The United Republic of Tanzania

FY2024 Ex-Post Evaluation Report of Japanese ODA Loan

"Small Scale Irrigation Development Project"

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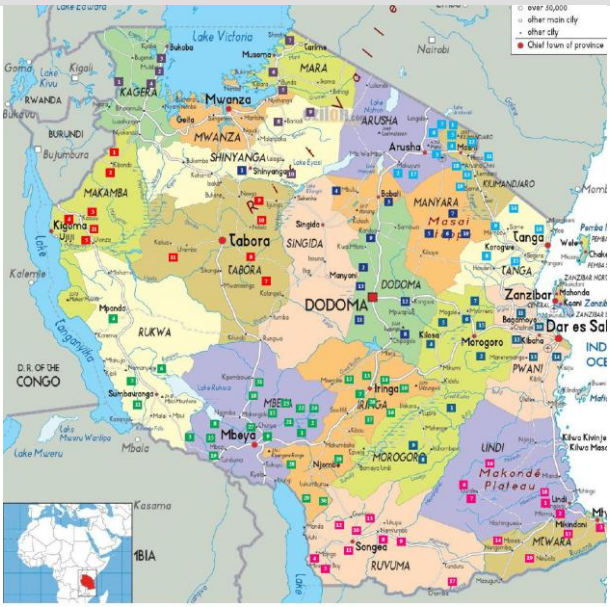
0. Summary

This Project was implemented throughout mainland Tanzania with the aim of improving agricultural productivity—mainly rice production—by constructing new irrigation facilities, rehabilitating existing facilities, and procuring related equipment, thereby contributing to improvements in the livelihoods of small-scale farmers and poverty reduction.

The Project was highly consistent with Tanzania's development policies and development needs, both at the time of planning and at the time of the ex-post evaluation. It was also consistent with Japan's development cooperation policy at the planning stage, and concrete results of collaboration with other JICA projects and organizations were confirmed. Therefore, the relevance and coherence of the Project are high. Although the project cost was within the plan, the project period was significantly longer than planned—more than double the original schedule—so the efficiency of the Project is moderately low. With regard to effectiveness, none of the six operation and effect indicators (including beneficiary area and cultivated area by crop) established at the time of planning achieved their target values. For farmers who were actually able to use irrigation water, improvements in farming conditions and living conditions were confirmed as qualitative effects. In terms of impacts, among those farmers, impacts related to poverty reduction, changes related to gender, and people's well-being were observed. However, since the beneficiary area reached only 53% of the planned value, the scale of benefits was limited compared with the plan. Therefore, the effectiveness and impact of the Project are moderately low. With regard to sustainability, sustainability in terms of policy and system is high; however, challenges remain in the institutional/organizational, technical, financial, and operation and maintenance aspects. Therefore, the sustainability of the Project is moderately low.

In light of the above, the Project is evaluated to be partially satisfactory.

1. Project Description



Project Locations

(Source: Project Status Report on Small Scale Irrigation Development Project)

Note: The red, green, and other colored squares scattered across mainland Tanzania indicate the locations of each sub-project. A list of the sub-projects is provided in the appendix.



Headworks constructed under the Project. Water is abstracted from a seasonal river. Scheme name: Isaka
(Source: The external evaluator)



Canal and division gate constructed under the Project. Scheme name: Mwamapuli
(Source: The external evaluator)

1.1 Background[1]

Agriculture in Tanzania accounts for approximately 25% of the country's Gross Domestic Product (GDP) and about 20% of its export value, and it is a critical sector in which more than three-quarters of the poor population are engaged. However, due to insufficient financial resources, the country had been unable to fully utilize its high agricultural and irrigation development potential (29.4 million hectares (ha)), and the actual irrigated area remained slightly above 1% (370,000 ha as of 2011/12). In response, the Government of Tanzania identified, as priorities under the "National Strategy for Growth and Reduction of Poverty II (MKUKUTA II)"

[1] Source: JICA documents

(2010–2014), the shift away from rain-fed agriculture through irrigation development, the expansion of cultivated land, the increase of irrigated area, and the enhancement of rice production as a major cash crop.

In addition, the Agricultural Sector Development Programme Phase II (ASDP II), formulated as a Sector-Wide Approach (SWAp) for the agricultural sector, was under preparation at the time of the Project appraisal, and it included agricultural productivity improvement and irrigation development as key pillars. Furthermore, Tanzania was positioned as a first-group member of the Coalition for African Rice Development (CARD), and formulated the National Rice Development Strategy (NRDS) in 2009. Under the goal of doubling rice production by 2018, the country had been promoting irrigation development.

Against this backdrop, Japan formulated the "Rice Production Capacity Enhancement Programme," through which it provided technical cooperation to promote irrigation development and contributed to institutional reforms via policy dialogue with the Government of Tanzania and Development Partners (DPs) in the agricultural sector. The Project was implemented as part of this programme.

1.2 Project Outline

The objective of the Project is to improve agricultural productivity—mainly rice production—by constructing new irrigation facilities, rehabilitating existing facilities, and procuring related equipment, thereby contributing to improvements in the livelihoods of small-scale farmers and poverty reduction throughout mainland Tanzania[2].

Loan Approved Amount / Disbursed Amount	3,443 million yen / 3,443 million yen	
Exchange of Notes Date / Loan Agreement Signing Date	May 2013 / May 2013	
Terms and Conditions	Interest Rate	0.01%
	Repayment Period	40 years
	(Grace Period	10 years)
	Conditions for Procurement	General Untied

[2] During the implementation period of the Project, small-scale irrigation development in Tanzania was carried out by dividing the country into seven zones (Dodoma, Kilimanjaro, Mwanza, Mbeya, Morogoro, Mtwara, and Tabora), where the Zonal Irrigation Offices under the National Irrigation Commission (NIRC) provided technical support to the district governments. The sites covered by this Project were located across all seven Zonal Irrigation Offices. Subsequently, although the number of zones was temporarily increased to eight, the institutional structure was reorganized after 2019. Under the new structure, Regional Irrigation Offices (RIOs) were established directly under the NIRC Headquarters, and District Irrigation Offices (DIOs) were placed under the RIOs, assuming responsibility for all irrigation schemes. As a result, district governments no longer have jurisdiction over irrigation administration.

Borrower / Executing Agency	The Government of the United Republic of Tanzania / Ministry of Agriculture, Food Security and Cooperatives
Project Completion	July, 2021
Target Area	Throughout mainland Tanzania
Main Contractor(s) (Over 1 billion yen)	-
Main Consultant(s) (Over 100 million yen)	Nippon Koei Co., Ltd. (Japan)
Related Studies (Feasibility Studies, etc.)	-
Related Projects	<Technical Cooperation Project> "Capacity Development for the Promotion of District Agricultural Development Plans (DADPs) Irrigation Schemes Phase I and II (TANCAID 1 and 2)" (2010–2014, 2015–2019) "Project for Supporting Rice Development (TANRICE 2)" (2012–2019) "Project for Strengthening Training Capacity for Irrigation Engineering at Arusha Technical College (ATC)" (2014–2017) <Other International Organizations and Aid Agencies> Co-financing with the World Bank through the ASDP Basket Fund, with funds transferred to the respective target district governments.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mihoko Kikuchi / Tomoyuki Sho, Metrics Work Consultants Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: December 2024-February 2026

Duration of the Field Study: April 6–26, May 7–17, and July 12–18, 2025

3. Results of the Evaluation (Overall Rating: C[3])

3.1 Relevance/Coherence (Rating: ③[4])

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Tanzania

The National Five Year Development Plan 2021/22–2025/26 (hereinafter referred to as "FYDP III") of the Government of Tanzania highlights the importance of the agricultural sector in the national economy and sets a target to expand the irrigated area from approximately 700,000 ha in 2020 to 1.2 million ha by 2025. Rice, which is the main target crop of the Project, is also positioned as one of the priority crops in FYDP III[5]. Furthermore, ASDP II, the current policy framework for the agricultural sector, aims to accelerate agricultural GDP growth, improve farmers' incomes, and achieve food security and nutrition improvement by 2025. ASDP II places emphasis on agricultural commercialization, strengthening of value chains and value addition, prioritization of high-potential commodities, and mobilization of the private sector[6]. In addition, NIRC formulated the Medium Term Strategic Plan (2023/2024–2027/2028) in 2022, which sets a target of expanding the irrigated area to 1.67 million ha by June 2028. To achieve this, the plan outlines the construction of 208 new irrigation schemes, rehabilitation of 261 existing schemes, and strengthening the operational and maintenance capacity of Irrigators' Organizations (IOs).

Based on the agricultural sector policies of the Government of Tanzania at the time of planning, as described in "1.1 Background," as well as the policies in effect at the time of the ex-post evaluation, this Project is consistent with the Government's agricultural sector and irrigation development policies at both stages. The importance of agricultural and irrigation development policies has been maintained at the time of the ex-post evaluation. Therefore, it is judged that the Project is consistent with Tanzania's development policies at the time of planning and at the time of the ex-post evaluation.

3.1.1.2 Consistency with the Development Needs of Tanzania

According to national statistics, per capita rice consumption in Tanzania increased from 10 kg in 1980 to 30 kg in 2010. However, due to delays in irrigation development, productivity remained low, and the country relied on imports for 7–8% of its consumption (more than 100,000 tons)[7]. Under these circumstances, the NRDS, formulated in 2009, set a target to increase rice production from 0.899 million tons in 2008 to 1.963 million tons by 2018[8].

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[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[4] ④: Very High, ③: High, ②: Moderately Low, ①: Low

[5] Source: FYDP III, pp. 85 and 215

[6] Source: ASDP II website (https://asdp.kilimo.go.tz/index.php/about); and The Project on the Revision of the National Irrigation Master Plan in the United Republic of Tanzania: Final Report, pp. 2–21.

[7] Source: JICA documents

[8] Source: JICA documents

According to the statistics of the Food and Agriculture Organization of the United Nations (FAO)[9], rice production increased from 2.19 million tons in 2013[10] to an estimated 3.59 million tons in 2023, showing an overall upward trend despite annual fluctuations. Rice import volumes had been on a declining trend after 2014 but rose again to 140,000 tons in 2023. Meanwhile, export volumes were 630,000 tons in 2021, 360,000 tons in 2022, and 210,000 tons in 2023.

At the same time, expansion of irrigated rice cultivation has been considered essential for improving productivity. Under the NRDS, a plan was established to convert 190,000 ha of rain-fed lowlands into irrigated fields over a period of ten years. More than 80% of farmers in Tanzania are small-scale farmers, and to promote sustainable irrigation development and ensure proper operation and maintenance of irrigation schemes, the Government set a policy direction to advance small-scale irrigation[11] development at the district level. Applications to the District Irrigation Development Fund (DIDF), which provides financing for small-scale irrigation development, were rapidly increasing at the time of the appraisal. Although the Government expanded the DIDF budget, it could not keep pace with the rising number of applications; in FY2011/12, only about one-quarter of the approved budget amount was actually allocated[12]. This situation demonstrated a significant gap between needs and available financial resources, resulting in an increased necessity for funding small-scale irrigation development.

According to NIRC data confirmed at the time of the ex-post evaluation, the irrigated area expanded from approximately 450,000 ha in FY2013/14 to around 980,000 ha in FY2024/25. However, this is still far from the 2028 target of 1.67 million ha, and rain-fed agriculture continues to dominate[13]. Overall, while both rice production and irrigated area have increased, the majority of production remains dependent on rainfall, and the importance of irrigation development continues to be high. Therefore, the Project, which aims to improve agricultural productivity—particularly rice—through the construction and rehabilitation of irrigation facilities, is consistent with development needs both at the time of appraisal and at the time of the ex-post evaluation.

3.1.1.3 Appropriateness of the Project Plan and Approach

At the time of appraisal, based on lessons learned from similar past projects that emphasized the importance of strengthening the functions of IOs responsible for operation and maintenance and

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[9] Source: FAOSTAT, https://www.fao.org/faostat/en/

[10] Regarding the discrepancy between the government targets under the NRDS and the production figures reported in the FAO statistics, the executing agency was consulted; however, the reason for the discrepancy was not known. The executing agency confirmed that there was no issue with using the FAO statistics in this report.

[11] According to the Tanzania Irrigation Policy 2010, irrigation schemes with an area of 500 ha or less are defined as small-scale irrigation. (Source: The Project on the Revision of the National Irrigation Master Plan in the United Republic of Tanzania: Final Report, JICA, 2018, p. 5-3.)

[12] Source: JICA documents

[13] According to the NRDS-II, formulated in 2019, the breakdown of the cultivated rice area is 9% irrigated, 71% rain-fed lowland, and 20% upland.

providing agricultural extension services, collaboration with TANCAID 2 for strengthening IOs and with TANRICE 2 for agricultural extension was envisaged. Although collaboration with TANCAID 2 began from the second batch of the Project (2016), it was confirmed at the time of the ex-post evaluation that collaboration with these other JICA projects contributed to enhancing the effectiveness of the Project's outcomes. Details of the collaboration with each project are described in "3.1.2.2 Internal Coherence."

