorbike. Occasionally, middlemen or buyers come directly to his home to purchase vegetables, maize, and fish. He mentioned that the vegetables are usually sold out on every market day. Bento reports significant improvements in his family's well-being, noting that spacing vegetables at specific intervals has enhanced their overall quality. He adds that this has allowed him to work from home, contributing to an increase in his family's income. He now spends more time gardening with his wife. Within a few months of participating in SAPIP, they began to see tangible benefits. Project officers Jose Gomes and Ines Salsinha, who have worked in Ermera for nearly five years, stated, "Bento and his wife have developed their farming skills through SAPIP training."

Bento's farmer group has collectively earned approximately US$5,860.00 from various crops, including beans (US$2,550.00), onions (US$1,000.00), kangkung (US$990.00), mustard (US$915.00), and eggplant (US$245.00). He sells his vegetables at the local market, earning at least US$450.00 from each weekly harvest. This income allows him to purchase milk and eggs for his children, meeting daily needs and improving family nutrition.

"I am grateful to SAPIP for their support and guidance in increasing my vegetable production. I plan to grow more vegetables to further boost my family's income and improve our nutrition," he says.

"Growing vegetables every day is my job, and I love it," says Bento Viana Mota.

LIVESTOCK PRODUCTION

Farmer groups that focused on chicken production were particularly successful, often leading to diversified livestock systems. Farmer groups are already witnessing the positive impacts of expanded chicken production. SAPIP support included training, materials for chicken coops, and the provision of chicken, two males and eight females per participating member.

In the Harburas Farmer Group (Ermera Municipality), chickens were largely free-range before SAPIP. After receiving training, they are now kept in coops more frequently, resulting in improved feeding practices. Group members noted that

before SAPIP, a viral disease killed all their chickens, whereas after SAPIP, only a portion of the flock was affected. The chickens were vaccinated by the local veterinary officer. While the vaccine was not 100% effective, it appeared to reduce mortality during the outbreak. Overall, the chicken population has grown as a result of SAPIP, and sales have increased, primarily to local customers and markets.

One particularly innovative farmer, Ms. Flavia Soares da Silva, demonstrated notable results. She sold fewer than five chickens over a two- to three-month period before SAPIP; after SAPIP, this number doubled. Through breeding and sales, she earned $200, which she used to buy a female pig that later produced three piglets. She raised the piglets and sold two, using the income to purchase a cow that is now being fattened for sale. The original pig has since produced four more piglets. With chickens, pigs, and cows, she has successfully diversified her income sources.

Another member used chicken sales to acquire ducks. One member noted that the livestock business had helped her send her children to school and had improved household nutrition.

In another farmer group, Sikus (Liquiça Municipality) the group's secretary, Ms. Ana Paula Alves, described their success with chicken production. They chose chicken farming for SAPIP support due to the quick returns they anticipated. Before SAPIP, she had six chickens; now, she describes the number as 'uncountable.' She sells up to 10 chickens per month at $7 each, setting aside part of the income to manage the risk of disease outbreaks. She shared that the chicken business had transformed her life, enabling one of her three children to attend university through the income earned from sales.

The Fatuk Leten Farmer Group, which focused on rice, horticulture, and chicken production, also reported positive outcomes from their chicken sales. They kept chickens as a group initiative and earned at least $750 from the first round of sales and approximately $1,500 from the second. The third sales period is still ongoing, with a total of $560 earned so far.

Pig and goat production has also achieved notable success. Farmer groups selecting pig production for SAPIP support received training, materials for pig pens, one pig per member, and three males for breeding across the group. In the Bele-Bele Farmer Group (Ermera Municipality), pigs were largely free-range before SAPIP and, when enclosed, were kept in unhygienic pens close to the homestead. After SAPIP, pigs spend more time in pens, are better fed, and the pens are now constructed at least 10 meters from homes, reducing the risk of disease outbreaks. Pig sales have increased, contributing to the diversification of livestock production.

For example, one farmer initially had only one pig and one buffalo before SAPIP. After receiving a female pig through the project, he obtained a litter of seven piglets. Although some died, he sold four and used the income to purchase another buffalo and two more piglets for the next production cycle. Another pig farmer successfully expanded their herd and made two sales, earning $1,600. With this income, the farmer invested in a cow.

Farmer groups focusing on goat production shared similarly positive experiences. Through SAPIP, they received training, materials for pens, and, in some cases, three goats per member. Goats are now more frequently enclosed and managed intensively, resulting in lower mortality rates. Alsino Kelo, leader of the Masin Taom Farmer Group (Oecusse Municipality), reported that before SAPIP, most members had no goats. Now, the average is about five goats per member. Some members were particularly successful. For example, one member previously had three goats but now owns 27, having already sold six for an income of $420. An additional benefit of raising goats is the manure, which is used in horticulture to grow onions and garlic that are then sold at the market.

A very productive female member stands by the animal pen, with piglets on the top platform and chickens below (Ms. Flavia Soares da Silva).

HORTICULTURAL PRODUCTION

Some of SAPIP's major successes have been in horticultural production, particularly in terms of sales. The Hapan Mor Farmer Group (Ainaro Municipality) received irrigation equipment and vegetable seeds to support their production. The group meets regularly during the wet season to assign individual responsibilities for the 2,800 m² vegetable garden established through SAPIP. As a result of SAPIP, the group has transitioned from traditional to more modern cultivation practices. These improvements include better water management, revised land preparation techniques, optimized planting distances, the use of organic fertilizer (replacing previously expensive inorganic options), pesticide application, and the introduction of new vegetable varieties. The group reports increased productivity and a reduction in post-harvest losses estimated at up to 50%. They view the communal garden positively, recognizing it as a reliable source of income.

The Emiliana Farmer Group (Ainaro Municipality), where many members focus on strawberry production, reported significant improvements in nursery management since SAPIP's intervention. Following SAPIP's intervention, plants are now ready for transplanting in less than three weeks, compared to over four weeks before.

The Famona Farmer Group (Bobonaro Municipality) reported significantly higher sales and income from a one-hectare group vegetable garden developed on previously abandoned land. They established a water tank in the garden, which is filled from a local irrigation canal using a pump. They also maintain a well-functioning nursery and produce compost on-site. Thanks to training sessions, effective teamwork, and a reliable water source, the group has experienced a significant increase in productivity.

The income from the group garden has allowed members to use their home gardens primarily for personal consumption, which they believe has improved household nutrition as a result of SAPIP. The midline survey also indicated positive results in horticultural production.

Hapan Mor Farmer Group (Ainaro Municipality) finalising the preparation of land in their group garden for the 2023 season

The horticultural nursery of Famona Farmer Group (Bobonaro Municipality)

ANNEX 7. Map of Project Areas