



## 1. Project Data

<b>Project ID</b> P147629	<b>Project Name</b> Agricultural Development Support Project	
<b>Country</b> Myanmar	<b>Practice Area(Lead)</b> Agriculture and Food	
<b>L/C/TF Number(s)</b> IDA-56240	<b>Closing Date (Original)</b> 30-Jun-2022	<b>Total Project Cost (USD)</b> 73,043,998.31
<b>Bank Approval Date</b> 23-Apr-2015	<b>Closing Date (Actual)</b> 30-Jun-2022	
	<b>IBRD/IDA (USD)</b>	<b>Grants (USD)</b>
Original Commitment	100,000,000.00	0.00
Revised Commitment	100,000,000.00	0.00
Actual	75,599,130.81	0.00

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## 2. Project Objectives and Components

### a. Objectives

The Project Development Objective (PDO) of the Agricultural Development Support Project (ADSP) as articulated in the Financing Agreement (FA, page 4) was identical to the one stated in the Project Appraisal Document (PAD, paragraph 26) and aimed to:

***"Increase crop yields and cropping intensity in selected existing irrigation sites in the Recipient's Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions."***



The PDO was revised as part of the 2016 restructuring to add the underlined statement:

***"To increase crop yields and cropping intensity in the selected existing irrigation sites in the Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions, and, in the event of an eligible crisis or emergency, to provide an immediate and effective response to said eligible crisis or emergency.***

**Parsing the PDO.** The PDO will be parsed based on the following three objectives:

1. To Increase crop yields in selected existing irrigation sites in the Recipient's Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions.
2. To increase cropping intensity in selected existing irrigation sites in the Recipient's Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions.
3. To provide an immediate and effective response to said eligible crisis or emergency.

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

Yes

**Did the Board approve the revised objectives/key associated outcome targets?**

No

**c. Will a split evaluation be undertaken?**

No

**d. Components**

The PDO was supported by the following four components:

**1. Irrigation and Drainage Management (appraisal cost: US\$78.40 million, actual cost: US\$56.39 million).** This component aimed to provide more responsive and reliable irrigation and drainage services to expand irrigated area coverage, increase farm productivity, and improve distribution of benefits between users. Key interventions included: (a) providing farmer-responsive irrigation services and building irrigation and drainage management capacity in service delivery institutions and Water User Groups (WUGs); and (b) improving irrigation and drainage infrastructure, especially rehabilitation and improvement of main conveyance channels, flow control and sediment management systems, improvement of farmer-managed water management infrastructure, and supporting clarification of land tenure issues.

**2. Farm Advisory and Technical Services (appraisal cost: US\$17.20 million, actual cost: US\$9.17 million).** This component sought to improve farming systems and enhance farm productivity in the irrigation command area improved under component 1. Financing was provided for strengthening relevant government departments; building farmer capacity to improve cropping intensity and diversify into more water-efficient crops; supporting farm mechanization, climate-smart technologies, training, and skills enhancement; strengthening farm advisory and extension systems; improving quality seed production and supply chains and promoting integrated pest management.



**3. Project Coordination and Management (appraisal cost: US\$4.40 million, actual cost: US\$1.45 million).** This component aimed to establish a fully equipped, staffed, and functional project management unit (PMU) in the Ministry of Agriculture, Livestock and Irrigation (MOALI). Key responsibilities involved overall coordination, fiduciary arrangements, safeguard implementation, and using a functional project monitoring and evaluation (M&E) system.

**4. Contingent Emergency Response (appraisal cost: US\$0.00 million, actual cost: US\$4.99 million).** This component was to allow a rapid reallocation of loan proceeds from other components to provide emergency recovery and reconstruction support. In the case of a natural or climate-related disaster, this would finance public and private sector expenditures on a positive list of goods, specific works, services, or emergency operations.

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

**Project Cost.** The total project cost was estimated at US\$100 million. The actual cost according to the ICR (Data Sheet, page 2) was US\$75.60 million or 76% of the appraisal estimate.

**Financing.** The project was financed through an IDA Credit worth US\$100.00 million (IDA Investment Project Financing). The actual amount disbursed according to the ICR (Data Sheet, page 2) was US\$75.60 million. The project disbursements were halted 17 months prior to the closing date on the heels of a military takeover. As a result about US\$25.00 million were not disbursed.

**Borrower Contribution.** The project was fully financed through the IDA Investment Project Financing (IPF).

**Dates.** The project was approved on April 23, 2015 and became effective five months later on September 29, 2015. The Mid-Term Review (MTR) was conducted on April 25, 2019 which was about 43 months after effectiveness. This was in line with expected MTR date in the PAD (40 months after effectiveness, paragraph 60). The project closed on its expected closing date on June 30, 2022 with no extensions.

The project underwent three Level-II restructurings as follows:

1. On June 14, 2016 when the amount disbursed was US\$0.00 million, in order to revise the PDO, revise the Results Framework, change components and cost, and reallocate funds between disbursement categories.
2. On April 5, 2018, when the amount disbursed was US\$15.64 million, in order to revise the Results Framework, change the implementation schedule, and expanded land digitization activities under component 1.
3. On April 1, 2020, when the amount disbursed was US\$51.60 million, in order to extend the timeline for submitting the audit reports from six to nine months from FY2020 onwards to provide more time for translating the reports from Burmese to English.

