United Republic of Tanzania

FY2023 Ex-Post Evaluation Report of Technical Cooperation Project

"The Project for Capacity Development for the Promotion of Irrigation Scheme Development under the District Agricultural Development Plans (DADPs)" and "The Project for Capacity Development for the Promotion of Irrigation Scheme Development under the District Agricultural Development Plans (DADPs) Phase 2"

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0. Summary

This project[1] was implemented to strengthen the framework for improving and promoting irrigation development in line with the Comprehensive Guideline (hereinafter referred to as CGL) by enhancing the formulation and implementation (hereinafter referred to as F&I) capacities of irrigation staff at zonal[2] irrigation offices and districts, as well as the operation and maintenance (hereinafter referred to as O&M) capacities of these staff and irrigators' organizations (IOs)[3]. This project, which aimed to promote irrigation development, was consistent with Tanzania's development policies and needs from the commencement to the completion of both phases. And the project plan and approach were appropriate. The project was consistent with Japan's ODA policy at the time of planning. Regarding internal coherence, while there was collaboration with other JICA projects during implementation, the intended specific effects were not confirmed. As for external consistency, there was no collaboration with other donors, but the project was consistent with an international framework. Therefore, its relevance and consistency are high. Although the project achieved

[1] This evaluation was conducted as an integrated assessment of the "The Project for Capacity Development for the Promotion of Irrigation Scheme Development under the District Agricultural Development Plans (DADPs)"(hereinafter referred to as Phase 1) and "The Project for Capacity Development for the Promotion of Irrigation Scheme Development under the District Agricultural Development Plans (DADPs) Phase 2" (hereinafter referred to as Phase 2) in Tanzania. In this report, unless otherwise noted, "this project" refers to both phases as a single project.

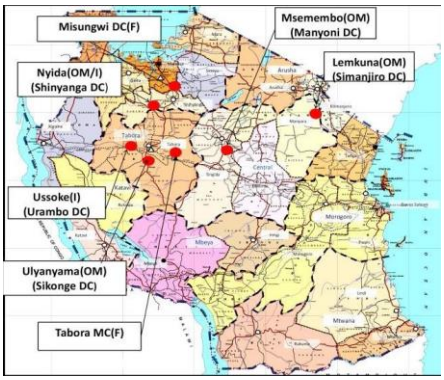
[2] In Tanzania, government agencies are often established at four levels: national, regional, district, and division. However, some sectors, including irrigation, have agencies at the "zone" level, which is between the national and regional levels. Zones are geographical divisions but are not administrative units like regions, so they do not have administrative authority. At the time of planning Phase 1, there were seven irrigation zone offices (Ruvuma, Tabora, Morogoro, Mbeya, Kilimanjaro, Mwanza, Dodoma) across mainland Tanzania, excluding Zanzibar. However, *the National Irrigation Act*, enacted in 2013 and enforced in 2014, abolished the zone irrigation offices and established the National Irrigation Commission (NIRC) as an independent agency. The functions of the zone irrigation offices were transferred to regional irrigation offices. While Phase 1 was implemented based on zone divisions, this report describes the project in terms of regions (refer to the project location map for the positions of the regions).

[3] Under *the Irrigation Act*, the basic roles of Irrigators' Organizations (IOs) are defined as: (1) fair water distribution, (2) efficient use of irrigation water, (3) proper maintenance of irrigation facilities, (4) conservation of the local environment, and (5) collection of water usage fees and water charges. The IOs are responsible for the maintenance and management of facilities after their construction. The establishment of IOs is initiated by farmers who apply to the government, and after a series of procedures, they are approved by NIRC ("Attempts of the National Irrigators' Organization Competition in Tanzania," The Journal of the Japanese Society of Irrigation, Drainage, and Rural Engineering Vol. 90, No. 2, 2022 Agricultural and Rural Engineering Society, pp. 97–100).

its overall goal only to a certain extent at the time of the ex-post evaluation, positive impacts were observed. The project purpose, i.e., strengthening the framework for irrigation development in line with the CGL, was achieved more than planned. Therefore, effectiveness and impacts are high. The outputs were achieved by the completion of Phase 2, and there were no problems with Japanese inputs' quality, quantity, and timeliness. However, the project cost exceeded the plan, and the project period slightly exceeded the plan. Therefore, efficiency is moderately low. Some issues have been observed in terms of institutional/organizational, technical, and financial aspects. It cannot be said that there are good prospects for improvement/resolution. Therefore, sustainability of the project effects is moderately low.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Locations (The red dots show the Demonstration Sites of Phase 2) (source: The Phase 2 Terminal Evaluation Report)
Note: The abbreviations in the speech bubbles on the map are as per the footnotes[4].

The Nyida irrigation scheme in Shinyanga Region[5]
(Source: Photo taken by the evaluator)

1.1 Background

Agriculture in Tanzania is the core of the country's economic growth and the key to poverty reduction. *The National Irrigation Master Plan*, formulated in 2002, identified approximately 2.1 million hectares of high irrigation development potential areas. Despite

[4] The speech bubbles indicate the names of the demonstration sites and the classifications in the CGL. DC (District Council) refers to the district level local government, and MC (Municipal Council) refers to the city level local government, both of which are administrative divisions. Additionally, as divisions on the CGL, F stands for Formulation, which refers to irrigation planning, I stands for Implementation, which refers to irrigation facility construction, and OM stands for Operation and Maintenance, which refers to irrigation maintenance and maintenance.

[5] An irrigation scheme is an agricultural water system designed to draw water from rivers, lakes, groundwater, etc., to irrigate farmland. Generally, it includes intake weirs to draw water from the source for agricultural use, canals to transport the pumped water to the fields, drainage channels to discharge excess water back into rivers, and dams or reservoirs to store water in preparation for droughts.

promoting irrigation development through implementing the Agricultural Sector Development Programme (hereinafter referred to as ASDP) formulated in 2006, only 350,000 hectares had been developed by 2010. Under the ASDP, the Tanzanian government transferred the responsibility for implementing small-scale irrigation projects of less than 500 hectares from the central government to local government authorities (hereinafter referred to as LGAs) to promote irrigation development. Each district was to formulate and implement irrigation projects using the ASDP budget through the DADPs. However, due to the insufficient number, experience, and capability of irrigation staff, and in some districts, the absence of irrigation staff, it was challenging for districts to plan and implement irrigation development independently.