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

In the Yokohama Action Plan announced at the Fourth Tokyo International Conference on African Development (TICAD IV) in 2008, the Government of Japan identified "Agriculture and Rural Development" as one of its priority issues, emphasizing increased food production and improved agricultural productivity. Likewise, the Country Assistance Program for Tanzania (June 2012) positioned "Economic Growth for Poverty Reduction" as a priority area. Under this policy orientation, Japan's assistance in the agricultural sector centered around two cooperation programs. The first was the "Program of Supporting ASDP." The second was the "Program of Strengthening Rice Production," to which this Project belongs. The latter aimed to enhance rice production capacity through improving the productivity of irrigated rice cultivation[14].

Given this background, the Project sought to reduce poverty by improving agricultural productivity, which is essential for Tanzania's economic growth. Therefore, the Project was consistent with Japan's priority area of "Economic Growth for Poverty Reduction" under the Country Assistance Program at the time of appraisal. It was also consistent with Japan's assistance policy in the agricultural sector.

3.1.2.2 Internal Coherence

At the time the Project was implemented, support to the agricultural sector in Tanzania was carried out under the framework of ASDP, in which the Government identified priority areas and priority individual projects, and DPs were expected to provide assistance in line with these priorities. Accordingly, both this Project and other JICA projects were premised on supporting the priority areas designated by the Government of Tanzania.

As confirmed at the time of the ex-post evaluation, many of the sub-projects (SPs) targeted under this Project were also selected as target areas in other JICA projects. As a result, collaboration with these JICA projects contributed to enhancing the effectiveness of this Project's outcomes. The following sections describe the achievements of collaboration with each project.

[14] Source: Ex-ante Evaluation document for the Project, pp. 1–2.

Collaboration with TANCAID2[15]

Since the commencement of collaboration from the second batch of the Project, monthly tripartite meetings (this Project, NIRC and TANCAID2, and the JICA Tanzania Office) were held, through which close coordination was maintained.

On the construction side, planning and implementation at 78 SPs under this Project were carried out in accordance with the Comprehensive Guidelines for Irrigation Scheme Development (CGL) revised and developed by TANCAID2. As a result, issues observed in the first batch—such as inadequate document management (including bidding documents and progress reports) within the Zonal Irrigation Offices and district governments, which had contributed to project delays—were improved from the second batch onward.

Furthermore, through construction skill-up seminars and other capacity development activities conducted under TANCAID2, officers of the Zonal Irrigation Offices and district governments began supervising construction using the improved monitoring sheets developed by TANCAID2, which enhanced their supervision capacity. Local contractors who participated in these seminars also strengthened their construction skills.

On the operation and maintenance (O&M) side, TANCAID2 implemented dissemination activities on the O&M section of the CGL at 36 SPs and conducted continuous monitoring. During the field study for the ex-post evaluation, the evaluator confirmed cases where IOs supported by TANCAID2 were carrying out routine O&M activities in accordance with the CGL, including removal of silt and weeds from canals, rust prevention and repainting of gates, repair of minor cracks, management of irrigation service fee (ISF) records, and posting of irrigation block maps, crop calendars, and O&M plans. These consistent and systematic activities have contributed to ensuring the continued use of irrigation water.

Collaboration with TANRICE2 and TANRICE3[16]

Under TANRICE2 and the ongoing TANRICE3, farmer training has been conducted at 51 SPs under this Project. During the field study for the ex-post evaluation, the evaluator confirmed that farmers at many of the SPs where TANRICE had provided training understood the training content well and were applying it in practice. Such practices included proper land preparation before transplanting, improved nursery management, appropriate timing for planting and harvesting, adequate planting spacing, and appropriate fertilizer application. According to farmers, these training activities significantly contributed to increased yields and improved rice quality.

[15] Source: "Ex-post Evaluation Report of the Project for Capacity Development for the Promotion of Irrigation Scheme Development under the District Agricultural Development Plans (DADPs) Phase 2," stakeholder interviews, and results of the field study.

[16] The Project for Strengthening Capacities of Stakeholders of Rice Industry Development (TANRICE3) (2023–2028)

Many farmers also stated that the combined effects of the training and access to irrigation water led to higher household income. Even in SPs where only limited irrigation water was available, farmers reported that they were able to increase yields as a result of the training received.

Based on the above, collaboration and coordination between this Project and other JICA projects generated synergistic effects and complementarity. However, regarding collaboration with TANCAID2, had the collaboration modalities been explicitly planned from the design stage so that collaboration could begin when TANCAID2 commenced (midway through the first batch of this Project), it is possible that the enhancement of construction supervision capacity and the mitigation of delays in the project period could have been achieved from the first batch onward.

3.1.2.3 External Coherence

The Project was implemented as irrigation development support under the ASDP through parallel co-financing with the World Bank. Major DPs, including the International Fund for Agricultural Development (IFAD), the African Development Bank (AfDB), the United States Agency for International Development (USAID), and FAO, provided assistance in line with the government-led policy framework, supporting various stages of the agricultural value chain such as production, processing, and distribution. According to the confirmation at the time of the ex-post evaluation, the irrigation facility development under this Project functioned in a complementary manner with the above-mentioned assistance provided by other DPs. Activities conducted by those partners—such as post-harvest handling support and the provision of agricultural machinery—contributed to enhancing the effectiveness of this Project[17]. Therefore, the Project demonstrated high external coherence under the ASDP, and synergistic effects were observed with other DP-funded initiatives.

<Summary of relevance and coherence>

The Project was consistent with the development policies and development needs of the Government of Tanzania both at the time of appraisal and at the time of the ex-post evaluation. It was also aligned with the development cooperation policies of the Government of Japan and JICA. In addition, internal and external coherence were observed, and concrete results attributable to collaboration with other JICA projects and DPs were confirmed.

Therefore, its relevance and coherence are high.

[17] For example, in Mlambalasi, following the implementation of this Project, FAO provided rice harvesting machines as well as drying and storage materials, which contributed to improvements in post-harvest processes. In Bagamoyo BIDP and Msoga, the construction of warehouses and the installation of rice milling machines by other DPs enabled proper storage and processing of the increased harvest resulting from irrigation development.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

At the time of appraisal, the Project envisaged the development (new construction and rehabilitation) of irrigation facilities at approximately 70 sites throughout mainland Tanzania—covering a total irrigated area of 52,800 ha and benefiting an estimated 132,000 farmers. The SPs were to be finalized after the commencement of the Project. After the Project started, a total of 107 SPs—153% of the planned number—were selected, significantly exceeding the initial plan. The SPs that had completed their preparatory procedures were allocated across the seven Zonal Irrigation Offices in a balanced manner and implemented in three batches. The civil works and procurement of equipment were implemented as planned. Due to the extension of the overall project period (described later), the period of the consulting services was also extended by 20 months. Under the consulting services, in addition to providing technical and economic reviews of design reports, drawings, and bidding documents prepared by the Zonal Irrigation Offices and district governments, the consultants developed manuals such as the Construction Supervision Manual and the Financial Management Manual, as well as a cost estimation program, thereby providing technical support to strengthen the project implementation structure.

A comparison between the planned and actual outputs is presented in Table 1, and the list of the 107 SPs is provided in the appendix.

Table 1: Comparison of Planned and Actual Outputs

Component	Plan	Actual
1) Civil Works (Construction, rehabilitation, and expansion of irrigation facilities, including headworks and main/secondary canals)	Approximately 70 sites throughout mainland Tanzania	107 sites throughout mainland Tanzania (see Appendix for details). All civil works were 100% completed in every batch. Payment completion rates were 100% for Batch 1, 99.7% for Batch 2, and 100% for Batch 3. The unpaid portion in Batch 2 resulted from the non-submission of Statements of Expenditure (SoE)[18] for Nakahuga in the Mtwara Zone. The civil works implemented were, as planned at the time of appraisal, confined to the construction, rehabilitation, and expansion of headworks and main/secondary canals.
2) Procurement of Equipment	Equipment for design and construction supervision for Zonal Irrigation Offices and district governments	Implemented as planned. See Table 2 for details of procured items.

[18] In accordance with the Project's implementation requirements, the start of each subsequent batch was conditioned on the collection of SoEs equivalent to 70% of the civil works cost from all SPs. Therefore, SoEs were collected from all SPs.

3) Consulting Services	Design and construction supervision support for Zonal Irrigation Offices and district government	The contract period, originally scheduled to end on 14 October 2017, was extended to 15 July 2019 (see "3.2.2.2 Project Period" for the reasons). Major activities included: ・ Preparation of manuals on construction supervision, quality control, progress management, safety, and quantity control ・ Preparation of a financial manual covering financial procedures, SoE management, and invoice management ・ Provision of a cost estimation program ・ Technical and economic review of design reports, drawings, and bidding documents prepared by Zonal Irrigation Offices and district governments ・ Development of bid evaluation criteria and confirmation of bid evaluation results ・ Construction supervision of civil works ・ Preparation of quarterly technical reports and the final report

Source: Documents provided by the executing agency, questionnaires collected during the ex-post evaluation, and interviews.

Table 2: Procurement of Equipment

Category	Main Items	Quantity
Heavy Machinery	Bulldozers, hydraulic excavators, wheel loaders, vibratory rollers, graders, tractor trailers, etc.	17 units
Vehicles	Dump trucks, pickups, four-wheel-drive vehicles, motorcycles, etc.	84 units
Information and Communication Equipment	PCs, printers, scanners, projectors, cameras, etc.	129 units
Peripherals and Accessories	External HDDs, UPS units, routers, USB memory sticks, memory cards, extension cables, voltage stabilizers, microphones, etc.	156 items
Software and Office Equipment	AutoCAD, GIS-related software, antivirus software, binding machines, paper cutters, cabinets, etc.	96 items

Source: Documents provided by the executing agency, questionnaires collected during the ex-post evaluation, and interviews.

3.2.2 Project Inputs

(Refer to "Comparison of the Original and Actual Scope of the Project" on the final page of the report for details.)

3.2.2.1 Project Cost

As shown in Table 3, the project cost remained within the planned amount (91%). The planned total project cost was 3,785 million yen, of which the planned total amount of the ODA loan was 3,443 million yen and the Government of Tanzania was to bear 342 million yen. The actual total project cost was 3,443 million yen, with the entire amount financed by the ODA loan and no government contribution[19]. For civil works and equipment procurement, the planned amount was

[19] It is considered that the costs for design and supervision services provided by irrigation engineers of the Zonal Irrigation Offices and District government were recorded as administrative expenses and were covered by the

2,869 million yen, while the actual amount was 3,132 million yen—263 million yen higher than planned. The consulting services also exceeded the plan, increasing from 221 million yen to 309 million yen. The costs for civil works and equipment procurement exceeded the planned amounts because, while the scope of works in the first and second batches was adjusted to fit within fixed contract amounts, the construction costs required at the time of finalizing the SPs for the third batch exceeded those amounts. In addition, the extension of the project period led to an increase in the cost of consulting services. These additional costs were covered by the contingency. As a result, the total amount of the ODA loan was 3,443 million yen, or 100% of the planned amount. These adjustments are assessed to have been appropriate.

Table 3: Planned and Actual Project Costs (Unit: million yen)

Plan			
Cost Item	ODA Loan	Tanzania	Total
Civil Works	2,731	0	2,731
Price Escalation	72	8	80
Contingencies	280	31	311
Consulting Services	221	0	221
Procurement of Equipment	138	0	138
Administration Cost	0	303	303
Import Taxes	0	0	0
Interest During Construction (IDC)	1	0	1
Commitment Charge	0	0	0
Total	**3,443**	**342**	**3,785**
Actual			
Cost Item	ODA Loan	Tanzania	Total
Civil Works / Procurement of Equipment	3,132	0	3,132
Price Escalation	0	0	0
Contingencies	0	0	0
Consulting Services	309	0	309
Administration Cost	0	0	0
Import Taxes	0	0	0
IDC	2	0	2
Commitment Charge	0	0	0
Total	**3,443**	**0**	**3,443**

Source: Prepared based on documents provided by JICA (planned values) and documents provided by the executing agency (actual values).
Exchange rate: 1 Tanzanian Shilling (Tsh) = 0.0501 yen, Price escalation rates: Foreign currency: 2.1%; Local currency: 2.7%
Contingency rate: 10.0%, Cost estimation reference period: December 2012

3.2.2.2 Project Period

The project period substantially exceeded the original plan (211% of the planned duration). While the planned period was from May 2013 to March 2017 (47 months), the actual period was

Government of Tanzania. However, since the specific amount could not be calculated, it is presumed that a response of zero was provided.

from May 2013 to July 2021 (99 months) (Table 4). The factors causing the delay and the responses taken are summarized in Table 5. Although the subsequent processes improved as a result of the strengthened project implementation structure introduced from the second batch onward, the cumulative delays in the initial stages ultimately resulted in a project period more than twice as long as planned. Appropriate and concrete measures were taken to address the delay factors from the second batch onward.