**Split Rating.** Although the PDO was amended by adding a legal provision in the credit agreement for the financing of an eligible crisis or emergency, this increased the project's ambition if a crisis or emergency occurred. Therefore, a split rating of outcomes was unnecessary for this project.



### 3. Relevance of Objectives

#### Rationale

**Context at Appraisal.** In Myanmar, the agriculture sector employed 53% of the labor force, provided livelihoods to 70% of the rural population and contributed 36.4% to the gross domestic product (GDP). Paddy rice was the dominant crop grown on over 70% of arable land; however, the average paddy yield estimated at 2.5 tons per hectare (ha) was among Asia's lowest. Farm productivity was constrained by the uneven distribution of rainfall, limited irrigation and drainage services, and poor flood management. The prevailing field-to-field irrigation practice generally allowed wet-season rice cultivation only. In the dry season diversified cropping was possible only if proper on-farm irrigation and drainage infrastructure was provided and managed. To address the constraining factors impacting agriculture, the project invested in irrigation infrastructure, including dam safety, water-related governance, yield-increasing technologies such as crop variety development, capacity building for farmers, and relevant government services.

**Previous Bank Experience.** The ADSP was the Bank's first re-engagement in the agriculture sector in Myanmar after a gap of two decades. This project built on the experience and lessons of Indonesia's Bank-funded Water Resources and Irrigation Sector Management Program (WISMP). Constraints in irrigation service delivery in Myanmar had a lot in common with the situation in Indonesia in 1990s. This project also drew on international experience from the United States and Australia with regards to soil improvement and sustainable land management technologies, agricultural extension in Brazil, mechanization in Thailand, and farmer field schools (FFS) and integrated pest management (IPM) in South East Asia. In addition to experience from the Food and Agriculture Organization (FAO) on soil management.

**Consistency with Bank Strategies.** The project contributed to the twin goals of the World Bank Group (WBG) by raising agricultural productivity and profitability, thereby reducing poverty among participating farmers and targeting poor areas in Myanmar. At appraisal, the PDO aligned with the Bank's Country Partnership Framework for Myanmar (CPF, FY2015-FY2019), which focused on reducing poverty, investing in people and effective institutions for people, and supporting a dynamic private sector to create jobs. At completion, the PDO continued to align with the Bank's Country Partnership Framework for Myanmar (CPF, FY2020-FY2023). Specifically, the project contributed to the CPF policy area 1.5 to Improve income generation opportunities and accessibility in rural areas, and policy area 3.1 to manage land and natural resources transparently, equitably, and sustainably. The project worked towards increasing agricultural productivity, profitability, and community-led investments in irrigation infrastructure; it also built the capacity of farmers and participating departments for improved irrigation services, farm advisory services, and farming practices through technological adoption.

**Consistency with Government Strategies/Priorities.** At appraisal, the PDO was in line with Myanmar's overall National Strategy for Poverty Alleviation and Rural Development, especially the Framework for Economic and Social Reforms (2012-2015), and the Rural Development Strategic Framework (2014). At completion, the PDO continued to be in line with two of the three objectives of Myanmar's Agriculture Development Strategy and Investment Plan (2018/19-2022/23). Specifically, enhancing governance and capacity of institutions responsible for agricultural development, and increasing agricultural productivity and farmers' income. The project contributed to stronger farmer associations and federations, strengthened farmers' land rights; improved agriculture extension; qualitative agricultural education and training; more responsive and reliable irrigation, better drainage and water management services; improved crop inputs



and technologies; increased mechanization in agricultural value chains; good agricultural practices; and enhanced farmer resilience to climate change and disasters. The project also supported the official policy of people-centered development, per their needs, potentials, skills, and social norms (ICR, paragraph 20).

**Summary of Efficacy Assessment.** The PDO statement was clear and pitched at an adequate level of ambition. At completion, the PDO continued to align with the Bank Strategy and Government priorities. Therefore, the Relevance of Objectives is rated High.

## Rating

High

## 4. Achievement of Objectives (Efficacy)

### OBJECTIVE 1

#### Objective

To increase crop yields in selected existing irrigation sites in the Recipient's Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions.

#### Rationale

**Theory of Change (ToC).** To achieve the stated objective, the project invested in developing appropriate technologies to increase yields among farmers in the targeted irrigation schemes. This included support to crop variety development and seed multiplication, demonstrations of climate-smart technology and mechanization services, farm demonstrations and training of farmers in the use of the new technologies and strengthening capacity for the delivery of farm advisory services in the government. Further, the project supported improved irrigation and drainage management through addressing irrigation and drainage infrastructure needs, which included improvement of the management of selected existing reservoirs and irrigation systems, supporting technical assistance for farmers and farmer groups, and improvement of land records and practices in the project irrigation sites. The project also supported the irrigation department through capacity-building activities in operation and maintenance and improved management practices. The rehabilitation and operational improvement of irrigation schemes was expected to enhance the reliability and flexibility of water delivery services to farmers which would improve crop productivity, enable intensification of cropping systems, and reduce production risks. The expected outputs included the production and distribution of quality seeds, testing labs upgraded, community storehouses established, crop variety trials conducted, farm machinery and agricultural technology demonstrated, farmers trained in sustainable land management (SLM) practices (crop rotation, tillage reduction, safe use of pesticides and fertilizers), improved irrigation and drainage infrastructure completed, dam safety measures installed, training courses and modules provided; knowledge centers established, functional farmer schools and farmers trained, water user groups and associations trained, water management decision support system set up at irrigation department. The expected outcomes included: farmers having access to and adopting the use of improved seed varieties, farmers having access to digital land records, agricultural technology adopted by farmers, SLM practices adopted, improved availability of irrigation water in target areas, WUGs functioning and govern access to irrigation, farmers with timely access to irrigation for crops, irrigation department uses computerized systems



for land use and water accounting; and for reservoir and irrigation allocation and delivery planning and monitoring; and asset management. All this was expected to contribute to increased average crop yields for selected crops. Anticipated long-term outcomes included: crop productivity and irrigation coverage increased, reduced poverty and increased wage jobs, more stable food prices, reduction of farmers' vulnerability due to improved land management and climate resilient practices, and cropping intensity increased in target areas.