To strengthen the system for promoting irrigation development and to strengthen the capacity of irrigation development personnel, Japan implemented the "Study on the National Irrigation Master Plan" from 2001 to 2004, which formulated an irrigation development master plan for the whole of Tanzania and formulated the "Guidelines for irrigation project formulation for DADPs" through demonstration studies. In addition, the Technical Cooperation for "Formulation and Training of the DADP Guidelines on Irrigation Scheme Development" (2007-2010) revised the above guidelines, formulated the "CGL for Irrigation Scheme Development under DADPs," which added construction management, maintenance and management, and training. It also strengthened the capacity of zonal and district irrigation staff in four irrigation zones. Although the project's Terminal Evaluation Study (2009) confirmed its effects, it also identified issues such as the need to disseminate the "CGL for Irrigation Scheme Development under DADPs" nationwide, strengthen the construction management capacity of district irrigation staff to further promote irrigation development, and strengthen the operation and maintenance capacity of IOs. Therefore, Phase 1 of this project was implemented at the request of the Government of Tanzania. At the time of project completion of Phase 1, the CGL and monitoring system introduced in Phase 1 were not functioning sufficiently at the district level. For this reason, further technical cooperation was needed to continue and improve irrigation development, and Phase 2 was implemented[6].

[6] PCR of Phase 2 pp. 1-2.

1.2 Project Outline

(1) Phase 1

Overall Goal		Irrigation schemes developed under DADPs are improved and promoted.
Project Purpose		Capacities of Zonal/District irrigation staff as well as IOs trained by the project in all the seven Irrigation Zones are enhanced[7].
Outputs[8]	Output 1	The supporting system for the implementation of the irrigation scheme development (i.e. planning and institutional set up, feasibility study[9], design, tender and contract management, and construction supervision) by zonal/district irrigation staff is improved, in line with the CGL.
	Output 2	The supporting system for IO's O&M system of irrigation schemes by Zonal Irrigation Technical Service Units (hereinafter referred to as ZITSUs) and district irrigation staff, is improved[10].
Total cost (Japanese Side)		467 million yen
Period of Cooperation		October 2010–June 2014 (Extension Period: December 2013–June 2014)
Target Area		All 7 irrigation zones on the Tanzanian mainland.
Implementing Agency		Department of Irrigation Technology Service, Ministry of Water and Irrigation (MWI)
Other Relevant Agencies/ Organizations		Department of Training (hereinafter referred to as DT), Ministry of Agriculture, Food Security and Cooperatives (hereinafter referred to as MAFC)
Organization in Japan		Ministry of Agriculture, Forestry and Fisheries
Related Projects		[Technical Cooperation] - Technical Cooperation for Formulation and Training of the DADP Guidelines on Irrigation Scheme Development (2007–2010)

[7] In the Japanese version of Project Design Matrix (PDM) of Phase 1, Project Purpose is described as follows. "Capacities of irrigation staff at all the seven zonal offices and all the districts as well as capacities of selected IOs to implement irrigation are strengthened."

[8] In the Japanese version of PDM of Phase 1, there is also description of "under DADPs" for Output 1 and Output 2 in addition to the description in the English version of PDM as indicated in the table.

[9] A study to assess feasibility of a new project.

[10] In the Japanese version of Project Design Matrix (PDM) of Phase 1, Output 2 is described as follows. "The supporting system for implementing O&M of irrigation schemes based on CGL by irrigation staff at zonal and district offices as well as IOs is improved under DADPs."

	- Technical Cooperation in Supporting Service Delivery Systems of Irrigated Agriculture in The United Republic of Tanzania (TANRICE) (2007–2012) [Japanese ODA Loan Project] - Small Scale Irrigation Development Project (hereinafter referred to as SSIDP) (May 2013)

(2) Phase 2

Overall Goal		Irrigation development in line with CGL is promoted.
Project Purpose		System for improving and promoting irrigation development schemes in line with CGL is strengthened.
Output(s)	Output 1	Capacities of Zonal/District irrigation staff on F&I of irrigation schemes are enhanced.
	Output 2	Capacities of Zonal/District irrigation staff on O&M of irrigation schemes are enhanced.
Total cost (Japanese Side)		805 million yen
Period of Cooperation		August 2015–August 2020 (Extension Period: August 2019–August 2020)
Target Area		All the Tanzanian mainland except for Zanzibar. Seven irrigation schemes [11] were selected as demonstration sites, and 56 irrigation schemes as dissemination sites[12] in the whole country.
Implementing Agency		National Irrigation Commission (hereinafter referred to as NIRC), Ministry of Agriculture, seven ZITSUs, and District Offices of demonstration and dissemination sites
Other Relevant Agencies/ Organizations		None

[11] Misungwi District (Formulation), Nyida Irrigation Scheme in Shinyanga Region (Implementation and O&M), Ussoke Irrigation Scheme in Urambo District (implementation), Tabora City (Formulation), Ulyanyama Irrigation Scheme in Sikonge District (O&M), Msemembo Irrigation Scheme in Manyoni District (O&M), Lemkuna Irrigation Scheme in Simanjiro District (O&M).

[12] The demonstration districts were selected for irrigation schemes that apply these mechanisms to establish a system of monitoring, reporting, feedback, information sharing, and information accumulation in line with CGL for F&I and O&M that contribute to quality and time management of irrigation development, in consideration of accessibility also for exhibition effect. The dissemination sites were selected to see if these systems, which were improved based on the experience in the demonstration sites, would function sustainably in the dissemination sites by providing training and technical support, mainly by the districts and the regions, to the above schemes.

Consultant/ Organization in Japan	Ministry of Agriculture, Forestry and Fisheries
Related Projects	[Technical Cooperation] - Project for Supporting Rice Industry Development in Tanzania (TANRICE-2) (2012–2019) [Japanese ODA Loan Project] - SSIDP (May 2013)

1.3 Outline of the Terminal Evaluation

The Terminal Evaluation of Phase 1 was conducted in February 2014. In addition, the Terminal Evaluation of Phase 2 was carried out in two parts, in July and August 2019. The overview of the Phase 2 Terminal Evaluation, the final phase, is shown below.

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

The submission status of monitoring sheets related to formulation, implementation, and maintenance management in accordance with the CGL from the districts to the Regional Secretariat and the Zone Irrigation Offices was favorable. The 4th edition of the CGL was approved at the JCC meeting held on August 15, 2019. Additionally, a notification to the districts to promote irrigation development projects in line with the CGL was expected to be issued soon. From the above, it was determined that the project purpose (strengthening the framework for improving and promoting irrigation development projects in line with the CGL) was assessed to be achieved soon.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including Other Impacts.)