Table 4: Planned and Actual Project Period

Activity	Plan	Actual
L/A	May 2013	May 2013
Approval of SPs by JICA	End of June 2013	Early August 2013
Consulting Services	December 2013 – October 2017 (46 months)	April 2014 – July 2019 (63 months)
Civil Works Contractor (including Selection)	July 2013 – March 2017 (45 months)	Batch 1: July 2014 – March 2018 Batch 2: June 2016 – July 2021 Batch 3: April 2018 – July 2021 (85 months)
Procurement of Equipment	August 2013 – February 2014 (7 months)	Batch 1: March 2014 – December 2015 Batch 2: January 2017 – December 2019 Batch 3: February 2019 – April 2020 (74 months)
Total	May 2013 – March 2017 (47 months)	May 2013 – July 2021 (99 months)

Source: Documents provided by the executing agency and JICA

Table 5: Factors for Project Period Extension and Countermeasures

Component	Main Factors	Countermeasures
Civil Works	1) Delays in finalizing detailed designs and conducting procurement procedures in some SPs. 2) Inadequate management of project-related documents by some Zonal Irrigation Offices and district governments. 3) Delays in obtaining SoEs due to mixed accounting management with district general accounts [20], as well as	The following measures to strengthen the project implementation structure were taken. [From Batch 2 onward] ・ To ensure the submission of reports, the payment of construction supervision costs (fuel and allowances) to Zonal Irrigation Offices was made conditional upon the submission of monthly reports, thereby strengthening the reporting system. ・ Printing costs for monthly documents prepared by Zonal Irrigation Offices and the NIRC Headquarters were covered. ・ Through collaboration with TANCAID2, as described in "3.1.2.2 Internal Coherence," the construction supervision and document management capacity of zonal and district staff was strengthened.

[20] Under the ASDP, projects were implemented in accordance with an administrative system in which central ministries and local governments plan and implement projects under the decentralization policy, while efforts were made to strengthen the capacities of central and local government institutions responsible for implementation. Accordingly, irrigation projects at the district level carried out as SPs were, in principle, to be procured and paid for by district administrations within this system. In addition, under the ASDP Basket Fund, the system was designed to enhance

	handwritten accounting caused by shortages of printers and paper.	・ The NIRC Headquarters reviewed all bidding drawings prior to procurement. ・ Scheme Managers were appointed for all SPs, and the NIRC regularly followed up on progress. ・ The JICA Tanzania Office directly contacted the personnel in charge of each SP and supported the collection of SoEs. [From Batch 3 onward] ・ Procurement and payment processes were shifted from district governments to centralized management by the NIRC Headquarters, thereby shortening the procurement period and the SoE collection process[20].
Procurement of Equipment	Due to a change in government policy, vehicle procurement was shifted to a centralized procurement system through the Ministry of Finance, resulting in prolonged procedures.	As this was a government policy decision, no specific countermeasures could be taken; however, procurement progress was closely monitored to ensure completion.

Source: Documents provided by the executing agency and stakeholder interviews.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

Financial Internal Rate of Return (FIRR)

At the time of appraisal, since the target SPs had not yet been determined, the EIRR was not calculated. Instead, it was stipulated that the EIRR would be calculated for each SP based on the following assumptions, and that SPs with an EIRR of 12% or higher would be selected[21].

Cost: JICA project cost (excluding taxes) and O&M costs Benefit: Revenue generated from increased crop production attributable to the JICA project Project Life: 30 years

At the time of SP selection, the EIRR was calculated, and all 107 SPs selected had an EIRR of 12% or higher[22]. In this ex-post evaluation, attempts were made to collect the necessary data in order to recalculate the EIRR for each SP. However, only a very limited number of SPs possessed data on O&M costs and crop revenue. Even among those SPs, the revenue attributable to increased crop production resulting from the JICA project was reported to be unknown. This was because

government capacity by requiring district governments to report expenditure results to the relevant line ministry, rather than submitting individual accounting documents to each DPs, and to undergo separate financial audits conducted by the Controller and Auditor General. The measures taken in the third batch—while exceptional at the time and adopted to ensure the smooth implementation of this Project—are considered to have contributed to the subsequent institutional restructuring under the NIRC, in which Regional and District Irrigation Offices were established.

[21] Source: JICA documents

[22] Source: Documents provided by the executing agency

many SPs involved rehabilitation or expansion of existing facilities, and even in the case of newly developed SPs, traditional irrigation practices had already been in place prior to the Project. In addition, crop revenue is highly influenced by annual climatic conditions and the incidence of pests and diseases, making it difficult to isolate and identify revenue solely attributable to increased crop production resulting from the JICA project. Therefore, it was not possible to collect sufficient data to recalculate the EIRR for each SP.

<Summary of efficiency>

With regard to outputs, except for the increase in the number of sites for civil works from the originally planned approximately 70 sites to 107 sites, the scope of civil works, procurement of equipment, and consulting services were implemented as planned. All outputs were delivered within the planned project cost, and the total project cost remained within the plan (91%). On the other hand, the project period significantly exceeded the original plan, reaching 211% of the planned duration, due to insufficient supervision capacity of district governments and delays in the collection of SoEs. Based on the above, the efficiency of the Project is moderately low.

3.3 Effectiveness and Impacts[23] (Rating: ②)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

As quantitative effects of the Project, six operation and effect indicators were established: (i) beneficiary area (ha), (ii) cultivated area by crop (ha), (iii) ISF collection rate (%), (iv) production of major crops (tons/year), (v) yield of major crops (tons/ha), and (vi) gross agricultural income per household (Tsh/year/household) (Table 6). The data collected for each indicator at the time of the ex-post evaluation are summarized in Table 7.

The target year was set as 2020, three years after project completion. However, as the actual completion year of the Project was 2021, the ex-post evaluation confirmed the actual values for FY2023. As a result, none of the six indicators achieved their respective targets.

[23] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 6: Operation and Effect Indicators[24]

Indicators	Baseline Value (2013)	Target Value (2020) 3 years after project completion	Actual Value (FY2023) 2 years after project completion
Beneficiary area (ha)	15,800	52,800	24,049*1
Cultivated area by crop (ha)	50,688	79,200	38,413*2
ISF collection rate (%)	15-75	70	17 out of 107 SPs (16%) achieved an ISF collection rate of 70% or higher
Production of major crops (tons/year)	51,480	242,880	133,322*3
Yield of major crops (tons/ha)	2.0	4.0	3.2*4
Gross agricultural income per household (Tsh/year/household)	512,150	1,718,300	1,593,582*5

Source: Baseline and target values were derived from documents provided by JICA. Actual values were obtained from a web-based questionnaire survey conducted at the time of the ex-post evaluation, covering a total of 67 District Irrigation Offices responsible for all 107 SPs, as well as interviews with District Irrigation Offices and IOs. The areas were not measured directly at the time of the ex-post evaluation. Regarding the baseline and target values for "gross agricultural income per household," the Ex-ante Evaluation document presented these figures in Japanese yen (baseline: 30,610 yen/year/household; target: 102,700 yen/year/household); however, this evaluation adopted the figures denominated in Tanzanian shillings as presented in the Project Completion Report.

Note1: It should be noted that FY2023 experienced lower yields than usual in many areas due to weather conditions.

Note2: As Tanzania's fiscal year starts in July, the data obtained at the time of the ex-post evaluation were recorded on a fiscal-year basis. Accordingly, only the actual values are presented for FY2023.

*1: Total irrigated area of all 107 SPs; equivalent to 46% of the target value.

*2: The total cultivated area for the 101 SPs for which data were available was 36,280 ha. As the number of SPs differs from that used for the target value, the figure shown in the table is an estimated value converted to 107 SPs based on the average value for the 101 SPs (359 ha), to allow comparability.

*3: The total production volume for the 90 SPs for which data were available was 112,132 tons/year. As the number of SPs differs from that used for the target value, the figure shown in the table is an estimated value converted to 107 SPs based on the average value for the 90 SPs (1,246 tons), to allow comparability.

*4: Average value for the 74 SPs for which rice was included among major crops and yield data were available.

*5: Average value for the 63 SPs for which data were available.

[24] The baseline values were estimates derived from data from a limited number of candidate sites or figures cited from other reports. The target value for the beneficiary area was based on the aggregated total of the 70 candidate sites identified at the time of appraisal, while the target values for the other indicators were set based on the estimated baseline values. Whether the targets were overly ambitious cannot be determined without confirming the basis used at the time of target setting. However, neither the stakeholder interviews conducted during this evaluation study nor the documents provided clarified the underlying rationale; therefore, no definitive judgment can be made. In addition, the baseline values were not established based on actual performance data from the 70 candidate sites. Moreover, the final set of 107 SPs implemented under the Project differed from the initially identified candidate sites. Accordingly, it is not appropriate to directly compare the baseline values with the actual values. Although the Ex-ante Evaluation document stated that the baseline and target values would be reviewed after the selection of SPs, such a review was not conducted in practice.

Table 7: Data Collected for Each Indicator in the Ex-post Evaluation

Indicators	Data Collected for Each Indicator in the Ex-post Evaluation
Beneficiary area (ha)	The irrigated area of each SP in FY2023. This represents the total of: (i) the irrigated area increased by the Project; (ii) the existing irrigated area (including areas served by facilities rehabilitated under the Project); and (iii) the area increased through rehabilitation and expansion conducted after the JICA project[25].
Cultivated area by crop (ha)	The total annual cultivated area (ha) for all crops cultivated at each SP in FY2023 (classified into rice, maize, beans, vegetables and fruit crops, and other crops). In the case of double cropping or multiple cropping, cultivated areas in the rainy season and dry season were aggregated. Both irrigated and rain-fed cultivation were included, as it was difficult to obtain data disaggregated by irrigation and rain-fed conditions.
ISF collection rate (%)	Based on ISF collection rate data obtained for each SP, the proportion of SPs that achieved the target value of 70% was calculated.
Production of major crops (tons/year)	The total annual production (tons) of all crops cultivated at each SP in FY2023 (classified into rice, maize, beans, vegetables and fruit crops, and other crops). In the case of double cropping or multiple cropping, production in the rainy season and dry season was aggregated. Both irrigated and rain-fed productions were included, as it was difficult to obtain data disaggregated by irrigation and rain-fed conditions.
Yield of major crops (tons/ha)	Rice yield (tons/ha) in FY2023 for SPs where rice cultivation had been practiced prior to the Project.
Gross agricultural income per household (Tsh/year/household)	Gross agricultural income per household for each SP, calculated as the average of production volume by crop × crop price at farm-gate level.

Beneficiary Area

Irrigated area data for FY2023 were obtained for all 107 SPs, and the total beneficiary area was calculated. The total beneficiary area for the 107 SPs amounted to 24,049 ha, which was substantially lower than the target value of 52,800 ha (46% of the target). It should be noted that the target value of 52,800 ha was set prior to the final selection of SPs. As it is more appropriate to compare planned and actual values for the SPs that were ultimately selected, a comparison was made between the planned beneficiary area and the actual beneficiary area for the 96 SPs (out of the 107 selected SPs) for which planned data were available. As a result, the planned total beneficiary area was 42,873 ha, while the actual beneficiary area was 22,837 ha, corresponding to 53% of the planned value, which is also substantially below the plan.

Among the 107 SPs, there were 13 SPs where the beneficiary area was zero and the irrigation facilities were not functioning at all. The main factors[26] are as follows:

・ Continued inability to abstract and distribute water as planned after project completion,

[25] As the Government of Tanzania has continued to expand and rehabilitate these SPs, the actual values at the time of the ex-post evaluation include irrigated areas that were expanded or rehabilitated after the completion of this Project.

[26] Among the natural disasters, impacts caused by disasters of an extraordinary scale that could not normally be anticipated are considered external factors. In many cases, however, the impacts were attributable to seasonal or recurrent weather conditions. Relocation is also regarded as an external factor. In all cases, these factors are described as reasons why the irrigation facilities are currently not in operation.

resulting in deterioration of facilities without sufficient utilization: 4 SPs

- Inability to use facilities due to inadequate O&M of reservoirs or pumps: 3 SPs
- Natural disasters (e.g., changes in river courses due to flooding that prevented water abstraction, or damage to facilities): 5 SPs
- Relocation following the designation of the project site as part of a national park after project implementation: 1 SP

Cultivated Area by Crop

Attempts were made to obtain data on the total annual cultivated area by crop for FY2023 for all 107 SPs, including cultivated areas in both the rainy and dry seasons and under both irrigated and rain-fed conditions. The total cultivated area for the 101 SPs for which data were available amounted to 36,280 ha[27]. As complete data for all 107 SPs could not be obtained, an estimated value for 107 SPs (38,413 ha) was calculated by extrapolating based on the average value for the 101 SPs, and this was compared with the target value of 79,200 ha. As a result, the target was not achieved (49% of the target).

This indicator is influenced by external factors such as annual weather conditions, the incidence of pests and diseases, and market prices, as well as by farmers' decision-making based on these factors. However, as the achievement of this indicator fundamentally depends on the implementation of irrigated agriculture as planned, the failure to achieve the target is considered to be largely attributable to the shortfall in the beneficiary area. In addition, the fact that the target value was not reset based on the actual baseline values of the 107 SPs selected under the Project is also considered to have contributed to the non-achievement.

ISF Collection Rate

The target for this indicator was that the average ISF collection rate of IOs across the 107 SPs would reach 70% or higher. At the time of the ex-post evaluation, ISF collection rate data were obtained for all 107 SPs. The results show that 16% of the SPs achieved the target value of 70%, indicating a low level of target achievement. Specifically, 20% of the SPs recorded collection rates between 30% and 70%, while 64% of the SPs recorded collection rates of less than 30% (Figure 1). For the 17 SPs that achieved an ISF collection rate of 70% or higher, the average rice yield was 4.5 tons/ha, and the gross agricultural income per household was 2,050,909 Tsh, both of which were clearly higher than the overall averages. This suggests that farmers in these SPs perceive tangible benefits from the irrigation facilities and are generating sufficient income to be able to pay ISF.

[27] Of this total, the cultivated area for rice amounted to 24,759 ha, accounting for 68% of the overall cultivated area.