The achievement of the stated objective was underpinned by the following three critical assumptions: 1. Government approval of new irrigation Law for formation of WUGs and associations; 2. Continued government support and backing for institutional reforms; and 3. Ministry of Agriculture and Irrigation promotes and supports increased collaboration among key stakeholders.

The activities stated in the ToC were directly connected to the outputs, and outcomes in a plausible causal chain. The stated assumptions were logical and realistic.

### **Outputs/Intermediate Results**

The information below is based on the ICR (Annex 1) unless referenced otherwise.

#### **(a) Farm Advisory and Technical Services:**

- 56 technologies were demonstrated in the project areas (target fully achieved).
- 8,088 clients (including 2,158 females, exceeding the target of 1,100 females) adopted an improved agricultural technology promoted by the project which was below the overall target of 11,000 clients (overall target not achieved, but female target exceeded).
- 35.40 ha of land where SLM practices were applied, which was significantly below the target of 10,500 ha.
- 8,030 land users (including 2,099 females) adopted SLM practices as a result of the project exceeding the overall target of 6,500 users and the female target of 600 (both targets exceeded).
- The project provided 22,341 client days (including 3,136 days for females) of training, which was below the target of 30,000 but slightly exceeded the target of 3,000 days for females.

#### **(b) Irrigation and Drainage Management:**

- The project provided enhanced irrigation services to 32,843 hectares of farmland against an end target of 35,000 ha, with an achievement level of 94% (target substantially achieved). The project supported the improvement of four irrigation schemes and five dams under batch 1 (2015 onwards) and four schemes and five dams under batch 2 (late 2019 onwards). The civil works included the removal of obstacles for adequate delivery of irrigation water to the entire command area, repair of flow control and regulating structures, protection/lining of highly erodible canal banks, reduction of inundation areas and canal breaches, provision of drains and cross drainage, creation of sediment management measures to reduce the entrance of silt and strengthening canals. Bridges and inspection roads were upgraded to ensure all-weather access. The RF lacked indicators to track the aforementioned physical works.
- 43,106 ha pre-feasibility land assessment of the command area was completed exceeding the target of 35,000 ha (target exceeded).



- 8,188 water users (including 1,222 females) were provided with new/improved irrigation and drainage services which was below the overall target of 22,000 and the female target of 2,200 females (target not achieved).
- The project formed 396 WUGs against an end target of 280 and eventually created 56 functional Water User Associations (WUAs) (target exceeded).

## Outcomes

- An increase in crop yields was defined by the ICR (paragraph 24) as a weighted average of crop production in tons per hectare for the selected crops. By project completion, the overall yield of the four selected crops (paddy rice winter, paddy rice summer, green gram, and black gram) increased by 58%, exceeding the end target of 25% (PDO outcome indicator 2). The rice yield in the wet season (monsoon) increased by 280%, from 2.7 tons to 4.39 tons per hectare exceeding the end target of 3.37 tons per hectare. Also, rice yield in the dry season (summer) increased by 160%, from 3.2 tons to 4.85 tons per hectare, exceeding the end target of 4.16 tons per hectare.
- The ICR (paragraph 25) noted that while black gram yield initially increased significantly, the eventual increase was modest from 1.2 to 1.36 tons per hectare in later years due to a decreased demand in export markets, primarily India. This resulted in low farmgate prices and consequently farmers' interest in black gram dropped, and the planted area and yield dropped. On the other hand, green gram yield increased by 59% from 0.8 to 1.27 tons per hectare exceeding the end target of 1.04 tons by 30% (PDO indicator 2).
- The ICR (Annex 4) reported that the target area provided with improved irrigation was not achieved by project completion because the project disbursements were paused 17 months before the project closing date due to the military takeover. Nevertheless, the Government continued the improvement of the irrigation systems and complementary services to reach 94% of the target level mentioned above,

**Summary of Efficacy Assessment.** The project reached 217,760 beneficiaries, significantly exceeding the target of 120,000 beneficiaries (PDO outcome indicator 1). All the project-supported activities (improved irrigation and drainage, supplying certified paddy rice seeds to farmers, providing training, promoting the adoption of farm machinery and agricultural technologies, and improving soil fertility through SLM activities) contributed to increasing crop yields, as noted above. The project exceeded its outcome indicator targets for the total beneficiaries and crop yields except for black gram rice. The ICR (paragraph 25) provided a logical explanation for the shortcoming in meeting the target on black gram rice. Also, most intermediate results indicators were achieved or substantially achieved. As noted in the ICR, there were concerns regarding the data collection methods and inconsistency of data reported. Moreover, in the absence of a counterfactual, it is not clear the extent to which the yield increases were attributable to the project. Therefore, the efficacy with which this Objective was achieved is rated Substantial with moderate shortcomings.