The overall goal (promotion of irrigation development in line with the CGL) was deemed achievable if the NIRC took the necessary measures to disseminate and promote the revised CGL. In addition, other positive impacts were pointed out, including (1) impacts on IOs and irrigation schemes (such as improved transparency in financial management of IOs leading to higher collection rates of irrigation service fees, improved water distribution, and expansion of irrigated areas (increased crop cultivation area), and reduced water disputes among farmers as a result of using the water distribution manual), (2) dissemination of the CGL to irrigation schemes not covered by the project, and (3) improved collaboration between LGAs and IOs, as well as increased motivation for maintenance activities by IOs.

1.3.3 Recommendations from the Terminal Evaluation

The following recommendations were made.

A. Recommendations regarding what the project team should do by the project completion

1. To ensure the effective implementation of the following project activities during the extension period, as confirmed by both the Tanzanian and Japanese sides in the minutes signed on April 30, 2019:

(1) Conduct training and monitoring on formulation, implementation, and operation and maintenance for the remaining 16 irrigation schemes constructed under the SSIDP.

(2) Introduce and implement the CGL in irrigation-related courses and workshops conducted by academic institutions and organizations to disseminate the CGL for future irrigation personnel development.

(3) Mainstream the use of CGL in irrigation development through the following activities:

a) Provide advice on budget requests necessary for irrigation development and follow up on promoting IOs' registration.

b) Support the acquisition of water use permits and collect and manage water fees to strengthen operation and maintenance.

c) Assist in the integration of monitored data into the irrigation database.

2. Further improvement and dissemination of the NIRC database

3. Research on the impacts of this project and good practices

B. Recommendations to the NIRC

1. Official notification of revised CGL

2. Further improvement of the technical manual

3. Budget for dissemination of the revised CGL and technical manuals

4. Establishment of a knowledge transfer mechanism within NIRC

5. Quality control in construction of irrigation facilities by private companies (contractors)

2. Outline of the Evaluation Study

This evaluation was conducted as a combined assessment of Phases 1 and 2 in accordance with JICA's policy for the following reasons. Additionally, in terms of "effectiveness and impact," the project purposes and the overall goal were assessed primarily using the indicators of the subsequent phase.

(1) The implementing agency was the same, and there was a high degree of commonality or continuity in the project purpose, the overall goal, and their indicators (continuity of the logic model).

(2) The subsequent phase aimed to expand the scope of the project purpose or the overall goal of the preceding phase or aimed for a higher level.

2.1 External Evaluator

Mayumi Hamada, Foundation for Advanced Studies on International Development

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2023–February 2025

Duration of the Field Study: February 4, 2024–February 27, 2024; July 14, 2024–July 19, 2024

2.3 Constraints During the Evaluation Study

During the implementation of this project, the Irrigation Technical Services Bureau of the Ministry of Water and Irrigation became an independent government agency known as the NIRC, separate from the Ministry of Agriculture. In addition, the seven irrigation zonal offices were reorganized into 25 regional irrigation offices. As a result, there were some difficulties in collecting certain information.

3. Results of the Evaluation (Overall Rating: B[13])

3.1 Relevance/Coherence (Rating: ③[14])

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Tanzania

From the planning stage to the completion of Phase 1, the promotion of irrigation development was consistent with *KILIMO KWANZA* (Agriculture First, 2009) and *the Irrigation Act* (see footnote 2), which have been the pillars of *the VISION 2025* (*The Tanzania Development Vision 2025*, formulated in 1998). *The National Rice Development Strategy* (*NRDS*, 2010) also emphasized improving irrigation technology. From the time of planning and project completion of Phase 2, *the VISION 2025* and *the National Irrigation Act* remained valid, and the promotion of irrigation development was emphasized also in *the National Five-Year Development Plan 2016/17–2020/21*. Therefore, this project was consistent with Tanzania's policies in Phase 1 and Phase 2.

3.1.1.2 Consistency with the Development Needs of Tanzania

At the time of planning Phase 1, Tanzania's agricultural sector was the key industry, which accounted for more than 25% of GDP and about 40% of export earnings while supporting the livelihoods of approximately two-thirds of the population. However,

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

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

agricultural production was significantly affected by natural conditions such as droughts[15]. Therefore, irrigation development has been considered an important means of improving agricultural production. From the commencement to the completion of both Phase 1 and Phase 2, there have been no significant changes in these conditions. Thus, this project, aimed at improving the quality of irrigation development promotion, was consistent with Tanzania's development needs.

3.1.1.3 Appropriateness of the Project Plan and Approach

Throughout both phases, efforts were made to promote the participation of women in irrigation development. This included advocating for a minimum of one-third female representation among IO management members in the training courses for farmers. In addition, lessons from past experiences were utilized. For instance, the "Technical Cooperation for Formulation and Training of the DADP Guidelines on Irrigation Scheme Development" emphasized a lesson learned in a participatory process through workshops and training, which fostered stakeholder understanding and ownership. This approach and hands-on experience at the field level proved effective for acquiring irrigation technical skills. Consequently, this project also emphasized a participatory process and practical training in irrigation schemes. Lessons from Phase 1 highlighted the importance of involving not only practitioners in charge but also those with decision-making power for budget allocation into project activities and promoting awareness of the project's importance. This was planned for Phase 2 to ensure the project's budget was reflected in Tanzania's budget plans. Actually, in Phase 2, three different levels of meetings were regularly held to involve decision-makers and staff in charge. Furthermore, lessons from the "Technical Service Center for Irrigation System Project Phase 2" in Cambodia (2006–2009) indicated that ensuring farmers in beneficiary areas could generate sufficient profits from irrigation agriculture to cover maintenance costs was crucial for the operation and maintenance in a project where irrigation and drainage facilities are developed. This project emphasized the importance of collaboration with the "Project for Supporting Rice Industry Development in Tanzania" (Technical Cooperation Project) (TANRICE-2, 2012–2019), which aimed to expand irrigation rice cultivation techniques nationwide through training and was conducted simultaneously. During the implementation of Phase 2, TANRICE-2 accepted participants from two districts within the TANCAID target areas upon request from the project's experts[16]. Therefore, there were no issues with the appropriateness of the project plan and approach.