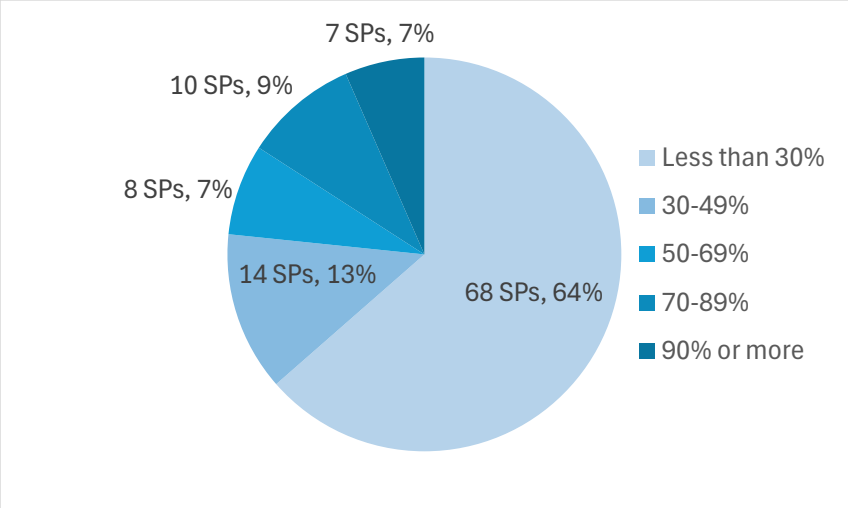


Figure1: ISF Collection Rate

Source: Web-based questionnaire survey conducted at District Irrigation Offices and interviews with IOs at the time of the ex-post evaluation.

Note: Figures in the chart indicate the number of applicable SPs, and percentages represent the proportion out of the total 107 SPs.

Production of Major Crops

Attempts were made to obtain data on the total production of crops for FY2023 for all 107 SPs, including production in both the rainy and dry seasons and under both irrigated and rain-fed conditions. The total production for the 90 SPs for which data were available amounted to 112,132 tons. As complete data for all 107 SPs could not be obtained, an estimated value for 107 SPs (133,322 tons/year) was calculated by extrapolating based on the average value for the 90 SPs, and this was compared with the target value of 242,880 tons/year. As a result, the target was not achieved (55% of the target). This indicator is influenced by external factors such as annual weather conditions, the incidence of pests and diseases, and market prices, as well as by farmers' decision-making based on these factors. However, as the achievement of this indicator fundamentally depends on the implementation of irrigated agriculture as planned, the failure to achieve the target is considered to be largely attributable to the shortfall in the beneficiary area. In addition, the fact that the target value was not reset based on the actual baseline values of the 107 SPs selected under the Project is also considered to have contributed to the non-achievement.

Yield of Major Crops

At the time of appraisal, the target value for this indicator was set based on the assumed yield of rice. Accordingly, rice yield data for FY2023 were collected for SPs where rice cultivation was practiced, and the average value was calculated. The average rice yield for the 74 SPs where rice was included among the major crops and yield data were available was 3.2 tons/ha, which did not achieve the target value of 4.0 tons/ha (80% of the target). This indicator is influenced by external

factors such as annual weather conditions and the incidence of pests and diseases. However, as its achievement fundamentally depends on the implementation of irrigated rice cultivation as planned, the shortfall is considered to be largely attributable to the insufficient achievement of the beneficiary area. In addition, the fact that the target value was not reset based on the actual baseline values of the 107 SPs selected under the Project is also considered to have contributed to the non-achievement. Compared with the achievement rates for the beneficiary area and cultivated area indicators, the achievement rate for rice yield was relatively higher. This is considered to reflect the positive effects of agricultural extension and farmer training provided under TANRICE and by the Government of Tanzania, as described above.

Gross Agricultural Income per Household

Attempts were made to obtain data on the average gross agricultural income per household for all 107 SPs, calculated as (production volume by crop × crop price). The average value for the 63 SPs for which data were available was 1,593,582 Tsh, which did not achieve the target value of 1,718,300 Tsh (93% of the target). As this indicator cannot be achieved unless irrigated agriculture is implemented as planned—leading to increases in cultivated area and production volume—the shortfall is considered to be largely attributable to the insufficient achievement of the beneficiary area. In addition, the fact that the target value was not reset based on the actual baseline values of the 107 SPs selected under the Project is also considered to have contributed to the non-achievement. Gross agricultural income is influenced by a complex combination of factors, including farmers' or farmers' groups' (such as IOs) marketing strategies, annual weather conditions, and the incidence of pests and diseases. Therefore, sufficient information was not available to clearly identify the reasons why the achievement rate for this indicator was relatively higher than those for the beneficiary area and cultivated area indicators.

As described above, since the target values were not reset after the selection of the target SPs, direct comparison with the actual values is difficult. However, as planned beneficiary area data were available for 96 of the selected SPs, an analysis of the factors contributing to the shortfall was conducted focusing specifically on the beneficiary area.

For the 83 SPs[28] where the planned irrigated area had not been achieved as of the time of the ex-post evaluation, the main factors were examined based on a questionnaire survey of District Irrigation Offices and field studies. While it is considered that multiple factors overlapped in all SPs, among the 69 SPs that provided responses, 17 SPs (25%) cited insufficient construction funding as the primary reason. These SPs reported that they were unable to implement the planned scope or contents of works, resulting in water abstraction and distribution not being carried out

[28] This includes the above-mentioned 13 SPs.

as planned[29]. Other factors included damage to facilities or inability to abstract water due to external factors such as flooding or changes in river courses (16 SPs; 23%), and inadequate O&M (7 SPs; 10%). For the remaining SPs, it was difficult to identify a single dominant factor, or detailed information was unavailable.

As this Project was implemented as a sector loan, the Tanzanian side examined candidate SPs based on the selection criteria after project commencement, resulting in the selection of 119 candidate SPs, of which 107 SPs were ultimately implemented. The selection of a number of SPs exceeding the assumptions made at the time of appraisal reflects both the high demand for irrigation development across the country and the executing agency's intention to allocate the budget to as many regions and districts as possible. Given the need to respect the ownership of the executing agency, it is inferred that a simple reduction in the number of SPs would have had limited practical effectiveness.

On the other hand, among the 96 SPs for which planned data were available, the planned beneficiary area was not achieved in 83 SPs, and in some cases, due to funding constraints, canals did not reach farmlands or pumps necessary for water distribution were not installed, resulting in insufficient water abstraction and distribution capacity. Considering that topographical conditions, water sources, and existing infrastructure varied significantly across SPs, that it is difficult to accurately estimate required costs prior to detailed design, and that, under the sector loan modality, SPs are finalized only after project commencement, there was room for improvement in the process at the detailed design stage following SP selection. In particular, improvements could have been made in verifying whether the designs, scope of works, and required funding levels were sufficient to secure the functionality necessary to achieve the planned beneficiary areas.

3.3.1.2 Qualitative Effects (Other Effects)

At the time of appraisal, poverty reduction and improvement of living conditions were envisaged as qualitative effects of the Project. Poverty reduction is addressed under Impact in the following section. In order to examine how improvements in living conditions have actually occurred as a result of farmers' utilization of the irrigation facilities developed under this Project for irrigated rice cultivation and upland cropping, the following items were set as evaluation items for

[29] With regard to the causes of insufficient construction funding, information was not available through the ex-post evaluation study to determine whether the shortfall resulted from: (i) a reduction in the scope of works specified in the specifications due to budget constraints; (ii) a reduction in the scope of works at the bidding stage because contract prices exceeded the estimated cost; or (iii) cost increases during construction (including those due to force majeure), for which contract variations could not be made due to budget limitations. In addition, detailed information on which cost components tended to be insufficient was not obtained. For the 17 SPs that cited insufficient construction funding as the main factor, the distribution by construction cost scale, planned beneficiary area, zone, and batch was examined; however, no specific pattern was identified. It is therefore considered that the underlying causes of funding shortfalls differed across SPs and were attributable to a combination of factors, including site-specific topographical and water source conditions, the status of existing infrastructure, the scope of works, and the type of irrigation system.

qualitative effects.

Implementation Status of Irrigated Rice Cultivation and Upland Cropping

- Water availability in both the rainy and dry seasons, compared with the pre-project situation
- Cultivation conditions in both the rainy and dry seasons compared with the pre-project situation (number of harvests and yields (number of bags per acre[30]))
- Factors contributing to, or constraining, observed changes

Improvements in Living Conditions of Farmers in the Target Areas

- Food availability compared with the pre-project situation (changes in frequency of rice consumption, increase and diversification of food items, etc.)
- Labor time related to water supply compared with the pre-project situation

To assess the above items, field studies were conducted at 25 SPs across the seven zones nationwide in Tanzania, as shown in the table below. Interviews were conducted with 24 representatives of IOs and 74 farmers. In selecting farmers for interviews, efforts were made, to the extent possible, to include farmers from upstream, midstream, and downstream areas within each SP. In addition, interviews were conducted with 22 officers from the District Irrigation Offices responsible for the respective SPs.

Table 8: Field Study and Interview Records

Zone	SP Name	Type of Works	Batch	Water Abstraction Method	Main Crops	Collaboration with other JICA projects	Interviewees
Kilimanjaro	Kikafu Chini	Rehabilitation /Expansion	2	River (Gravity)	Rice	TANCAID	IO, 3 Farmers
	Kivulini	Rehabilitation /Expansion	1, 2	River (Gravity)	Rice	TANCAID	IO, 3 Farmers
	Kirya	Rehabilitation /Expansion	1	River (Gravity)	Rice	TANRICE	IO, 3 Farmers
Mbeya	Mlambalasi	Rehabilitation /Expansion	2	River (Gravity)	Rice	TANCAID	IO, 2 Farmers
	Isaka	New	1	Seasonal river*1 (Gravity)	Onions, Maize, Beans	—	IO, 2 Farmers
	Mgambalenga	Rehabilitation /Expansion	1,2&3	River (Gravity)	Maize, etc.	TANRICE	IO, 2 Farmers
Mwanza	Maliwanda	Rehabilitation /Expansion	1, 3	Reservoir (Gravity)	Rice	TANRICE	IO, 3 Farmers
	Irienyi	Rehabilitation /Expansion	1	Reservoir (Gravity)	Rice	TANRICE	IO, 2 Farmers

[30] Tanzanian farmers usually measure crop yields in terms of the number of bags per acre (1 acre = 0.4047 ha). The weight per bag is 80–90 kg for rice, and 100–120 kg for maize and beans.

	Nyida	Rehabilitation	3	Seasonal river (Gravity)	Rice	TANCAID	IO, 4 Farmers
	Nyenze	Rehabilitation /Expansion	1	Seasonal river (Solar pump lift)	Rice	—	3 Farmers*2
Mtwara	Narunyu	Rehabilitation	1	River (Gravity)	Rice	—	IO, 3 Farmers
	Kinyope	Rehabilitation	1, 3	River (Gravity)	Rice	TANRICE	IO, 4 Farmers
	Ng'apa	Rehabilitation /Expansion	1	River (Gravity)	Rice, Maize	—	IO, 3 Farmers
	Kitere	Rehabilitation /Expansion	1	Reservoir (Gravity)	Rice	TANRICE	IO, 3 Farmers
Morogoro	Bagamoyo BIDP	Rehabilitation /Expansion	2	River (Pump lift)	Rice	TANCAID	IO, 3 Farmers
	Msoga	New	2	Reservoir (Pipeline)	Vegetables	—	IO, 3 Farmers
	Mongomole/ Kwala	Rehabilitation /Expansion	2	Reservoir (Pipeline)	Rice, Maize	—	IO, 3 Farmers
	Nyamweke	New	2	Reservoir (Pipeline)	Rice	TANCAID	IO, 4 Farmers
Tabora	Mwamapuli	Rehabilitation /Expansion	2	Reservoir (Gravity)	Rice	TANRICE	IO, 3 Farmers
	Ruhwiti	Rehabilitation	2	Seasonal river (Gravity)	Rice	TANCAID TANRICE	IO, 3 Farmers
	Inala	Rehabilitation /Expansion	1	Reservoir (Gravity)	Rice	TANRICE	IO, 3 Farmers
	Lusu	Rehabilitation	2	Seasonal river (Gravity)	Rice	TANRICE	IO, 3 Farmers
Dodoma	Mtazamo	Rehabilitation /Expansion	2	Seasonal river (Gravity)	Rice	TANCAID	IO, 3 Farmers
	Kidoka	New	2	Deep well (Pump)	Vegetables	—	Former IO*2, 2 Farmers
	Msagali	Rehabilitation /Expansion	1	Seasonal river (Gravity)	Rice	—	IO, 4 Farmers
Total: 25 SPs; IO representatives: 24; Farmers: 74; District Irrigation Office officers: 22							

Source: Prepared by the evaluator

*1 A seasonal river refers to a river whose flow increases during the rainy season but weakens or dries up during the dry season; therefore, year-round water abstraction is difficult.

*2 The irrigation facilities were not functioning and the IO had already been dissolved (Nyenze), or interviews were conducted with a former IO representative (Kidoka), as interviews with the current IO were not possible.

The interview results are summarized as follows.