## Rating

Substantial

## OBJECTIVE 2

Objective



To increase cropping intensity in selected existing irrigation sites in the Recipient's Bago East, Nay Pyi Taw, Mandalay, and Sagaing regions.

### **Rationale**

**Theory of Change (ToC).** The same ToC under objective 1 applies to this objective since the project activities contributed to both objectives of increasing productivity and increasing cropping intensity.

### **Outputs/Intermediate Results**

The same outputs/intermediate results under objective 1 apply.

### **Outcome**

- Cropping intensity was defined by the ICR (paragraph 24) as the sum of crop areas planted in wet, winter and dry seasons divided by the net area equipped by irrigation and drainage. By project completion, the cropping intensity increased from the baseline of 120% to 160% fully achieving the end target (PDO outcome indicator 3). The key project-supported activity that contributed to increasing cropping intensity was the irrigation improvement works. This was evidenced when cropping intensity decreased due to reduced irrigation flows. According to the ICR (paragraph 26) cropping intensity increased with the completion of irrigation works and the restoration of irrigation flows in the irrigation system. Improvement in irrigation flows allowed farmers to practice double-cropping and, in rare cases, triple-cropping systems depending upon the soil moisture content and surface water availability. Cropping intensity would also benefit from improved production management practices as discussed under Objective 1.

**Summary of Efficacy Assessment.** The project-supported investments, mainly improving irrigation works, enabled increasing cropping intensity by the target farmers. As noted above the completion of irrigation works and the restoration of irrigation flows enabled farmers to practice double cropping or in rare cases triple cropping. While the project fully achieved its PDO outcome target pertaining to this objective, there is no evidence in the ICR that all increases in cropping intensity were attributable to the project since there was no control group. Therefore, the efficacy with which this objective was achieved is rated Substantial with moderate shortcomings.

### **Rating**

Substantial

## **OBJECTIVE 3**

### **Objective**

To provide an immediate and effective response to said eligible crisis or emergency.

### **Rationale**

**Theory of Change (ToC).** Achievement of this objective was contingent on the occurrence of and eligible crisis or emergency. The occurrence would allow a rapid reallocation of loan proceeds from other components to provide emergency recovery and reconstruction support. In July 2015, Cyclone Komen hit Myanmar, three months after the approval of ADSP, and the project's Contingent Emergency Response





Component (CERC) was activated in response, and US\$4.99 million was reallocated from existing components to the IDA Immediate Response Mechanism (IRM) to finance the necessary goods and equipment for post-flood recovery and reconstruction.

### **Outcome**

The ICR (paragraph 34) reported that all planned goods were procured and distributed for rehabilitation and reconstruction of the targeted flood-affected areas and communities. The total cost for the CERC component at closing was US\$ 4.12 million. The IDA IRM brought together CERC allocations from four on-going projects in Myanmar and was implemented with the support of the United Nations Office for Project Services. While the immediate and effective response was provided, the management of the IRM proved to be complex and time consuming (with unfamiliar implementation arrangements involving four ministries), which affected the startup phase of the ADSP (ICR, paragraph 52).

Overall, the efficacy with which this Objective was achieved is rated Substantial.

### **Rating**

Substantial

## **OVERALL EFFICACY**

### **Rationale**

Overall Efficacy is rated Substantial with moderate shortcomings. While the project arguably contributed to increased crop yields and cropping intensity, it is highly unlikely that all of the increases were attributable to the project. The ICR stated that “Productivity and profitability (also) increased due to restored irrigated areas” based on “M&E data showing that crop yields have increased compared to the baseline” (Annex 4, para 9). On the other hand, a footnote in Table A4.2 in Annex 4 states that “The average yield for Myanmar during 2018–2021 was 3.8 tons per hectare” which would be the best estimate in the ICR of rice yield outside of the project area (a proximate control group) during project implementation. The net benefit from the project due to increased productivity and cropping intensity could therefore have been based on the yields achieved in the project area compared to the average yield in Myanmar during implementation. Finally, the project managed to provide immediate and effective response to a flood crisis and support for the accompanying emergency services.

### **Overall Efficacy Rating**

Substantial



## 5. Efficiency

### Economic and Financial Analysis (EFA)

#### *ex ante*

- The project's economic rate of return (ERR) was estimated at 28%. The net present value (NPV) was estimated at \$47.00 million at a 12% discount rate and 20 years of project investment life.
- The main quantifiable benefits (on an incremental basis) of the project would be derived from the increase of crop production arising from the conversion of rain-fed to irrigated areas, switch to higher-value crops, adoption of climate-smart technologies, lower use of chemical inputs, and improvements in output in existing irrigated areas resulting from improved, more reliable and timely available water supply.
- Non-quantifiable social and environmental benefits included flood control, better water management and improved soil fertility.
- Financial analysis was conducted to gauge project impact on farmers' incomes. Crop budgets and farm models were formulated under "with" and "without" the project to gauge the financial attractiveness to farmers (PAD, Annex 5, paragraph 4).
- Sensitivity analysis was conducted on variables that were likely to significantly affect economic viability, or variables considered at risk for value change. These included project cost increase by 20%, project benefit decrease by 20%, and a 2-year delay in project benefits. The overall project economic outcomes were most sensitive to decreased project benefits and increased project costs. A two-year delay in achieving project benefits had the smallest impact.