[15] Phase 1 Detailed Planning Survey Report p. 8
[16] Interview with former Expert of TANRICE-2.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

Agriculture was identified as a priority support area in *Japan's Country Assistance Plan for Tanzania* (2008) and *the Country Assistance Policy for Tanzania* (2012), and both phases were consistent with Japan's ODA policy at the time of planning.

3.1.2.2 Internal Coherence

In Phase 2, farmers in two of the irrigation schemes[17] covered by this project received TANRICE-2 training (out of 100 irrigation schemes in total[18]). The experts of the two projects coordinated with each other for the implementation of the training program with the specific objective of improving agricultural technology to enable farmers to raise funds for the maintenance and management of irrigation facilities, and it can be judged that there was a "linkage" with this project. However, no specific targets were set, and no information was obtained on the increase in crop yields and changes in the payment status of irrigation facility maintenance and management costs after implementing the training. On the other hand, no documentation of prior discussions or coordination was confirmed between the SSIDP and this project regarding specific effects intended by the two projects, and it cannot be said that there was a specific "linkage" in terms of internal consistency. However, the utilization of the SSIDP's irrigation facility design, construction management, and operation and maintenance in this project to conduct a practical training program was considered a contributing factor to improving the project's effectiveness, as it led to an improvement in the participant's level of understanding (see Section 3.2 Effectiveness below).

3.1.2.3 External Coherence

There was no specific linkage between this project and other donor-supported projects (i.e., the content of the linkage and expected results were discussed and agreed upon in advance). However, both phases of this project are consistent with the international framework as they are positioned as projects related to the Coalition for African Rice Development (CARD) in Tanzania.

As mentioned above, this project, which aims to promote irrigation development, was consistent with Tanzania's development policy and needs from commencement to completion of both phases. The project plan and approach were appropriate. The project was consistent with Japan's ODA policy at the time of planning. Although there was a linkage with another JICA project during implementation, the intended concrete effects of the project

[17] Tulo Kongwa Irrigation Scheme in Morogoro Region and Msanjesi Irrigation Scheme in Mtwara Region.
[18] Based on the list of the target irrigation schemes provided by NIRC.

could not be confirmed. Although no coordination with other donors was observed, coordination with international frameworks was confirmed. Therefore, its relevance and coherence are high.

3.2 Effectiveness and Impacts[19] (Rating: ③)

3.2.1 Effectiveness

The integrated evaluation of both phases of this project is based on the final version of the PDM (Ver. 4) of Phase 2. However, since some of the output indicators included project purpose-level indicators, a reorganization based on logic was conducted before the evaluation. The effectiveness was primarily assessed based on the achievement status of the project purpose at the completion of Phase 2, as indicated in the above PDM.

3.2.1.1 Achievement of Project Purpose

As an integrated evaluation based on the above, Table 1 shows the actual results of the project purpose and its indicators in the final version of the Phase 2 PDM at the completion of Phase 2.

Table 1 Achievement of Project Purpose (at project completion of Phase 2)

Objective	Indicator	Actual Result	Achievement (4-point scale)
Project Purpose: System for improving and promoting irrigation development schemes in line with CGL is strengthened.	1. Monitoring sheets for at least 60 % of the target irrigation schemes (demonstration and dissemination sites) are periodically submitted from LGAs to ZIOs.	The percentages of regular submission of the following three types of monitoring sheets at the time of completion are as follows: - Formulation: 100% - Implementation: 74% - Operation and Maintenance (O&M): 94%	4
	2. Revised CGL is approved by JCC.	The revised CGL was approved by JCC four times.	3
	3. Ministry of Agriculture in cooperation with other related Ministries provides an official announcement	The official announcement was not made by the project completion. The main reason was the replacement of the Permanent Secretary of the Ministry of Agriculture and the Director of the NIRC (although it was achieved in October 2020, two months after the completion of Phase 2).	2

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

<table>
<tr><td></td><td>to LGAs to promote irrigation development in line with CGL.</td><td></td><td></td></tr>
<tr><td></td><td>4. F&I based on revised CGL are practiced in 50 irrigation schemes.</td><td>F&I based on the revised CGL was conducted in 88 irrigation schemes. The breakdown is shown in the table below.

Breakdown of the number of irrigation schemes where F&I was practiced
(During Phase 2 Implementation Period)
(Unit: cases)
<table><tr><th>Number of Irrigation Schemes by Financial Sources</th><th>Actual Results</th><th>Remarks</th></tr><tr><td>SSIDP</td><td>78</td><td></td></tr><tr><td>Government of Tanzania</td><td>5</td><td></td></tr><tr><td>Other donors</td><td>5</td><td>World Bank: 2
AfDB: 2
ASDP2: 1</td></tr><tr><td>Total</td><td>88</td><td></td></tr></table></td><td>4</td></tr>
<tr><td></td><td>5. O&M based on revised CGL are practiced in 23 irrigation schemes.</td><td>O&M based on the revised CGL was conducted by IOs in 29 irrigation schemes (four demonstration sites and 25 dissemination sites).</td><td>4</td></tr>
</table>

Source: Phase 2 Project Completion Report (PCR)

Note 1: As a result of the close examination of all PDMs in this evaluation study to confirm and organize the logic, the project purpose and its indicators were based on the PDM Ver. 4 of Phase 2. Although Indicators 4 and 5 in the table were indicators of outputs in the PDM of Phase 2 (Ver. 1 to 4), they were reorganized as it was deemed logically appropriate to make them indicators at the project purpose level.

Note 2: The number shown in the achievement column means as follows: 4: Achieved more than planned, 3: (Mostly) Achieved as planned, 2: (Slightly) Not achieved as planned, 1: Not achieved at all.

Looking at all the PDMs[20] of this project, it can be understood that at the output level, the project aimed to improve the CGLs by improving stakeholders' understanding of CGLs and reflecting the results of activities, and at the project purpose level by achieving the outputs, the project aimed for a "state of actual implementation" of the cycle of F&I and O&M in accordance with the CGLs in the vertical flow of "central ministry–irrigation zonal offices[21]/regional offices–district offices–IOs. Out of the five indicators of the project purpose, only Indicator 3 (notification from the central ministries to the districts) is different in nature from the other indicators and does not function as an indicator to measure the level of CGL implementation but as a means of ensuring sustainability. The remaining four

[20] The PDM was revised three times in Phase 1 (December 2011, February 2013, and May 2014) and three times in Phase 2 (September 2017, October 2018, and April 2019), creating PDM Ver. 1 through Ver. 4, respectively.