Implementation Status of Irrigated Rice Cultivation and Upland Cropping

Based on the results of the field studies at 25 SPs, irrigation facilities were operational at 18 SPs, while 7 SPs were non-operational at the time of the ex-post evaluation. For these non-operational SPs, the reasons varied by site and included factors such as natural disasters, changes in water source conditions, sedimentation, facility layout, and O&M arrangements. Table 9 summarizes the situation of these seven non-operational SPs.

Table 9: Status of Non-operational SPs at the Time of the Ex-post Evaluation[31]

SP Name	Reason for Non-operation	Situation Confirmed on Site	NIRC's Response
Nyenze	Insufficient intake capacity due to change in intake method	The original plan was gravity intake via a headworks; however, due to budget constraints, the intake method was changed to a solar pump system. The pump capacity was insufficient, irrigation was never implemented as planned, and the facilities have since been damaged.	Reconsideration of an appropriate intake method, including possible reversion to gravity intake; rehabilitation to be considered once funding is secured.
Narunyu	Facility damage caused by flooding (natural factor)	Facilities under construction were damaged by flooding in 2014. Although basic design was revised thereafter, construction was not resumed, and irrigation use remains impossible.	Budget for construction of new irrigation facilities has been secured.
Kinyope	Difficulty in water distribution due to inappropriate canal alignment	The canal is located at a lower elevation than the farmland, making gravity distribution difficult. The facilities have not been used since completion and have deteriorated.	Reservoir construction underway; rehabilitation works under planning.
Kitere	Inability to abstract water due to sedimentation	Sediment accumulation in the reservoir has reduced storage capacity, making sufficient water abstraction impossible.	Drilling of boreholes underway due to insufficient reservoir water supply.
Mongomole/ Kwala	River course change caused by flooding (natural factor)	After land leveling following a water supply test, subsequent flooding caused a change in the river course, making water abstraction impossible. The facilities have never been operated, and some equipment has been stolen.	Surveys planned to reset the intake location considering the changed river course.
Nyamweke	Pump damage caused by flooding (natural factor)	Flooding that occurred shortly after project completion damaged the pump, making water abstraction impossible. The facilities have never been operated and have deteriorated due to lack of maintenance.	Survey planned.

[31] The seven SPs presented in this table represent those for which the operational status of irrigation facilities was directly confirmed during the field studies conducted at 25 SPs. Among these seven SPs, Kinyope has a non-operational irrigation facility developed under this Project; however, irrigation is still being practiced through traditional canals, and therefore its beneficiary area is not zero. In addition, Kitere was non-operational at the time of the field study (March 2025), but a beneficiary area of 40 ha was reported for FY2023. For these reasons, of the 13 SPs previously reported as having zero beneficiary area, only five SPs overlap with the seven SPs presented in this table.

Kidoka	Insufficient pumping capacity from deep well and excessive operation cost	Pumping volume from the deep well was lower than expected, and pump operation costs were excessive for the IO. Operation was suspended approximately one year after project completion.	Rehabilitation planned; budget not yet secured.

Source: Interviews with District Irrigation Offices, respective IOs, and farmers, as well as field observations. Information on NIRC's response was obtained through interviews with NIRC.

As described above, in SPs where irrigation utilization was not taking place, in addition to site-specific factors such as natural disasters and O&M conditions, structural constraints related to the implementation arrangements may have been one of the contributing factors. Under this Project, the implementation arrangements followed the basket fund approach, whereby detailed design and construction supervision were carried out primarily by the Zonal Irrigation Offices and district governments. In particular, for SPs that required technical judgment—such as the selection of intake methods and facility layout—SPs that required prompt responses following natural disasters, and SPs where careful prior consideration of operation costs and water source conditions was essential, there were situations in which local implementing agencies faced difficulties in conducting sufficient technical examination and follow-up on an SP-by-SP basis, given that a large number of SPs were widely dispersed across the country. Furthermore, although technical support was provided through the Project's consulting services and collaboration with TANCAID, the large number of SPs and their wide geographic distribution may have limited the extent of follow-up that could be undertaken. These constraints inherent in the implementation arrangements may have been one of the factors contributing to differences in the extent to which irrigation effects materialized across SPs.

For the following evaluation items, the conditions at the 18 SPs that were operational at the time of the ex-post evaluation are summarized.

<Water Availability in Both the Rainy and Dry Seasons Compared with the Pre-project Situation>

Table 10 presents the status of water availability during the rainy and dry seasons at the 18 SPs. Based on the results of interviews and field studies, improvements in water availability compared with the pre-project situation were reported at 16 out of 18 SPs during the rainy season and at 7 out of 18 SPs during the dry season. Reported improvements included:

(1) increased water distribution volumes following canal development/improvement;
(2) stabilization of water supply, enabling water to reach downstream farmers; and
(3) the introduction of irrigated agriculture in plots that had previously depended solely on rainfall.

It should be noted that water availability based on rainfall differs significantly between the rainy and dry seasons; accordingly, what is perceived as an "improvement" also differs by season.

During the rainy season, many SPs had already received a certain level of water supply prior to the Project, and partial improvements were not necessarily perceived by farmers as improvements. In contrast, during the dry season, many SPs had received little to no water supply before the Project. Therefore, in the dry season, cases marked as "△" were perceived by farmers as improvements, even where water availability was partial, because such supply had not existed prior to the Project.

Table 10: Water Availability During the Rainy and Dry Seasons by SP

Zone	SP Name	Rainy Season	Dry Season
Kilimanjaro	Kikafu Chini	○	△(insufficient for downstream farmers)
	Kivulini	○	○
	Kirya	○	△(insufficient for some farmers)
Mbeya	Mlambalasi	○	○
	Isaka	○	×(intake from a seasonal river)
	Mgambalenga	△(only a small number of farmers)	×
Mwanza	Maliwanda	○	×(due to sedimentation in the reservoir)
	Irienyi	○	×(due to sedimentation in the reservoir)
	Nyida	○	×(intake from a seasonal river)
Mtwara	Ng'apa	○	○
Morogoro	Bagamoyo BIDP	○	○
	Msoga	○	×(due to sedimentation in the reservoir)
Tabora	Mwamapuli	○	×(not used during the dry season; sedimentation not severe)
	Ruhwiti	○	×(intake from a seasonal river)
	Inala	○	○
	Lusu	○	×(intake from a seasonal river)
Dodoma	Mtazamo	○	×(intake from a seasonal river)
	Msagali	△(only one-quarter of target farmers)	×(intake from a seasonal river)

Legend
○: Water supply required for irrigation is generally secured (e.g., increased water volume, stabilized supply, transition from rain-fed to irrigated agriculture).
△: Water supply has improved in some areas or for some farmers, or a certain level of supply exists but remains insufficient.
×: Water supply is insufficient, making irrigation difficult or not practiced.

At Kikafu Chini, Mlambalasi, and Bagamoyo BIDP, the IOs were well organized and conducted regular activities such as cleaning canals and surrounding areas, repainting gates, and repairing minor cracks. At these SPs, even when flooding or partial deterioration of facilities occurred, IO members were able to continue water supply through activities such as removing sediment and repairing or replacing minor equipment.



Photo 1: Main canal developed under the Project. Weekly cleaning activities are carried out by IO members every Monday.
Site: Kikafu Chini
(Source: Photograph taken by the evaluator)



Photo 2: Canal where cracks have been repaired by IO members. The white areas indicate sections repaired with cement.
Site: Mlambalasi
(Source: Photograph taken by the evaluator)

The factors underlying the situation at the two SPs where water supply was available only to a limited number of target farmers even during the rainy season are summarized below.

Mgambalenga:

At the time of project completion, canals required to convey water to farmland had not yet been constructed; consequently, the commencement of irrigation use was delayed until 2023. At the time of the ex-post evaluation, only a very small number of farmers located upstream and not enrolled in the IO were practicing irrigation on a limited scale. As a result of the time lag before utilization began, the facilities have deteriorated: trees and sediment have accumulated at the headworks, and weeds have grown extensively along the canals. Since IO members have not yet benefited from irrigation, O&M activities appear to be insufficient.

Msagali:

Following flooding in 2018, changes in the river course significantly reduced the intake volume, with the result that only approximately one-quarter of the target farmers have been able to practice irrigation. Consequently, only 10–15% of farmers participate in O&M activities, and all intake gates at the weir have become non-functional due to sediment accumulation. Sedimentation in the canals has also progressed, further exacerbating the decline in intake volume, creating a negative cycle. However, the intake constraints are attributable not only to the 2018 flooding. Because some canals were constructed at elevations lower than the farmland, even immediately after project completion only about three-quarters of the planned beneficiary farmers were able to receive water. After the 2018 flooding, canal damage and leakage caused by seasonal flooding during each rainy season have continued to worsen, due in part to low-strength concrete and narrow canal design. As a result, at the time of the ex-post evaluation, irrigation was possible only

in upstream plots located along the secondary canals.

<Cultivation Conditions in Both the Rainy and Dry Seasons Compared with the Pre-project Situation (number of harvests and yields (number of bags per acre)>

Table 11 summarizes cultivation conditions during the rainy and dry seasons at the 18 SPs. At the seven SPs where irrigation water is available during the dry season, year-round harvesting has become possible through double rice cropping, or double cropping such as rice in the rainy season and maize or beans in the dry season. Compared with the pre-project situation, these SPs have achieved notable increases in yields, improvements in crop quality, and expansion of cultivated areas resulting from stabilized water supply.

Table 11: Cultivation Conditions During the Rainy and Dry Seasons by SP

Zone	SP Name	Rainy Season	Dry Season
Kilimanjaro	Kikafu Chini	○(increased yields, expanded cultivated area)	○(double rice cropping or double cropping with non-rice crops)
	Kivulini	○(increased yields, expanded cultivated area)	○(double rice cropping or double cropping with non-rice crops)
	Kirya	○(increased yields, expanded cultivated area)	○(double rice cropping or double cropping with non-rice crops)
Mbeya	Mlambalasi	○(increased yields, expanded cultivated area)	○(double cropping with non-rice crops)
	Isaka	○(increased yields)	×
	Mgambalenga	△(yield and quality improvements for a limited number of farmers)	×
Mwanza	Maliwanda	○(improved quality)	×(cultivate under rain-fed conditions)
	Irienyi	○(increased yields)	×
	Nyida	○(increased yields and quality, expanded cultivated area)	×(cultivate under rain-fed conditions)
Mtwara	Ng'apa	○	○(double cropping with non-rice crops)
Morogoro	Bagamoyo BIDP	○(increased yields)	○(double cropping possible depending on weather conditions)
	Msoga	○(increased yields)	×(cultivate under rain-fed conditions)
Tabora	Mwamapuli	○(improved yields and quality)	×
	Ruhwiti	○(improved yields and quality)	×
	Inala	○(increased yields, expanded cultivated area)	○(double cropping possible depending on weather conditions)
	Lusu	○(increased yields, expanded cultivated area)	×
Dodoma	Mtazamo	○(introduction of rice cultivation)	×
	Msagali	△(increased yields for approximately one-quarter of target farmers)	×

Improvements in Living Conditions of Farmers in the Target Areas

<Food Availability Compared with the Pre-project Situation (changes in frequency of rice consumption, increase and diversification of food items, etc.)>

Among farmers who gained access to irrigation water, the ability to secure three meals per day has been achieved, and both the quantity and nutritional balance of meals have improved significantly. Staple foods have shifted from being predominantly ugali-based to rice-based, and farmers have become able to include side dishes such as meat, fish, vegetables, and fruits. Some farmers who had previously purchased relatively expensive imported rice are now able to secure sufficient rice for household consumption and sell surplus rice. Even farmers who do not cultivate rice themselves have become able to purchase rice as a staple food using income from other crops.

<Labor Time Related to Water Supply Compared with the Pre-project Situation>

At 11 SPs, farmers reported that canal development/improvement reduced water abstraction time, enabled expansion of cultivated areas, and allowed planting at appropriate times without waiting for rainfall. Some farmers also reported that watering livestock became easier, and that increased agricultural income reduced the need for secondary jobs, allowing them to spend more time with their families. On the other hand, many farmers stated that because they had depended on rainfall prior to the Project and therefore had not engaged in water fetching, their labor time related to water supply did not change after the Project.

Based on the above, among the 25 SPs visited, irrigated agriculture was being practiced at the 18 operational SPs, although the duration and extent of irrigation water availability varied across sites. As a result of irrigated agriculture, improvements in cultivation conditions and living conditions were confirmed at these SPs. In contrast, at the seven SPs where facilities were not operational, no qualitative effects of the Project were observed.

<Summary of Effectiveness>

All operation and effect indicators fell short of their target values, and the achievement rate for the beneficiary area was limited to 53%. Accordingly, the scale of irrigated agriculture achieved under the Project remains smaller than originally planned. On the other hand, among the SPs covered by the field studies, qualitative effects such as improved cultivation conditions and improved living conditions were confirmed at the 18 SPs where irrigated agriculture was being practiced. This indicates that the Project's effects have materialized with certainty in areas where irrigation facilities are functioning. However, considering the achievement rate of the beneficiary area, the number of farmers who are actually able to utilize irrigation water remains limited compared with the scope envisaged in the project plan.

3.3.2 Impacts

3.3.2.1 Intended Impacts

At the time of appraisal, poverty reduction was positioned as a qualitative effect; however, it is more appropriately assessed as an impact. In this ex-post evaluation, whether the Project contributed to poverty reduction was assessed based on the following aspects at each SP: introduction of higher-value crops, changes in household income, changes in expenditure patterns, and diversification of local businesses. The sources of information were the same as those used in "3.3.1.2 Qualitative Effects" described above.