#### *ex post*

- **ECONOMIC ANALYSIS.** The analysis at completion followed the same methodology at appraisal to ensure consistency and comparability. The economic analysis at completion estimated the project's internal rate of return (IRR) at 21.1% (compared to 28% appraisal) under a discount rate of 12% and a net present value (NPV) at US\$27.7 million.
- The ICR noted that the ERR at appraisal was overestimated due to incorrect assumptions that all 35,000 hectares of improved irrigation and drainage services would be achieved in the first project year. The analysis also did not consider that the project investments would gradually materialize over the entire seven-year project cycle. This, combined with the higher increase in crop yields of 60% to 70% in Year 1, led to an inaccurate estimation of the ERR and NPV in the PAD.
- A sensitivity analysis in the ICR showed the NPV was sensitive to a change in the discount rate when lowering it from 12% to 10%, increasing the NPV by 45% from US\$27.7 million to US\$40.2 million.
- However, the ex-post efficiency analysis lacked an assessment of the attribution of the outcomes to the project. The analysis in the ICR can only be regarded as robust and provide sufficient economic justification for the project investment if it is assumed that without the project, there would have been no increases in yield or cropping intensity. The ICR provides no evidence to support such an assumption. In addition, the ICR provided no explanation of the origin and reliability of data on the project's achievements given the shortcomings in the project's M&E quality.
- **Implementation efficiency.** The project closed on its expected closing date on June 30, 2022 with no extensions despite initial implementation delays. According to the ICR (paragraph 38) "the project achieved all PDO indicators and outcomes 17 months before the closing date." The actual project cost was US\$75.60 million against the PAD allocation of US\$100.00 million.



**Summary of Efficiency Assessment.** While the ICR estimated an ex-post IRR at 21%, lower than the 28% estimated at appraisal, it was still significantly above the discount rate of 12%. As noted above, the ICR provided a logical explanation for the overestimation of the ERR at appraisal. The project closed on time, but disbursements were halted 17 months earlier because of the military takeover of the government resulting in an overall disbursement rate of about 76%. However, the economic efficiency analysis omitted a control group, and M&E quality had serious shortcomings, which raised questions about the veracity of the data used to estimate the project's ERR. The attribution issues are further amplified given that the project achieved all the outcomes, and the irrigation works were completed 17 months before the closing date with US\$25 million out of US\$100 million yet to be disbursed. Overall, therefore the project's efficiency is rated as Modest.

## Efficiency Rating

Modest

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

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	28.00	0 <input checked="" type="checkbox"/> Not Applicable
ICR Estimate	✓	21.00	0 <input checked="" type="checkbox"/> Not Applicable

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

## 6. Outcome

Relevance of Objectives was rated High. Overall Efficacy was rated Substantial with moderate shortcomings. The project increased crop yields and intensity. It exceeded its targets for two PDO outcome indicators and fully achieved the target on the third. However, the ICR noted concerns about the accuracy of data collection methods and the inconsistency of data reported. Also, the ICR failed to provide evidence of the extent to which the yield increases were attributable to the project in the absence of a control group. Finally, the project provided an immediate and effective response to a flood crisis and the subsequent emergency. Efficiency was rated Modest. The ICR estimated an ex-post IRR at 21%, which was lower than the 28% estimated at appraisal, even though it was above the discount rate. Given the weak M&E quality, there are concerns about the accuracy of the estimates of project benefits used in the rate of return analysis.

Based on the assigned ratings for the three outcome criteria, the overall Outcome is rated Moderately Satisfactory due to moderate shortcomings pertaining to the evidence of the efficacy of the project's agricultural achievements, and of the project's overall efficiency.

### a. Outcome Rating

Moderately Satisfactory



## 7. Risk to Development Outcome

The following risks could potentially impact the Development Outcome:

- 1. Environmental risk.** Since Myanmar experiences considerable climatic variation and frequent natural disasters, effective resilience and adaptation efforts are needed to sustain project benefits. However, the country has limited capacity to build resilience to climate change in agriculture and a natural calamity could risk the achievements and outcomes of the project. Therefore, greater resilience and adaptation will need to be introduced by the authorities and farmers to protect the project's development outcome and benefits.
- 2. Project related risk.** WUGs and WUAs require further guidance and support to sustain their efforts. By the end of the project, the formulated WUGs and WUAs were at various stages of evolution. They still required regular guidance, support and training to perform their functions and carry out O&M of irrigation infrastructure delegated to them. The extent to which they would continue functioning after the project closure is uncertain.
- 3. Institutional risk.** While the project strengthened government institutions and improved staff capacity, new capacity-building needs emerged. They included dam safety, value addition, entrepreneurship, nutrition, and food safety. MOALI needs to institutionalize a system of periodic staff capacity needs assessment followed by quality training.
- 4. Financial risk.** In February 2021, the project disbursements were paused due to the military takeover of the government, which affected the completion of ongoing and planned interventions. An additional financing of US\$50 million was under preparation in 2020 to provide the additional resources and time the Government of Myanmar had requested for the project completion. The status of works under construction at the time of the military takeover is not stated in the ICR, but the chances of their completion are probably remote. Given the fluid situation in the country, it is, therefore, difficult to ascertain the extent to which the project's achievements and outcomes will be sustained.