[21] Due to a reorganization, the office was changed from a zone office to a state office during the implementation of Phase 2.

indicators measure the actual application level of F&I and O&M in line with the CGL. Not only were these achieved, but three of the four exceeded the target values (the remaining one, Indicator 2, does not have a target value set and, therefore, cannot be compared to the target value). Therefore, the project purpose is considered to have been achieved more than planned by the time of completion of Phase 2.

One of the contributing factors to this high level of achievement was the appropriate planning and implementation of the output level. These include formulating and implementing a practical and participatory curriculum that utilizes actual irrigation facility design and construction management sites, training for zonal and district irrigation staff throughout Tanzania, and confirmation of training effects through examinations and follow-up guidance for districts with insufficient understanding. To secure sufficient space for the design and construction management of irrigation facilities necessary for practical training, the experts of this project coordinated with the local contractor responsible for constructing the SSIDP irrigation facilities during the implementation of the project so that the SSIDP irrigation facility construction site could be utilized for the training. This was an important contributing factor in improving participants' understanding of the project. In addition, the trained district irrigation staff also provided practical and participatory training to the IO farmers, just as they had received it when they had attended the training. During the interviews at the ex-post evaluation, several participants from the then-district offices commented that the training was easy to understand and useful. These factors led to the acquisition of practical knowledge by zonal and district irrigation staff and IOs (farmers) and further to achieving the project purpose of applying CGL. Furthermore, this project incorporated into each output of the Phase 1 and Phase 2 monitoring of the training and the field application status, as well as the periodic revision and improvement of the CGL itself and related manuals to be applied. The project team, which consisted of Japanese experts and local counterparts, implemented this with confirmation and consultation, which is considered to have led to the promotion of the irrigation development project in line with the CGL (the overall goal of Phase 2).

Based on the above, the project achieved its purpose more than planned. The high level of the achieved outputs contributed significantly to the achievement.

3.2.2 Impacts

3.2.2.1 Achievement of Overall Goal

In line with the approach described in "2. Outline of the Evaluation Study," the achievement status of the overall goal among the impacts was evaluated based on the final version of the Phase 2 PDM (Ver. 4) at the time of the ex-post evaluation.

Table 2 shows the achievement status of the Phase 2 overall goal at the time of the ex-post evaluation. Regarding the overall goal (Promotion of irrigation development projects in line with CGL), the rate of CGL application in 2023, three years after the completion of Phase 2, was 50%, far below the target of 90%. The main reasons for this are the decrease in the number of visits to irrigation schemes by district irrigation staff due to the COVID-19 pandemic in FY2020, transfer of irrigation staff to other ministries and retirement. In addition, training on CGL has yet to be conducted for irrigation staff hired by NIRC and deployed at the district level in FY2023 due to NIRC's increased role in irrigation development. Activities and monitoring of the irrigation schemes after the project is completed are not undertaken sufficiently due to insufficient budget for travel and transportation expenses.

Table 2 Achievement of Overall Goal

Objective	Indicator	Actual Results						Achieve-ment (4-point scale)
Overall Goal: Irrigation development in line with CGL is promoted.	Revised CGL is applied in over 90% of the development and expansion irrigation schemes implemented by NIRC during 3 years after Project completion.	Year	2020 (SEP-)	2021	2022	2023	2024	1
		Rate of Application (%)	70	70	70	50	40	

Source: Phase 2 PCR, Questionnaire to NIRC
Note: The number shown in the Achievement column shows the following. 4: Achieved more than planned, 3: (Mostly) Achieved as planned, 2: (Slightly) Not achieved as planned, 1: Not achieved at all.

Table 3 shows the status of keeping basic documents for O&M by IOs in line with the CGL for the irrigation schemes visited by the evaluator in February 2024. Only one of the six irrigation schemes visited had the same basic documentation in place at the time of the ex-post evaluation. Although the small sample size does not guarantee representativeness, it can be assumed that many irrigation schemes did not apply the CGL at the time of the ex-post evaluation. The reason for this is that, in addition to the aforementioned lack of continuous guidance by district irrigation staff, the IO management team is subject to periodic elections, and there were some instances in which the handover was not properly carried out. However, this could have been avoided if the district irrigation staff had visited IOs periodically to guide the IOs. The reasons for the lack of proper guidance were the impacts of the COVID-19 pandemic and the fact that the implementation system for irrigation development and management was drastically changed after completion of this

project, making it difficult for the newly established district irrigation staff to continue their support in terms of structure and capacity. The Nyida Irrigation Scheme in Shinyanga Province, the only site in Table 3 that has kept a series of basic CGL documentation, was supported by this project throughout Phases 1 and 2. Primarily, it was selected as a demonstration site in Phase 2, both in terms of Implementation and O&M, and it was the only irrigation scheme. In this sense, the Nyida Irrigation Scheme received the most generous support and guidance compared to other demonstration sites, not to mention general dissemination sites. At the time of the field visit for this ex-post evaluation, the motivation and cohesiveness of the IO members in the scheme were high, and the long-lasting and generous support is considered a contributing factor that outperformed other irrigation schemes in terms of the effects described below. In addition, the Nyida irrigation scheme had an irrigation scheme manager[22] on-site at the time of ex-post evaluation to provide necessary guidance and support. NIRC intends to promote the assignment of an irrigation scheme manager in the future[23] with a view to supporting a proper handover between IO managers. Still, no specific medium- to long-term assignment plan was obtained.

Table 3 Basic CGL documentation at visited sites (February 2024)

IO	Mtazamo	Bahi Sokoni	Igenge	Nyida	Lawate	Orumwi
District	Bahi	Bahi	Misungwi	Shinyanga	Siha	Siha
Region	Dodoma	Dodoma	Mwanza	Shinyanga	Kilimanjaro	Kilimanjaro
Supported Phase	II	I	II	I&II	I	II
Basic CGL Documentation by IOs	**No**	**No**	**No**	**Yes**	**No**	**No**
Remarks	Because there was no handover when the management team of the IO changed due to elections; it was prepared until May 2020.	It was last documented in 2018.	It was documented until 2018. Construction of irrigation facilities was only part of the original plan, and irrigation facilities were not fully functional.	The documentation is made in line with the CGL. However, it was not done in FY2021 and FY2022 (when the previous management team was in place).	They do not have the form itself regarding CGL.	Irrigation facilities have not started functioning yet. No training has been received by the time Phase 2 was completed.