<Introduction of Higher-value Crops>

Among the 18 operational SPs, the availability of irrigation water enabled six SPs to shift to rice cultivation, while five SPs introduced maize, beans, tomatoes, and other vegetables. As some SPs introduced multiple crops, the total number of SPs that introduced higher-value crops was ten.

<Changes in Household Income>

Based on the field studies conducted at the 18 SPs, improvements in household income among farmers practicing irrigated agriculture were confirmed at 17 SPs, excluding Mgambalenga. Factors contributing to income increases included crop shifts from other crops to rice enabled by irrigation, increased yields, higher sales prices resulting from improved crop quality, and expansion of cultivated areas. Many farmers also attributed yield increases not only to the availability of irrigation water but also to agricultural extension and training provided by JICA technical cooperation projects and the Government of Tanzania.

<Changes in Household Expenditure Patterns>

At all 17 SPs where income increases were observed, changes in household expenditure patterns were also reported. Frequently cited examples included the following:

- Increased spending on education, such as sending children to better schools (including private schools and universities), purchasing uniforms and school supplies, and saving for school fees;
- Increased investment in housing, including replacing mud-walled houses with brick houses, home renovations, purchase of new houses, and installation of wells or electricity;
- Increased spending on agricultural activities, such as replacement of farm tools, purchase of new agricultural machinery (e.g., power tillers and rice mills), purchase of fertilizers, acquisition of farmland, and hiring of labor for farm work;
- Purchase of durable goods and assets, including bicycles, motorcycles, televisions, and

livestock.

<Diversification of Local Businesses>

At 13 SPs, respondents reported that diversification of local businesses had been observed in connection with the Project. Specific changes included the following:

- An increase in small retail businesses for vegetables and rice, as well as shops selling processed agricultural products, leading to expanded employment opportunities;
- An increase in the number of farmers owning rice milling machines, enabling the sale of value-added rice and resulting in an increase in rice traders;
- With increased production volumes, a growing number of buyers from other regions have come to purchase agricultural products, and rice sales have expanded to Kenya and Dar es Salaam;
- Members of the younger generation have used income earned from agriculture to purchase motorcycles and engage in transport and delivery services;
- Women's groups have emerged that operate food stalls, made possible by improved food security and increased capacity to invest in new business activities.

Based on a comprehensive assessment of the above findings, it can be evaluated that the Project contributed to poverty reduction among small-scale farmers at 17 SPs.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

At the time prior to JICA's loan approval, individual SPs had not yet been identified, and the Project was expected to include SPs that could potentially have environmental impacts. Accordingly, under *JICA Guidelines for Environmental and Social Considerations (April 2010)*, the Project was classified as Category FI. The Government of Tanzania has established an "Environmental and Social Management Framework (ESMF)" as the framework for environmental and social impact assessment for all projects implemented under the ASDP. Following the selection of SPs, environmental categorization was conducted for each SP in accordance with the ESMF. As a result, all SPs were classified as Category C, as they were expected to have minimal or negligible environmental impacts. Consequently, no SP required environmental mitigation measures. During the project implementation period, NIRC conducted monitoring, and it was confirmed that no environmental impacts occurred and no complaints were raised by local residents[32].

After project completion, District Irrigation Offices have continued to visit SPs on a regular

[32] Source: Documents provided by the executing agency and interviews with NIRC Headquarters.

basis and respond to environmental issues and reports from local residents. Based on interviews and field studies conducted at the time of the ex-post evaluation, the following operational considerations were identified:

- In interviews with some farmers, increases in the use of agrochemicals and chemical fertilizers, as well as inappropriate disposal of pesticide containers, were reported. According to interviews with district irrigation engineers in the surveyed areas, water quality testing to assess the impacts of agrochemicals and fertilizers is not conducted on a regular basis; instead, District Irrigation Offices respond on a case-by-case basis when potential problems are suspected.
- At Kivulini in the Kilimanjaro Zone, field observations confirmed that a combination of insufficient drainage capacity in certain sections and sediment inflow caused by illegal cultivation resulted in water stagnation and widespread tree fall[33], which in turn caused cracks in water distribution facilities. Rehabilitation works financed by World Bank funds are currently under planning, and a comprehensive review, including drainage design, is required.

2) Resettlement and Land Acquisition

According to NIRC Headquarters, no involuntary resettlement or land acquisition associated with the Project occurred, and no related complaints were reported. As no resettlement had been envisaged from the outset, a Resettlement Policy Framework (RPF) was not formulated, following discussions between NIRC and JICA[34].

3) Gender

Gender Power Balance within IOs

Among the 25 SPs visited during the field studies, 23 IOs remained organized at the time of the ex-post evaluation. In all 23 IOs, women's membership was recognized and women were in fact members. Interviews with female IO members indicated that they did not experience inequality or disadvantage based on gender in IO activities, and that O&M tasks, such as facility cleaning, were not disproportionately borne by women. In addition, some women members played central roles within IOs, and during interviews there were no indications that opportunities to speak or participate were limited to men.

[33] At this SP, two canals—the Kivulini main canal and the Boghoyo main canal—as well as their branch canals, were developed; however, fallen trees were observed in the forested area along the Kivulini main canal and its branch canals.
[34] Source: Documents provided by the executing agency.

Power Balance within Households

At the 17 SPs where irrigated agriculture led to income improvements, many interviewed households reported improvements in women's power balance within the household. Increased agricultural income promoted cooperation between spouses, joint household financial management, and greater participation of women in decision-making. Even in female-headed households, stable income enabled women to support their families more effectively.

It should be noted that TANRICE and TANCAID have implemented gender-related training that includes promotion of women's participation in IOs, enhancement of women's involvement in decision-making within IOs and households, and encouragement of men's participation in domestic work. Such training may have contributed to the gender-balanced IO management and increased participation of women in decision-making observed above.

4) Well-being and Human Rights

At the 17 SPs where irrigated agriculture led to improvements in income and living conditions, the Project is assessed to have had positive impacts on people's well-being and respect for human rights. Stable access to agricultural water provided farmers with a sense of security, while income improvements resulting from irrigated agriculture contributed to better nutritional balance in diets, improved access to medical services, and improvements in housing conditions. As a result, farmers were able to achieve more stable and improved living standards.

5) Unintended Positive / Negative Impacts

At several SPs, damage to irrigation canals caused by livestock was observed, leading to conflicts between pastoralists or livestock owners and farmers. In many cases, IO representatives attempted to mediate these conflicts through dialogue and the establishment of local rules. However, in some instances, the damage—such as destruction of valves or canals—was beyond the financial capacity of the IOs to repair, and requests were made for intervention by NIRC.

<Summary of Impact>

Positive impacts on poverty reduction, gender equality, and people's well-being were confirmed among farmers who were able to utilize irrigation water. However, among the 18 SPs where irrigation facilities were operational, data on planned irrigated areas were available for 17 SPs, and the achievement rate of the actual irrigated area against the planned total area was 56%. This indicates that the scope of farmers actually benefiting from irrigation water remains limited compared with the original plan. During the Project implementation period, no negative environmental impacts or issues related to resettlement or land acquisition were observed. In the

post-completion operational phase, however, some environmental considerations requiring attention were identified.

<Summary of Effectiveness and Impact>

Based on the above, the extent to which the Project's intended effects have materialized is limited compared with the original plan. Therefore, effectiveness and impacts of the Project are moderately low.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

As mentioned in "3.1.1.1 Consistency with the Development Plan of Tanzania, " the Medium Term Strategic Plan (2023/2024–2027/2028) formulated in 2022 demonstrates a strong policy commitment to expanding irrigated areas through both the development of new irrigation schemes and the rehabilitation of existing ones. In the irrigation sector, a comprehensive framework of laws, policies, and technical guidelines has been established, including the National Irrigation Policy (2010), the National Irrigation Act (2013), the Revised National Irrigation Master Plan (2018), the National Irrigation Development Strategy, the Medium Term Strategic Plan (2022), and the CGL, which serve as technical guidelines for irrigation development.

Institutionally, since 2019, the former zonal system has been restructured into a new institutional arrangement under the NIRC, whereby Regional Irrigation Offices (RIOs) have been established under the NIRC headquarters, and District Irrigation Offices (DIOs) under each RIO. This structure operates independently from district governments and reflects efforts to strengthen institutions specialized in irrigation policy and development.

Many RIOs and DIOs have a clear understanding of the current conditions of irrigation schemes within their respective jurisdictions and are implementing necessary rehabilitation works in a phased manner as budgets become available. Even for schemes supported under this Project that have already been damaged and are no longer functioning, it was confirmed that most have not been left unattended, and that there remains a proactive stance toward rehabilitation and expansion of existing irrigation infrastructure.

According to the results of the questionnaire survey conducted for this ex-post evaluation, among the 67 DIOs responsible for the 107 SPs, 53 DIOs reported having district-level strategies and/or annual plans for irrigation development and O&M.

Based on the above, the policy orientation of NIRC at the time the Project was implemented remains in place, and the policy commitment to irrigation development is expected to continue in the future. Therefore, the effects of the Project can be considered sustainable from a policy and system perspective over the long term.

3.4.2 Institutional/Organizational Aspect

Based on the National Irrigation Policy (2010) of the Government of Tanzania, the O&M of small-scale irrigation schemes are the responsibility of IOs. At present, technical support to IOs is provided by District Irrigation Engineers (DIEs) of the DIOs under the NIRC headquarters. Currently, capacity development support to IOs and periodic monitoring for irrigation scheme O&M are carried out by DIEs and other staff of the DIOs. However, even within the same district, irrigation schemes are often located in remote areas far from the DIOs. In response to this constraint, NIRC has a plan to deploy Scheme masters who are stationed at irrigation schemes and conduct day-to-day monitoring of O&M activities.

In addition, O&M of irrigation schemes is required to be conducted in accordance with the CGL.

Based on this background, the following sections examine the staffing situation, the SP monitoring framework, and the organizational arrangements of IOs.

Staffing Situation

In 2023, NIRC recruited more than 320 new staff members to establish a new organizational structure under which DIOs were created beneath the RIOs. DIEs are personnel newly recruited from 2023 onward. According to the results of a questionnaire survey of DIOs (covering 67 districts), staffing levels remain limited: one staff member in 13 districts, two in 22 districts, three in 23 districts, four in six districts, five in two districts, and one district with no response. Under these conditions, many DIOs are operating by sharing office space with RIOs or district governments. Staff composition mainly consists of DIEs and agricultural specialists.

Many of the staff of the former Zonal Irrigation Offices who were the recipients of technical transfer during the Project period continue to be engaged in irrigation-related activities as staff of the RIOs that were reorganized from the former zonal offices.

Scheme masters have been deployed in 121 out of 195 districts nationwide as of the time of the ex-post evaluation, and NIRC plans to further increase their number so that they can be assigned to each irrigation scheme in the future.

SP Monitoring Framework

According to the results of the questionnaire survey conducted for this ex-post evaluation, although the number of irrigation schemes under the responsibility of each DIO varies by region, 44 out of 67 districts responded that the current staffing level is insufficient to conduct regular monitoring of the schemes under their jurisdiction when asked whether existing human resources were adequate for routine monitoring. Regarding monitoring frequency, despite staffing constraints, monitoring activities were carried out at a relatively frequent level overall, 9 districts

reported monitoring fewer than one scheme per month, 16 districts monitored two schemes per month, 18 districts monitored one scheme per week, 21 districts monitored two to three schemes per week, and 2 districts monitored four or more schemes per week, with one district providing no response. Despite the fact that most DIEs and other staff interviewed for this evaluation (22 persons in total) had been employed only since 2023, almost all demonstrated a good understanding of the conditions of the SPs under their responsibility and showed strong motivation and commitment to fulfilling their duties.

In most of the 67 districts, transportation means required for monitoring (such as motorcycles and vehicles) and technical equipment (including GPS receivers, flow meters, current meters, water level gauges, and water quality testing kits) are insufficient. According to interviews, DIOs address these shortages by cooperating with RIOs, often borrowing vehicles and equipment from them. For example, the Kilimanjaro RIO oversees approximately 500 irrigation schemes but has only two vehicles, which are shared among the DIOs in the region. In some cases, DIEs reportedly conduct monitoring using their privately owned motorcycles. Given that many irrigation schemes are located far from DIO offices—often requiring two to three hours or more of travel one way on unpaved and poor roads—the availability of transportation is a critical factor for ensuring continuous monitoring. NIRC recognizes the importance of establishing a robust monitoring framework and is currently in the process of procuring vehicles, motorcycles, PCs, tablets, and other equipment to be allocated to DIOs.

Monitoring results for each SP are reported by responsible staff to DIOs and RIOs; however, reporting methods vary, including reporting at monthly regular meetings, preparation of written reports, or oral reporting only. Even where written reports are prepared, a standardized reporting format based on the CGL is not consistently used.

Organizational Arrangements of IOs

Among the 25 SPs covered by the field study, IOs were established at all 18 SPs where irrigation schemes were in operation. In contrast, at SPs where irrigation utilization was not taking place, IOs had either been dissolved after establishment or were functioning only nominally. Membership rates of the IOs at the 18 operational SPs ranged widely, from 12% (Mgambalenga) to 100% (Nyida, Irienyi, Ng'apa, Mwamapuli, and Inala). In SPs with a 100% membership rate and a 100% (or over 90%) ISF collection rate—namely Nyida, Irienyi, and Mwamapuli—farmland is institutionally managed under the IO, and farmers are not able to cultivate land unless they are members of the IO and pay ISF. In other SPs, higher IO membership rates tended to be observed where irrigation water supply was reliably available.