## 8. Assessment of Bank Performance

### a. Quality-at-Entry

- **Strategic relevance and approach.** The project was strategically relevant and in line with the Government's priorities. The PDO was also aligned with the Bank strategies (see section 3 for details). The project would complement the "Fostering Agricultural Revitalization" project supported by the International Fund for Agricultural Finance (IFAD). The IFAD project supports the MOAI to improve irrigation infrastructure in selected schemes.
- **Technical, financial, and economic aspects.** The project's design featured a comprehensive approach that addressed irrigation concerns, capacity building and improved agricultural technologies. Improvement of irrigation and drainage schemes focused on structural and non-structural measures. The project featured a phased approach, which allowed flexible identification of the number and size of target gravity irrigation perimeters. Implementation would start with smaller and technically relatively simple irrigation sites. They would be gradually scaled up to



potentially larger systems or systems with more complex problems as the lessons from the initial areas become available. The PAD included a detailed economic analysis, but the ERR was overestimated (see Section 5 for details).

- **Poverty, gender, and social development aspects.** The project was expected to benefit the rural poor through boosting crop yields and increasing crop intensity. The project also supported mainstreaming gender equality and empowerment in its provision of inputs and interventions. Design featured activating gender focal points to promote gender integration, adopting a gender-sensitized results framework, fostering equal benefits to men and women, promoting active female involvement in WUGs, and targeted training events for women. At the social level, the project supported awareness-raising campaigns and promoted nutritious, balanced meals using locally available produce.
- **Environmental and fiduciary aspects.** While the project had adequate environmental and fiduciary aspects, the implementing agency had limited knowledge and capacity to partner with the Bank and comply with its operational policies and requirements. For example, satisfying staffing requirements took longer than expected (17 months) and contributed to implementation delays.
- **Implementation arrangements.** Due to a gap of two decades in which there was no engagement with the Bank, the government had limited knowledge and capacity to partner with the Bank and comply with its operational policies and requirements. Also, setting up a capable project management unit (PMU) and field offices took longer than expected and contributed to implementation delays.
- **Risk assessment.** Nine risks were identified at appraisal, with an overall rating of Substantial. Four risks were rated high including: Political and governance, Institutional capacity for implementation and sustainability, fiduciary, and environmental and social. The ICR notes that the identified risks had adequate mitigation measures. With respect to dam safety, the Bank pointed out issues and remedial steps, however, the procurement process for international TA and preparation of dam safety plans were considerably delayed.
- **M&E arrangements.** The PMU oversaw M&E activities including tracking and assessing project implementation progress, outputs, outcomes and impacts across all three components. M&E design had shortcomings pertaining to the Results Framework which lacked indicators to measure improved capacity and to track the physical activities related to irrigation rehabilitation. Also, the increase in cropping intensity comprised only one PDO level indicator and no intermediate results indicators (IRIs).

**Summary of Quality at Entry Assessment.** The project was strategically relevant. Design featured a comprehensive approach that addressed irrigation concerns, capacity building and improved agricultural technologies. Environmental and fiduciary aspects were adequate, but staffing issues impacted implementation readiness. The ICR also acknowledges weakness in the economic analysis at appraisal due to incorrect assumptions. Also, M&E design had notable design shortcomings. Overall, Quality at Entry is rated Moderately Satisfactory due to moderate shortcomings.

**Quality-at-Entry Rating**  
Moderately Satisfactory



## b. Quality of supervision

- The project was implemented under challenging environmental and political conditions. Early in the implementation period the project experienced The after effects Cyclone Komen and later COVID - 19, and finally political turmoil due to a military take over. The project also had to deal with the collapse of the Swa Chaung Dam spillway in August 2018.
- The Bank conducted 11 implementation support missions. The project benefited from regular Bank guidance and support throughout the implementation duration. The Bank task team also carried out technical missions that included additional experts as needed, such as dam safety specialists. According to the ICR during the COVID-19 outbreak, the Bank task team effectively used IT solutions and virtual platforms for supervision and support.
- Implementation benefited from stationing a new task team leader in Myanmar, which further strengthened the working relationship with the PMU and MOALI. The Bank also cooperated with the International Rice Research Institute (IRRI) to provide technical assistance for rice farmers.
- The ICR states that “The Bank regularly reviewed the M&E system and recommended areas for improvement.” However, a review of Aide Memoires revealed that it was not until July 2020 (5 years after project approval) that there was a reference to M&E and the urgent need to strengthen its performance. None of the earlier 12 Implementation Status Results Reports had mentioned problems with M&E which the ICR states were apparent from the start because “Setting up a fully staffed M&E system was considerably delayed” (paragraph 58). Despite the fact that a plan to improve M&E could not be implemented because of the military takeover in February 2021, the ICR asserts that “The M&E system helped the project management make timely decisions to improve project performance, helping the ADSP achieve impressive results.”

**Summary of Quality of Supervision Analysis.** The Bank team successfully guided the project under challenging conditions as noted above. The project team provided technical support and strengthened the relationship with the PMU and MOALI, which was important in the context of reengagement. However, Bank supervision should have addressed M&E weaknesses much earlier in the implementation cycle. Overall, Bank Supervision is rated Moderately Satisfactory.