Source: The evaluator compiled the information during the irrigation scheme visit.

[22] The Irrigation Scheme Manager is a technician-level irrigation staff who is dispatched to the irrigation scheme by NIRC to reside in the irrigation scheme and provide guidance and support for irrigation development in accordance with the CGL.
[23] Interview with NIRC

Table 4 shows the continuation status of the project outputs and the project purpose after completion until the time of ex-post evaluation. While the application of CGL is observed for the formulation and implementation of irrigation facilities, the training and effect measurement, especially the guidance of IOs and the revision of CGLs and manuals, have yet to be maintained, mainly due to budgetary reasons. This is believed to have led to the failure to achieve the overall goal.

Table 4 Continuation of Outputs and Project Purpose after Completion of Phase 2

Objective	Indicator	Continuation Status
Output 1: Capacities of Zonal/District irrigation staff on formulation and implementation (F&I) of irrigation schemes are enhanced.	1-1. Understanding of District irrigation staff who participated in trainings on F&I of irrigation schemes is enhanced (80% of these staff could answer important points of revised CGL and relevant manuals on F&I). 1-2. CGL and relevant manuals on F&I are revised.	- The comprehension tests have not been implemented after project completion. - CGL and manuals have not been revised due to budget shortfall (travel and transportation expenses).
Output 2: Capacities of Zonal/District irrigation staff on operation and maintenance (O&M) of irrigation schemes are enhanced.	2-1. Understanding of District irrigation staff who participated in trainings on O&M of irrigation schemes is enhanced (80% of these staff could answer important points of revised CGL and relevant manuals on O&M). 2-2. CGL and relevant manuals on O&M are revised.	- Training and comprehension tests have not been conducted after the completion of the project. - The CGL and manuals have not been revised due to budget shortfalls (travel and transportation expenses).
Project Purpose: System for improving and promoting irrigation development schemes in line with CGL is strengthened.	1. Monitoring sheets for at least 60% of the target irrigation schemes (demonstration and dissemination sites) are periodically submitted from LGAs to ZIOs.	- N/A
	2. Revised CGL is approved by JCC.	- The CGL was not revised after the completion of Phase 2.
	3. Ministry of Agriculture in cooperation with other related Ministries provides an official announcement to LGAs to promote irrigation development in line with CGL.	- The notice was issued on October 1, 2020.
	4. F&I based on revised CGL are practiced in 50 irrigation schemes.	- Formulation and Implementation based on the revised CGL are carried out in 100 irrigation districts (Government of Tanzania 89, World Bank 11).
	5. O&M based on revised CGL are practiced in 23 irrigation schemes.	- No data is available due to system changes and budget shortfalls. However, in 2023,

		NIRC conducted training in 11 irrigation schemes in Mbeya Region and 33 in Kilimanjaro Region. The role of keeping monitoring records was transferred from LGAs to NIRC in March 2023, but capacity building for newly hired and deployed staff (253 persons) at the district level was largely not yet implemented.

Source: Questionnaire to and interviews with NIRC

This project did not construct the irrigation facilities but aimed to establish a system of Formulation, Implementation, and O&M in line with CGL and disseminate the system nationwide. No data were obtained on continuing the "implementation of irrigation facility maintenance management based on CGL" (Indicator 5 of the project purpose). The O&M status of irrigation facilities in the six irrigation schemes that the evaluator visited during the ex-post evaluation is shown in Table 5. Only one of the six irrigation schemes scored 4 or higher on a 5-point scale in terms of the maintenance of irrigation facilities and knowledge of maintenance methods in line with CGLs, and only half of the six schemes (3 out of 6) were regularly performing routine maintenance.

Table 5 O&M Status of Irrigation Facilities by IOs

IO	Mtazamo	Bahi Sokoni	Igenge	Nyida	Lawate	Orumwi
District	Bahi	Bahi	Misungwi	Shinyanga	Siha	Siha
Region	Dodoma	Dodoma	Mwanza	Shinyanga	Kilimanjaro	Kilimanjaro
Supported Phase	II	I	II	I&II	I	II
Maintenance and Management Status of Irrigation Facilities (5-point scale)	3.0	1.9	N/A	4.0	4.0	N/A (Facility not completed yet)
Frequency of Major repairs[24]	Once a year	Once a year	N/A	Once a year	Once a year	0
Frequency of Minor repairs	When a problem occurs	3 times/ season	2 times/year	4 times/year	2 times/year	0
Frequency of Periodical maintenance	Once a month	Once a year	2 times/year	2 – 3 times/year	4 times/year	0
Frequency of Routine maintenance	N/A	None	Once a season	2 times/season	2 times/year	0

[24] Major repairs are repairs in large scale and minor repairs are repairs in small scale; periodical maintenance is maintenance that is performed at regular intervals and includes strengthening and repair of banks and structures, and mowing, etc. Routine maintenance is daily maintenance and includes siltation, debris removal, and oiling of water gate, etc.

Knowledge of O&M in lined with CGL (5-point scale)	3.5	1.9	2.08	4.0	3.8	N/A
Remarks	- Requested assistance to the district and headquarters but they had not received a response until the time of the ex-post evaluation.	- There is no technical assistance, and everything must be handled by the villagers. - The canals are not lined, making them vulnerable to damage.	- The construc-tion of irrigation facilities is only part of the original plan and is not fully functional.	- The documen-tation is made in line with CGL. The documents only during FY2021 and FY2022 is missing (during the previous IO Managem ent Team period).	- They do not have the form itself; it was an agricultur-al coopera-tive before it became an IO.	- The irrigation facility has not started functioning yet. - Formulation and Implementa-tion was done in line with CGL, but no training was received on O&M.

Source: Prepared by the evaluator based on the results of interviews with farmers[25] during the visit to the irrigation schemes at the time of the ex-post evaluation.
Note: "Achievement status" shows the average of the results of asking farmers about their perception on a 5-point scale. The numbers mean the following: 5: Very good, 4: Good, 3: Neither good nor bad, 2: Bad, 1: Very bad.

Photo 1 Water canal developed by this project: Nyida Irrigation Scheme in Shinyanga Region (Photo taken by the evaluator)

Photo 2 Farmers busy responding to cope after floods: Bahi Sokoni Irrigation Scheme in Dodoma Region (Photo taken by the evaluator)

[25] The total number of farmers interviewed during the ex-post evaluation was 90 across the six irrigation schemes visited. Of these, 73 were male and 17 were female. An attempt was made to ensure an equal ratio of males and females, but this was not possible. The breakdown by irrigation scheme is as follows: Mtazamo: 10, Bahi Sokone: 14, Igenge: 26, Nyida: 20, Lawate: 11, Orumwi: 9.