Based on the above, NIRC has been strengthening its human resource base for regular

monitoring of irrigation schemes through the recruitment of more than 320 DIEs and the deployment of Scheme masters, and coordination between district and regional irrigation offices has been established. On the other hand, transportation means and monitoring equipment required for continuous monitoring, as well as reporting system for monitoring results, still need to be strengthened in parallel with the human resource framework.

In addition, strengthening the organizational capacity of IOs must proceed in tandem with the rehabilitation and effective functioning of irrigation schemes; otherwise, it is difficult for farmers to perceive the benefits of participation. Such capacity development cannot be achieved in the short term and requires sustained efforts over time. Therefore, while the institutional and organizational framework necessary to sustain the Project's effects over the long term has been developed to a certain extent, some challenges remain, and continuous and steady measures are required.

3.4.3 Technical Aspect

Capacity development support for IOs and regular monitoring for the O&M of irrigation schemes are undertaken by DIO staff, and their technical capacity is therefore a critical factor. Although many staff members were appointed to their current positions in 2023, in 25 out of 67 districts (37%) at least one staff member had previously participated in JICA-supported training under TANCAID or TANRICE.

To assess DIO staff's technical understanding of their duties, the questionnaire survey asked, "What roles do you consider yourself responsible for in relation to each SP?" Staff from 63 districts provided concrete responses, which can be summarized as follows. The responses indicate that staff generally have a good understanding of the technical support and activities required for O&M in line with the CGL:

- Supervision of O&M of irrigation schemes and implementation of minor repairs
- Training, awareness-raising, and extension activities for IOs and farmers regarding ISF and farming practices
- Support for ISF collection and IO organization
- Data collection and reporting

In response to the question, "Are there opportunities to improve your technical skills?", 25 out of 67 districts answered "Yes" (including on-the-job training), while 42 districts answered "No." NIRC also recognizes the need for human resource development and is currently strengthening the capacity of DIO staff mainly through OJT, including the dispatch of supervisors from headquarters. As described above, while DIO staff understand their roles and are conducting monitoring of SPs, opportunities for capacity development will be necessary to maintain staff motivation and to enable DIOs, as organizations, to continue fulfilling their functions on a

sustained basis. In addition, NIRC headquarters expressed a desire to learn from Japan's experience in O&M responses to issues such as sedimentation and water shortages that have emerged in some SPs due to population inflows following the availability of irrigation water.

Based on the above, DIO staff are generally well informed about the actual conditions of each SP and have an appropriate understanding of their responsibilities. However, as most staff assumed their current positions only in 2023, further capacity enhancement will be required going forward. With regard to strengthening the capacity of DIOs, JICA plans to provide support through the dispatch of an irrigation advisor and through the World Bank co-financed "Tanzania Food Systems Resilience Program."

3.4.4 Financial Aspect

Financial Situation of NIRC Headquarters

Although NIRC faced budget constraints during the Project implementation period, its budget has increased rapidly since 2022, reflecting the current administration's renewed emphasis on irrigation policy. As a result, the budget required to implement the Medium Term Strategic Plan (2023/2024–2027/2028), formulated in the same year, has been secured.

Financial Situation of DIOs

According to the questionnaire survey, 91 out of 105 SPs that responded reported that some form of damage or deterioration had occurred in irrigation schemes between Project completion and the time of the ex-post evaluation. In contrast, when asked about the extent to which budgetary provisions had been secured for necessary rehabilitation in the near future, approximately 80% of the 104 SPs that responded indicated that little or no budget had been secured, while only five SPs reported that sufficient budget had been secured (Figure 2). At the district and regional levels, there is no regular budget allocation for rehabilitation costs of irrigation schemes, and budget requests are submitted to NIRC headquarters as needs arise. As noted above, while NIRC's overall budget has increased significantly in recent years, the allocation of funds for rehabilitation of existing irrigation schemes to district and regional offices remains insufficient.

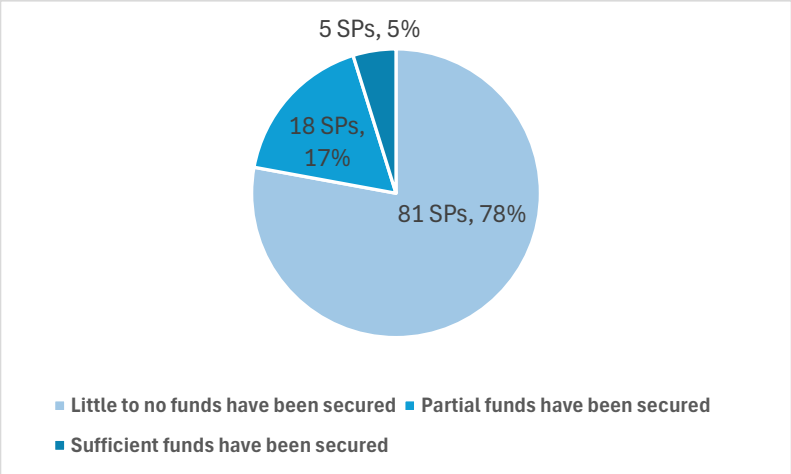


Figure 2: Budget Availability for Rehabilitation Costs at DIOs

Source: District Irrigation Office web-based questionnaire survey and IO interviews conducted at the time of the ex-post evaluation.

Note: The figures shown in the graph indicate the number of relevant SPs, and the percentages represent the share of the 104 SPs that responded.

In addition, the budget available for DIO staff to conduct monitoring of each SP is extremely limited. According to the questionnaire survey, all 67 districts responded that monitoring-related budgets are insufficient.

O&M Costs of Each SP

O&M costs are stipulated to be covered by ISF paid by IO members, equivalent to 5% of agricultural production[35]. During the field study conducted for this ex-post evaluation at 25 SPs, however, it was confirmed that instead of a percentage-based fee, a fixed amount of Tsh 50,000 per acre per household per harvest season is collected and paid to NIRC[36]. These ISFs are first paid to NIRC, after which 75% of the paid amount is refunded to the IO when minor rehabilitation becomes necessary. In addition, each IO collects a fixed amount from member farmers once a year and pays it to the Water Board responsible for the area. Other than the above, IOs generally do not collect additional funds for O&M; routine activities are largely limited to low-cost tasks such as cleaning. However, when minor repairs are required, some IOs respond by pooling contributions among members. In some cases, penalty fees imposed for violations of IO rules are also used as activity funds. As described in "3.3.1.1 Quantitative Effects," the ISF collection rate remains low: 64% of the 107 SPs recorded collection rates below 30%, and only 16% achieved the target rate of 70% or higher. Underlying factors include situations where farmers do not perceive the value of paying ISF when irrigation water supply is insufficient; limited

[35] Documents provided by JICA

[36] In some IOs, a portion of the collected irrigation service fees is retained as funds for IO activities, or the fees are not remitted to NIRC at all.

understanding among farmers of the role that ISF plays in sustaining O&M of irrigation schemes; and cases where agricultural income is insufficient to enable farmers to afford payment of the fees.

Based on the above, while the overall budget of NIRC headquarters has increased rapidly in recent years, allocations for rehabilitation costs of existing irrigation schemes and for monitoring activities at the district and regional levels remain insufficient, and the ISF collection rate of IOs also remains low. At present, the financial basis required to sustain the Project's effects cannot be considered sufficient, and therefore financial sustainability is assessed to be low. However, under the World Bank co-financed "Tanzania Food Systems Resilience Program," which includes a component for the O&M of existing irrigation schemes, there is a prospect that allocations for rehabilitation costs of existing schemes and for monitoring activities will increase from NIRC headquarters to regional and district irrigation offices in the future.

3.4.5 Environmental and Social Aspect

As described in "3.3.2.2 Other Positive and Negative Impacts: 1) Impacts on the Environment," no SP required environmental mitigation measures during the Project implementation period. However, in the post-completion operation of the irrigation schemes, certain environmental considerations were identified

3.4.6 Preventative Measures to Risks

Neither the ex-ante evaluation document nor the appraisal documents included descriptions of project risks, and interviews conducted at the time of this ex-post evaluation confirmed that no risks had been foreseen at the appraisal stage. However, during the implementation phase, given the Project's characteristics—namely, a large number of SPs widely dispersed across the country—there were situations in which Zonal Irrigation Offices and district governments faced difficulties in conducting sufficient technical examination and follow-up on an SP-by-SP basis. The status of responses to this risk has been described in "3.3.1.2 Qualitative Effects." In addition, the background to the extension of the Project period to 211% of the original plan included the emergence, during implementation, of challenges related to construction supervision and document management by Zonal Irrigation Offices and district governments. The process through which appropriate corrective measures were taken has been analyzed in detail in "3.2.2.2 Project Period."

Looking ahead, for the irrigation schemes targeted under the Project to be steadily rehabilitated and expanded and to continue contributing to poverty reduction among farmers, continuous capacity development of district and regional irrigation office staff, together with appropriate budgetary provisions for monitoring activities, will be essential.

3.4.7 Status of Operation and Maintenance

Status of Damage and Deterioration at Each SP and Corresponding Responses

According to the questionnaire survey, 91 out of 105 SPs that responded reported that some form of damage or deterioration had occurred between Project completion and the time of the ex-post evaluation. The reported types of damage and deterioration are summarized below.

Table 12: Types of Damage and Deterioration at SPs

Damaged Component	Examples of Damage
Canals	Cracks, erosion, leakage, sediment accumulation in canals, partial collapse, etc.
Intake structures (headworks, diversion weirs, etc.)	Damage to intakes, blockage by sediment, malfunction or theft of intake gates, etc.
Reservoirs	Reduction in storage capacity and water level, cracks in structures, deterioration of embankments, etc.
Gates and distribution structures	Damage to, corrosion of, or loss of main gates and division gates, etc.

Source: District Irrigation Office web-based questionnaire survey and interviews conducted during field study at the time of the ex-post evaluation.

Among the 91 SPs where damage or deterioration was reported, 45 SPs had taken some form of response. These responses ranged from full-scale rehabilitation works with secured budgets, to surveys to identify required rehabilitation works and prepare cost estimates, cleaning and minor repair activities carried out by IOs, and guidance provided to IOs on O&M practices. In contrast, 40 SPs had not yet taken any measures due to the lack of financial resources (the remaining SPs provided no response). NIRC headquarters receives reports from district and regional irrigation offices on the locations and nature of required rehabilitation at each SP and has a grasp of the overall situation. Budget allocations are being made and responses implemented sequentially, depending on priority and available resources.

Status of O&M Implementation by IOs

Among the 25 SPs visited during the field study, 18 SPs had irrigation schemes that were in operation. Of these, 11 SPs were found to be implementing O&M activities generally in an adequate manner. As described in the section on water supply conditions under “3.3.1.2 Qualitative Effects,” SPs with well-organized IOs tended to carry out routine and steady O&M activities on a regular basis. In contrast, in the remaining seven SPs, the field study suggested insufficient O&M activities by IOs. In these SPs, the accumulation of debris and sediment at intake points and in canals hindered proper water abstraction and distribution, led to sedimentation in drainage channels and farmlands, and, due to the lack of canal weeding, resulted in small cracks that were left unattended and eventually caused significant leakage. Such conditions have contributed to the progressive deterioration of the irrigation schemes.

As noted earlier, some form of damage or deterioration has occurred in most SPs after Project completion, and in several cases, irrigation schemes have already become non-operational. These damages and failures are considered to have resulted from a combination of factors, including natural causes such as flooding, insufficient O&M by IOs, and inadequate drainage conditions. While the challenges related to O&M of irrigation schemes are substantial, NIRC recognizes the need for rehabilitation and has been proceeding with budget allocation on a sequential basis, alongside strengthening organizational arrangements and staffing. If these efforts are sustained, it is expected that, in the long term, rehabilitation and expansion of the irrigation schemes supported under the Project will progress, thereby contributing to the expansion of irrigated agriculture.

<Summary of sustainability>

While the Project demonstrates high sustainability in terms of policy and system, there are currently challenges in the institutional/organizational. technical, financial, and O&M aspects. On the other hand, improvements can be expected in the medium to long term through measures such as strengthening of human resources and budget expansion by NIRC, as well as through co-financed programs with the World Bank. Taking these factors into consideration, the sustainability of the effects generated by the Project is assessed as moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This Project was implemented throughout mainland Tanzania with the aim of improving agricultural productivity—mainly rice production—by constructing new irrigation facilities, rehabilitating existing facilities, and procuring related equipment, thereby contributing to improvements in the livelihoods of small-scale farmers and poverty reduction.

The Project was highly consistent with Tanzania's development policies and development needs, both at the time of planning and at the time of the ex-post evaluation. It was also consistent with Japan's development cooperation policy at the planning stage, and concrete results of collaboration with other JICA projects and organizations were confirmed. Therefore, the relevance and coherence of the Project are high. Although the project cost was within the plan, the project period was significantly longer than planned—more than double the original schedule—so the efficiency of the Project is moderately low. With regard to effectiveness, none of the six operation and effect indicators (including beneficiary area and cultivated area by crop) established at the time of planning achieved their target values. For farmers who were actually able to use irrigation water, improvements in farming conditions and living conditions were confirmed as qualitative effects. In terms of impacts, among those farmers, impacts related to poverty reduction, changes related to gender, and people's well-being were observed. However,

since the beneficiary area reached only 53% of the planned value, the scale of benefits was limited compared with the plan. Therefore, the effectiveness and impact of the Project are moderately low. With regard to sustainability, sustainability in terms of policy and system is high; however, challenges remain in the institutional/organizational, technical, financial, and operation and maintenance aspects. Therefore, the sustainability of the Project is moderately low.