In a further communication with IEG, the Bank project team explained that *“the team recognized the Monitoring & Evaluation (M&E) system’s limitations and proactively developed a strategy to strengthen it, with the Project Management Unit (PMU) making significant advancements in the Management Information System (MIS) and integrating additional M&E expertise. Unfortunately, the progress was curtailed by the pandemic and further disrupted by the military takeover, which occurred a year and a half before the project’s planned conclusion.”* Based on the evidence in the ICR, this Review concluded that actions to develop a strategy to strengthen the project’s M&E should have been taken as part of the Bank’s supervision functions many years before the pandemic struck in early 2020 and the military takeover on early 2021.

Based on the assessment above, the Overall Bank Performance is rated Moderately Satisfactory due to moderate shortcomings pertaining to Quality at Entry and Bank Supervision.

## Quality of Supervision Rating

Moderately Satisfactory



## Overall Bank Performance Rating

Moderately Satisfactory

## 9. M&E Design, Implementation, & Utilization

### a. M&E Design

- The PAD did not include a Theory of Change (ToC) since it was not yet required by the Bank at the time of appraisal. Nonetheless, the ICR included a ToC that reflected the relationship between the project activities, outputs, outcomes and long-term impacts in a plausible causal chain. This Review reconstructed a ToC narrative for each objective based on the detailed project description in the PAD (Annex 2) in combination with the ToC reported in the ICR.
- The PDO was composed of two objectives (see section 2), which were assessed based on the following three PDO outcome indicators: (1) Number of direct project beneficiaries; (2) Average yields of selected crops in the project area increased; and (3) Cropping intensity in the project area increased. The PDO outcome indicators 2 and 3 were directly connected to the objectives, measurable and had reasonable targets. However, the cropping intensity objective was measured through one PDO outcome indicator and there were no intermediate results indicators to connect this objective to the project activities.
- The Results Framework included 13 intermediate results indicators (IRIs) to track the progress of the different project activities. The IRIs were measurable, reflected reasonable targets, and were connected to the project activities. However, improved technical and institutional capacity of the irrigation department was not captured by an indicator.
- Overall, M&E design suffered from some weaknesses, for example, the increase in cropping intensity was only measured by one PDO level indicator and no IRIs. Also, the targets for IRI 11a and 11b were miscalculated as the number of clients at 331,000 exceeded the 120,000 project target beneficiaries.

### b. M&E Implementation

- M&E activities were initially delayed due to the late recruitment of a fully staffed M&E system.
- Despite a dedicated M&E staff, M&E implementation faced a number of challenges including: the lack of good synthesis of all thematic reports, lack of harmony in data collection methods, inconsistency of data reported through different sources, lack of clarity on indicator definitions, and absence of a project database and Management Information System (MIS) (ICR, paragraph 58).
- The Bank attempted to rectify the M&E design shortcomings and addressed issues related to the IRIs as part of the first and second restructuring. Also, a plan to strengthen M&E was prepared but was not implemented due to the military takeover in February 2021.

### c. M&E Utilization



- M&E reports were useful during the COVID-19 pandemic when conducting field visits was not possible. According to the ICR (paragraph 59) "the M&E system helped the project management make timely decisions to improve project performance." However, the ICR did not report specific management decisions that were informed by the project's M&E system.

**Summary of M&E Quality Assessment.** M&E design suffered weaknesses related to the RF including inaccurate indicator targets, and the lack of indicators to capture improved capacity as well as the lack of indicators to measure the physical aspects of irrigation rehabilitation. M&E implementation faced initial delays and suffered notable shortcomings that raise concerns regarding the data collection methodologies and accuracy of the data collected. M&E utilization was limited and was undermined by implementation challenges. Overall, M&E Quality is therefore rated Modest.

## M&E Quality Rating

Modest

## 10. Other Issues

### a. Safeguards

- **Environmental Category and Safeguards.** The project was classified as a Category B - partial assessment due to the rehabilitation nature of the proposed irrigation works and limited scale of works. Six environmental and two social safeguard policies were triggered: Environmental Assessment (OP/BP 4.01), Pest Management (OP/BP 4.09), Physical Cultural Resources (OP/BP 4.11), Safety of Dams (OP/BP 4.37), Natural Habitats (OP/BP 4.04), Projects on International Waterways (OP/BP 7.50), Indigenous Peoples (OP/BP 4.10), and Involuntary Resettlement (OP/BP 4.12). An Indigenous People Planning Framework (IPPF) and a Land Acquisition and Resettlement Policy Framework (LRPF) were developed and attached to an Environmental and Social Management Framework (ESMF).
- **Compliance with Environmental and Social Safeguards.** The project's environmental risk was considered high, particularly from dam safety and climate variability and corresponding adverse impacts from hydrological inflows and outflows. These risks were exacerbated during implementation due to the delays in the preparation and implementation of dam safety measures. According to the ICR (paragraph 61) "the implementation of some project interventions or government-funded activities without ESMF compliance also added risks." In 2018, the spillway of the Swa Chung dam collapsed, and the Government undertook land acquisition for a total of 28 acres from three farmers for the construction/rehabilitation works. The Bank team provided continued support to ensure compliance with the resettlement policy framework (RPF). A grievance redress mechanism (GRM) was introduced late into the project and remained functional, receiving 16 grievances. However, after the military takeover in February 2021, it became difficult to monitor and ensure safeguard compliance and the Bank's guidance and technical support to the PMU was halted. The ICR did provide an explicit statement on the project's compliance with Bank's social and environmental safeguards.