Photo 3 Irrigation facilities where construction has stopped in the middle of the planning process: Igenge Irrigation Scheme in Mwanza Region (Photo taken by the evaluator)

Photo 4 Irrigation facilities with uncompleted construction: Orumwi Irrigation Scheme in Kilimanjaro Region (Photo taken by the evaluator)

As stated above, the project has achieved its overall goal only to a certain extent compared to the plan, mainly because of budgetary reasons. CGL was applied to the Formulation and Implementation management of irrigation facilities where government employees are engaged.

3.2.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

The irrigation development in which the irrigation staff trained in this project is engaged is mainly the development and rehabilitation of small-scale irrigation facilities. Therefore, it was assumed that the environmental impact would be manageable in Phase 1, unlike large-scale irrigation development. On the other hand, it was decided to consider the environmental impact assessment and water resource management policies in Tanzania during the formulation and implementation stage of irrigation projects[26]. In Phase 2, the project was classified as Category C based on the JICA Guidelines For Environmental and Social Considerations (April 2010) since the undesirable effects on the environment were minimal[27]. No positive or negative environmental impacts were found due to implementation of this project[28].

2) Resettlement and Land Acquisition

Resettlement and land acquisition by this Project was not anticipated and did not occur[29].

3) Gender Equality

Regarding gender, this project has emphasized that one-third of the IO management

[26] Phase 1 Ex-ante Evaluation Sheet p. 8
[27] Phase 2 Ex-ante Evaluation Sheet p. 5
[28] Questionnaire to and Interview with NIRC
[29] Questionnaire to NIRC

committee's[30] members should be women in O&M training since Phase 1 to increase women's participation in IOs. In Phase 2, most of the IOs that received O&M training changed to a system in which three out of nine management committee members are women[31]. According to an interview with female farmers, the participation rate of females in agricultural work is high. Previously, women were not allowed to participate in meetings, and men made all decisions. Although women are now allowed to participate in meetings after the implementation of this project, there are still some meetings in which they are not allowed to participate. In addition, some women said that the number of women selling vegetables and other products and setting up small-scale stores (selling sugar, rice, juice, etc.) has increased in recent years[32].

4) Marginalized People, Social Systems and Norms, People's Well-being and Human Rights

No impact was observed.

5) Unintended Positive/Negative Impacts

The CGL improved by this project was officially positioned by the Tanzanian government as a guideline for irrigation development. As a result, the CGL was used not only in irrigation development by the Tanzanian government but also in irrigation development (new facility construction/rehabilitation, IO training) supported by other donors, such as the World Bank's "The Expanding Rice Production Project" (2015–2021) and the DAKAWA irrigation scheme supported by USAID[33].

Table 6 shows the results of the farmer interviews[34] regarding changes in economic aspects (agricultural yield and income). Detailed information on changes in income by gender was not obtained. In IOs (Orumwi, Igenge), where there are issues with the construction of irrigation facilities that are not functioning well, and in IOs (Bahi Sokoni), where the maintenance status could be better, the yield and income have not improved much. On the other hand, it is believed that both have improved in Nyida, where maintenance is carried out in line with the CGL. However, generalization is not possible due to the small sample size. In addition, when farmers who answered that their income had increased were asked to give examples of changes in their lives, their responses included, "We rebuilt our house," "We can now send our children to school," "We can now have a balanced diet," and "We can now use machinery such as tractors."

[30] Operation and management committee of IOs. The members are chosen by election periodically.
[31] Questionnaire to NIRC
[32] Interview with farmers
[33] Questionnaire to JICA Tanzania Office
[34] The number of respondents in farmers interviews is as shown in footnote 24.

Table 6 Changes in Economic Aspects

(Comparison Between Before Project Implementation and Ex-post Evaluation)

IO	Mtazamo	Bahi Sokoni	Igenge	Nyida	Lawate	Orumwi
District	Bahi	Bahi	Misungwi	Shinyanga	Siha	Siha
Region	Dodoma	Dodoma	Mwanza	Shinyanga	Kilimanjaro	Kilimanjaro
Supported Phase	II	I	II	I&II	I	II
Increase in Yield	**3.8**	**2.0**	**1.6**	**4.0**	**4.1**	**2.0**
Ditto (Only Women)	*4.5*	*3.0*	*1.8*	*4.0*	*4.0*	*3.0*
Increase in Income	**4.0**	**2.3**	**1.15**	**3.9**	**3.7**	**2.0**
Ditto (Only Women)	*5.0*	*4.0*	*3.0*	*4.0*	*4.0*	*4.0*
Remarks		The self-assessment of the maintenance status of irrigation facilities was 2 out of 5 (poor).	Construction of irrigation facilities was only part of the original plan, and they are not functioning adequately.	At the time of ex-post evaluation, maintenance was being carried out in line with CGL.		The irrigation facilities are not yet functional.

Source: IO/farmer interviews in site surveys during ex-post evaluation

Note 1: The above was assessed by asking farmers to rate each item on a 5-point scale, and the average was calculated from the number of farmers who responded by raising their hands. The meaning of the 5-point scale is as follows: 1: No increase at all 2: Not much increase 3: Neither increased nor not increased 4: Increased 5: Significant increase

Note 2: Regarding crop yield, the kind of planted crop differs by region, district, and irrigation scheme, so the question was asked about the crops being cultivated in general.

Note 3: The number of "women only" was small (1-5 people each), so the figures are for reference only.

Through the implementation of this project, this project achieved the project purpose of strengthening of the irrigation development mechanism in line with CGL (i.e., the cycle of irrigation development from Formulation and Implementation to O&M is practiced in line with CGL) more than planned. Although the project achieved the overall goal only to a certain extent, some positive impacts, such as applying CGL to other donor support projects' construction of irrigation facilities, contribution to increased yields and income, and changes in the livelihood of farmers, were observed. Therefore, effectiveness and impacts of the project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Tables 7 and 8 show the inputs for this project.