In light of the above, the Project is evaluated to be partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency (NIRC)

Strengthening the monitoring foundation to sustain staff motivation

The presence of staff in District Irrigation Offices who have a correct understanding of their roles and demonstrate strong motivation to perform their duties constitutes a major driving force for future irrigation development policies. In order to sustain this motivation, it is essential to urgently secure adequate budgets for monitoring activities as well as appropriate means of transportation. The NIRC Headquarters recognizes this need and has already begun procuring and allocating vehicles, PCs, and tablets to District Irrigation Offices. This initiative should be continuously promoted and expanded.

Enhancing the technical capacity of Regional and District Irrigation Offices

Given that rehabilitating and expanding the very large number of irrigation schemes across Tanzania requires substantial financial resources, staff of Regional and District Irrigation Offices must possess the capacity to accurately identify high-priority rehabilitation sites. In addition, they need the technical ability not only to undertake simple repairs, but also to review and redesign schemes from a long-term perspective, including the incorporation of appropriate drainage planning, as well as the capacity to conduct bidding procedures and construction supervision for such works. Human resource development for Regional and District Irrigation Office staff should therefore be carried out continuously and in a steady manner.

Standardization of the monitoring reporting system

To ensure timely rehabilitation and expansion of the large number of irrigation schemes nationwide, it is necessary that sufficient and relevant information be regularly reported through a clear reporting line—from District Irrigation Offices to Regional Irrigation Offices, and from Regional Irrigation Offices to the NIRC Headquarters. At present, the content and arrangements for reporting monitoring results vary considerably by region. Therefore, there is an urgent need to establish standardized arrangements, including the frequency of monitoring, items to be checked and activities to be conducted during monitoring, report formats, and reporting methods.

4.2.2 Recommendation to JICA

Continued support for capacity development and institutional strengthening of Regional and District Irrigation Offices

As rehabilitating and expanding the large number of irrigation schemes across Tanzania entails substantial costs, it is necessary to develop staff of Regional and District Irrigation Offices who are capable of appropriately identifying priority rehabilitation sites, undertaking not only simple repairs but also design reviews that incorporate long-term considerations such as drainage planning, and managing bidding processes and construction supervision. In addition, it is necessary to strengthen and standardize the reporting system so that sufficient and relevant information is regularly reported from districts to regions and from regions to the NIRC Headquarters. Such human resource development and institutional strengthening are areas in which JICA has particular expertise through technical cooperation. JICA should therefore continue to provide support for these forms of technical transfer in a sustained manner.

4.3 Lessons Learned

Ensuring a minimum required level of financing and adequate design and construction quality for each irrigation scheme

Even when a yen loan covers only a portion of a country's vast potential irrigated area, it is essential to ensure that each irrigation scheme is provided with a sufficient level of financing, as well as adequate design and construction quality, so that water abstraction and distribution to farmland can commence immediately upon project completion. Specifically, this requires measures such as:

- Utilizing experts from JICA technical cooperation projects through close coordination
- Formulating project plans that are consistent with the level of technical support that can realistically be provided under the consulting services financed by the yen loan; and
- Supporting the partner country government in strengthening its bidding and evaluation systems so that contractors with strong internal quality control capacity are selected.

By implementing such measures in a manner tailored to the country context, it becomes possible to establish a framework in which, under the technical guidance of irrigation specialists, government counterparts can secure designs that meet the required functional standards, together with the level of financing necessary to realize those designs at each scheme. This, in turn, helps prevent the emergence of irrigation schemes that deteriorate or become damaged before achieving sufficient operational use.

Developing concrete coordination plans with other projects

In this Project, the need to coordinate with other JICA projects was recognized at the appraisal stage as a way of applying lessons learned from past projects. However, because the specific

content of such coordination was not defined in advance, the initiation of coordinated technical support to the partner country government and efforts to strengthen the project implementation arrangements were delayed. In light of the coordination outcomes confirmed through this ex-post evaluation, it is considered that earlier initiation of coordination could have contributed more substantially to the Project's effectiveness and efficiency. When coordination with other projects is envisaged, it is not sufficient merely to state in the ex-ante evaluation documents that "coordination will be undertaken." Rather, it is necessary to clearly and concretely define, prior to project commencement, what is to be achieved, through which activities of each project, at what timing, and in what manner such coordination will be implemented. Furthermore, to ensure that coordination results in concrete actions, the scope of work of consultants and experts engaged in the respective projects should explicitly include coordinated activities and their implementation.

Strengthening project implementation arrangements in countries undergoing decentralization

In cases such as this Project, where a large number of yen loan sub-projects are implemented under the leadership of local governments in a country undergoing decentralization, the key factors determining project progress and achievement of results include: the transparency and capacity of local governments in budget execution; their technical capacity for procurement and construction supervision; and the availability of human resources and transportation necessary for construction supervision. Even if personnel costs and transportation means are to be borne by the counterpart, it is important to take measures such as closely coordinating with technical cooperation projects and utilizing technical cooperation projects related to ODA Loan, in order to strengthen the institutional and technical implementation capacity of local governments in parallel with project implementation.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

None

5.1.2 Subjective Perspective (retrospective)

During the project implementation period, there was frequent turnover and reassignment of staff at NIRC Headquarters. As a result, the JICA Tanzania Office provided informal training to newly assigned staff on the submission procedures for Requests for Disbursement (RFDs) and Progress Status Reports (PSRs), in order to ensure the proper implementation and management of the Project.

5.2 Additionality

As described above, the Project benefited from collaboration with technical cooperation projects such as TANCAID and TANRICE, which contributed to the realization of irrigated rice cultivation. At the time of project planning and commencement, the aid coordination environment in Tanzania made the implementation of technical cooperation projects extremely challenging[37]. Despite these constraints, JICA continued to recognize the importance and effectiveness of project-type technical cooperation and maintained this approach. As a result, it was possible to continuously apply to this Project the human resource development outcomes achieved through TANCAID and TANRICE, as well as the CGL, which has been recognized nationwide in Tanzania as a standardized approach for the planning, implementation, and operation and maintenance of irrigation projects. This constitutes value and additionality that could be provided precisely because the Project was supported by JICA.

(End)

[37] Source: Ministry of Foreign Affairs of Japan (FY2016). Third Party Evaluation Report: Country Assistance Evaluation of the United Republic of Tanzania

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	1) Civil Works Approximately 70 sites throughout mainland Tanzania. 2) Equipment Procurement Design and construction supervision equipment (including vehicles) for Zonal Irrigation Offices and districts. 3) Consulting Services Support for design and construction supervision of irrigation schemes for Zonal Irrigation Offices and districts.	1) Civil Works 107 sites throughout mainland Tanzania. 2) Equipment Procurement As planned. The list of procured equipment is shown in Table 2 of the main text. 3) Consulting Services As planned in terms of scope. The contract period was extended by 20 months compared with the plan.
2. Project Period	May 2013 – March 2017 (47 months)	May 2013 – July 2021 (99 months)
3. Project Cost Amount Paid in Foreign Currency Amount Paid in Local Currency Total ODA Loan Portion	 222 million yen 3,563 million yen (71,118 million Tsh) 3,785 million yen 3,443 million yen Exchange Rate: 1 Tsh = 0.0501 yen (as of December 2012)	 307 million yen 3,136 million yen (59,620 million Tsh) 3,443 million yen 3,443 million yen Exchange Rate: 1 Tsh = 0.0526 yen (average from September 2013 to July 2021)
4. Final Disbursement	July 2021	

Appendix

List of Sub-projects (SPs)

Zone	No.	Batch			Region	District	SP Name
Dodoma	1		2		Dodoma	Bahi	Mtazamo
	2		2			Kondoa	Kidoka
	3	1				Mpwapwa	Msagali
	4	1			Manyara	Mbulu	Mangisa
	5		2			Simanjiro	Kambi ya chokaa
	6		2				Lemkuna
	7		2				Ngage
				3			
	8		2		Singida	Manyoni	Itagata
Dodoma sub-total	8	2	6	1			
Kilimanjaro	9		2		Arusha	Arusha	Kigongoni
	10		2				ATC
	11	1					Olevolosi
	12	1					Majimoto
	13	1					Mlangarini
	14	1					Timbolo
	15	1					Themi ya Simba
			2				
	16	1				Meru	Mapama
	17		2		Kilimanjaro	Hai	Kikafu chini
	18		2				Musa Mwinjanga
	19		2				Nsanya
	20	1				Moshi	Mawalla
			2				
	21			3			Soko
	22	1				Mwanga	Kileo
			2				
	23	1					Kirya
	24	1					Kivulini
			2				
	25		2			Siha DC	Kishisha
	26		2				Mowonjamu
	27			3			Orumwi
	28			3	Tanga	Lushoto	Kituani mwezae
	29			3			Kwemgiriti
	30	1				Muheza	Misozwe
	31		2		Tanga TC	Korogwe TC	Mahenge
Kilimanjaro sub-total	23	11	12	4			
Mbeya	32	1			Iringa	Iringa	Igingilanyi
	33	1					Isaka
	34	1					Luganga
	35		2				Mkombilenga /Magozi
	36	1					Mkungugu/Kigasi
	37		2				Mlambalasi
	38	1				Kilolo	Mgambalenga

			2				
				3			
	39	1					Ruaha Mbuyuni
	40	1			Katavi	Mpanda TC	Kakese
	41	1			Mbeya	Busokelo	Katela Ntaba
				3			
	42	1					Mbaka
				3			
	43		2			Ileje	Mbebe/Sasenga
	44		2			Mbarali	Gwiri
	45		2				Igomelo
	46		2				Mwendamtitu
	47		2				Uturo
	48		2			Mbeya	Mshewe
	49		2			Mbozi	Mbulu mlowo
	50	1				Momba	Naming'ongo
			2				
	51	1			Iringa	Makete	Luwumbu
	52		2		Njombe	Njombe DC	Itipingi
	53		2			Ludewa	Lifua
	54		2		Rukwa	Nkasi	Lwafi
	55		2				Katongolo
	56	1				Sumbawanga	Sakalilo
Mbeya sub-total	25	12	15	3			
Morogoro	57	1			Morogoro	Kilombero	Siginali
	58		2			Kilosa	Lumuma
	59	1					Mwega
	60		2			Morogoro (R)	Kiroka
	61		2				Tulo/Kongwa
	62		2			Mvomero DC	Wami Luhindo
	63		2			Ulanga	Minepa
	64		2		Pwani	Bagamoyo DC	Bagamoyo BIDP
	65		2				Msoga
	66		2			Kibaha DC	Mongomole/ Kwala
	67	1				Mkuranga	Mfulu/ Changanyikeni
	68		2			Rufiji	Nyamweke
Morogoro sub-total	12	3	9	0			
Mtwara	69	1			Lindi	Lindi R	Kinyope
				3			
	70	1				Mtama	Narunyu / Mtualonga
	71	1				Liwale DC	Mtawatawa
	72		2				Mtawango
	73	1			Mtwara	Masasi DC	Ndanda
	74	1				Mtwara V	Kitere
	75	1				Newala	Chikwedu-Chipamanda
			2				
	76	1				Tandahimba DC	Naming'ongo

	77	1			Ruvuma	Mbinga DC	Kimbande
	78	1					Litumbandyosi
	79		2			Namtumbo DC	Amani
	80		2				Msanjesi
	81	1				Songea MC	Subira
	82		2			Songea DC	Hangangadinda
	83		2				Nakahuga
	84	1				Tunduru DC	Kitanda
	85		2		Lindi	Ruangwa DC	Nanganga
				3			
	86			3		Liwale DC	Ngongowele
Mtwara sub-total	18	11	7	3			
Mwanza	87		2		Kagera	Karagwe DC	Mwisa
				3			
	88		2			Muleba DC	Buhangaza
	89		2				Kyota
	90	1			Mara	Bunda DC	Maliwanda
				3			
	91	1					Nyatwali
			2				
				3			
	92	1				Rorya	Irienyi
	93	1			Shinyanga	Kishapu	Nyenze
	94			3		Shinyanga DC	Nyida
	95		2		Simiyu	Bariadi DC	Mwasbuya
Mwanza sub-total	9	4	5	4			
Tabora	96	1			Kigoma	Kakonko	Katengera
	97		2				Ruhwiti
	98		2			Kasulu	Rungwe Mpya
	99		2				Titye
	100	1				Uvinza	Kashagulu
			2				
	101		2		Tabora	Igunga	Mwamapuli
	102			3			Mwalunili
	103		2			Nzega	Kahamanhalanga
	104		2				Lusu
	105	1				Tabora MC	Inala
	106		2			Urambo	Ussoke/Mlimani
	107	1				Uyui	Shitage
			2				
Tabora sub-total	12	4	9	1			
Total	**107**	**47**	**63**	**16**	**SP=107、No. of civil works=126**		

Source: Compiled from documents provided by JICA

(End)