**b. Fiduciary Compliance**

- **Financial Management (FM).** A FM assessment at appraisal identified several risks including: limited FM experience of donor projects and Bank FM requirements, inadequate documentation with policies and procedures, and limited FM capacity. The Bank provided training and knowledge transfer to MOALI and the project to improve FM performance. While the project FM system continued to improve, some weaknesses persisted including: poor consolidation of FM reports, limited computer use for FM reports and registers, and the need to standardize works and activity codes. Interim financial reports were submitted on time, but the certified English versions of the annual audit reports were delayed. FM was rated as Moderately Satisfactory at project closing.
- **Procurement.** A procurement assessment at appraisal identified the lack of a legal framework, written procurement procedures, and limited procurement capacity in MOALI. The project adopted the WB procurement guidelines and provided training for project and government staff. The project repeatedly experienced the cancellation of bids by the PMU due to proposed costs exceeding the estimated budget. According to the ICR (paragraph 63), this was addressed by improving the bidders' understanding of preparing cost estimates and the World Bank procurement requirements. Procurement was rated as Satisfactory at project closing.

**c. Unintended impacts (Positive or Negative)**

None.

**d. Other**

"The project facilitated the formation of a donor group which improved collaboration among the government and development partners. The donor group met regularly and was a good platform for agricultural policy and problem-solving discussions, information sharing, and improving coordination and complementarity among the agricultural projects and programs (ICR, paragraph 46)."

Further, "The project served as a platform for a research study to help diagnose, design, and test interventions to improve ADSP impacts on gender equality and nutrition. The report focused on reducing the gender gap in knowledge access and improving female empowerment, nutrition, and crop productivity (ICR, paragraph 48)."

**11. Ratings**

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	Overall Efficacy had moderate shortcomings due to attribution concerns in the absence of a reasonable counterfactual, and the Modest rating for efficiency.



Bank Performance	Satisfactory	Moderately Satisfactory	Quality at Entry and Supervision had moderate shortcomings
Quality of M&E	Modest	Modest	
Quality of ICR	---	Substantial	

## 12. Lessons

The ICR included six lessons. The following three are emphasized with some adaptation of language:

**1. Building mutual trust and respect between the Government and the Bank is a critical first step to re-engage a country experiencing fragility, conflict, and violence.** Building rapport helps overcome initial doubts and the lack of understanding or appreciation among the government, the Bank, and key stakeholders. It was valuable to maintain regular contact and communication, take extra steps and time to understand the perspective and concerns of the government and stakeholders, identify the common ground, point out areas and issues that require further discussion to proceed, explain the rationale and basis of the Bank policies and requirements, and offer the Bank's help and support to find solutions and build national capacity. The ICR confirmed that the Bank established a cordial working relationship with MOALI, implementing departments, and key stakeholders associated with this project.

**2. Irrigation projects involving dams, need to carefully but quickly assess dam safety, and ensure the implementation of all required precautionary and mitigation steps to avoid serious accidents during implementation.** During ADSP preparation, the Bank team assessed the candidate irrigation and drainage schemes. The Bank pointed out dam safety issues and remedial steps to MOALI and recommended hiring international TA. Such specialists would undertake further analyses, assessments, preparation, and implementation of dam safety plans for all dams as a priority. The procurement process for international TA and preparation of dam safety plans were considerably delayed. The Swa Chaung Dam spillway collapsed in August 2018 before the dam safety plans were implemented and raised serious safety concerns about all existing dams.

**3. Projects in FCV countries require a realistic M&E design that involves multiple data sources to verify results.** FCV countries are usually not data-rich environments. Baseline and impact data and other information about demographics and sector technical issues are either not available or not reliable and therefore need to be generated. This can delay preparation, implementation, and closure processes or lead to inaccurate estimates of the impact of a project. In FCV countries, Bank teams can provide funding to address the difficulties of data access and the level of confidence in the data available. The ICR also demonstrated that anecdotal information should be encouraged to back up a weak data story.

## 13. Assessment Recommended?

No



## 14. Comments on Quality of ICR

- **Quality of Evidence.** While the ICR provided a limited evidence base to support the achievements reported, it was not adequate to assess the project outcomes due to M&E implementation shortcomings.
- **Quality of Analysis.** The ICR provided clear links between evidence and findings to the extent possible and used the evidence base to serve the arguments under the different sections. However, the absence of any recognition of the need for a control group in the efficacy and efficiency analysis was a shortcoming.
- **Lessons.** Lessons reflected the project experience and were based on evidence and analysis.
- **Consistency with guidelines.** The ICR used the standard structure defined in the Guidelines and used available evidence to justify the assigned ratings. However, the ICR did not include an explicit statement on compliance with the Bank's safeguard policies.
- **Conciseness.** Overall, the ICR was well written, provided a clear and concise coverage of project activities, and candidly reported on most shortcomings. However, some sections could have benefited from further details, including the sections on M&E, gender issues, procurement, dam safety, and other safeguards that were not always clear. Also, the PAD reported that the project triggered eight safeguard policies while the ICR reported only seven because the safeguard policy on Physical and Cultural Resources (OP/BP 4.11) was not included in the ICR.

**Summary of the Quality of ICR Assessment.** The ICR included a plausible assessment of outcomes despite numerous shortcomings, but the lessons drawn by the ICR were relevant. Most sections were concise and reflected relevant evidence. Overall, the Quality of the ICR is rated Substantial with some moderate shortcomings.

### a. **Quality of ICR Rating** Substantial