Table 7 Inputs from the Japanese side

Inputs	Plan	Actual (At Project Completion)
1. Experts	**Phase 1** - Long-term Experts: 4 persons (Chief adviser/Irrigation policy, Irrigation construction management, Participatory irrigation maintenance and management/Organizational development, Project coordinator/Training promotion) - Short-term Experts: as needed **Phase 2** - Long-term Experts: Chief advisor/Data system, Formulation and implementation, operation and maintenance (O&M), Project coordinator/Training management - Short-term Experts: Monitoring sheet, Rehabilitation, Repair, Safeguard (Environmental and social considerations), Standard design, Data system, and others (as needed)	**Phase 1** - Long-term Experts: 6 persons (Chief adviser/Irrigation policy 2 persons (predecessor and Successor), Irrigation construction management, Participatory irrigation maintenance and management/Organizational Development, Project coordinator/Training promotion, Project coordinator) - Short-term Experts: 5 persons (ditto) **Phase 2** - Long-term Experts: 6 persons (Chief advisor/Database, Chief advisor, O&M, Formulation and implementation, Operation and maintenance management, Project coordinator/Training management - Short-term Experts: 8 persons (Rehabilitation/Standard design, Irrigation database system, Construction management, Environmental and social considerations, Gender mainstreaming, and Participatory design/Construction management)
2. Trainees received	**Phase 1** - Training in Japan or in the third country **Phase 2** - Training in Japan or in the third country	**Phase 1** - Training in Japan 1st Year: December 2010 - 0 person 2nd Year (TFY 2011): 2 persons 3rd Year (TFY 2012): 1 person 4th Year (TFY 2013): 8 persons Total: 11 persons (TFY means Tanzanian Fiscal Year. From July to June) **Phase 2** - Training in Japan “Irrigation development management course” 29 persons - Training in Japan “Participatory water management institution course” 2 persons - Training in Egypt “Efficient water use for modern irrigation course” 1 person Total: 32 persons
3. Equipment	**Phase 1** - Cars, Equipment for office and measuring (GPS) **Phase 2** - Cars, Office equipment, Survey equipment, etc.	**Phase 1** - Cars USD188,090 - Other equipment 25,892,500 TSH **Phase 2** - Cars and others 751,392,873 TSH - Overseas Activity Fund 793,734,873 TSH
4. Local Cost	**Phase 1** - Partial cost for implementing demonstration site activities and training **Phase 2** - Construction material necessary for irrigation development, and	**Phase 1** - 3,300,204,895 TSH - The main usages were transportation, traveling, expenses for commissioned work, per diem, etc. **Phase 2** - 7,324,026,673 TSH (till February 2020 only)

	implementation of TOT (Training of Trainers), etc.	- The main usages were air fare, travel cost, and other general cost.
Japanese Side Total Project Cost	**Phase 1** 310 million yen **Phase 2** 570 million yen **Total** 880 million yen	**Phase 1** 467 million yen **Phase 2** 805 million yen **Total** 1,272 million yen

Source: Ex-ante Evaluation Sheets, Terminal Evaluation Reports, and PCR of both phases
Note: The JICA exchange rate of February 2014: 1JPY=15.625TSH (for reference)

Table 8 Inputs from the Tanzanian Side

Inputs	Plan	Actual
1. Counterparts	**Phase 1** - Task Members[35]: Approximately 20 persons **Phase 2** - Project Director, Project Manager, Division Directors of NIRC, Engineers, ZITSU Irrigation Staff, District Irrigation Staff	**Phase 1** - Task Members: 49 persons (including 6 persons from Division of Irrigation Technical Service, MWI, 2 persons from DT, 41 persons from Zones and Districts) **Phase 2** - Central (NIRC) 9 persons, Region (Regional Irrigation Office) 49 persons
2. Provision of Land and Facilities, and Equipment Procurement, etc.	**Phase 1** - Working space, Facilities and Equipment at MWI, Zonal Irrigation Offices, and target District Offices **Phase 2** - Project office space, office equipment, and its maintenance cost (electricity, water, communication, etc.)	**Phase 1** - Two offices, three cars, and others (electricity and water expenses, etc. for offices) **Phase 2** - Two offices, drivers for the Experts (4 persons for NIRC, 8 persons for Zonal (Regional) Irrigation Offices, 7 persons for District Offices)
3. Local Cost, Salary of Counterparts, Training Cost	**Phase 1** - Local Cost (No indication on the amount.) **Phase 2** - Travel cost and transportation of Counterparts - Expenses for activities at Dissemination Sites	**Phase 1** - Local Cost 181,858,170 TSH (till October 2013. It is equivalent to JPY 11,638,923.) - Major usage of the expenses were fuel for cars, salary for drivers, and expenses for cars in the central and zone levels. **Phase 2** - Local Cost: Electricity expenses of Office for JICA Experts, salary for drivers of project cars (data of the amount was not available).

Source: Ex-ante Evaluation Sheets, Terminal Evaluation Reports, and PCR of both phases

3.3.1.1 Elements of Inputs

When NIRC was asked to rate the quality, quantity, and timeliness of the Japanese experts, equipment, and training in Japan for Phases 1 and 2 on a 5-point scale, the implementing agency rated them all at the highest level of 5[36]. The assessment by the Tanzanian side is high regarding the inputs from the Japanese side.

[35] Since previous phase, the Tanzania side requested that the name "counterpart" be avoided, and it was agreed that this name would be used in this project as well (Ex-ante Evaluation Sheet of Phase 1 p. 5).
[36] Questionnaire to NIRC

3.3.1.2 Project Cost

Table 9 shows the project costs on the Japanese side. The total project costs on the Japanese side for both phases exceeded the plan, 145% of the planned amount.

Table 9 Project Cost of Japanese Side

(Unit: million yen)

	Plan	Actual	Ratio against Plan (%)
Phase 1	310	467	151
Phase 2	570	805	141
Total	880	1,272	145

Source: Ex-ante Evaluation Sheet and PCR (Phase 1 & 2)
Note: Rounded down to the nearest million yen

3.3.1.3 Project Period

Table 10 shows the project period. The project period, including both phases combined, slightly exceeded the plan, which was 124% of the plan.

Table 10 Project Period

	Plan	Actual	Ratio against Plan (%)
Phase 1	Nov. 2010–Oct. 2013 (36 months)	Dec. 2010–Jun. 2014 (43 months)	119
Phase 2	Jun. 2015–May 2019 (48 months)	Aug. 2015–Aug. 2020 (61 months)	127
Total	84 months	104 months	124

Source: Ex-ante Evaluation Sheets and PCR (Phase 1 & 2)

The main reasons for the extension of the project period were, in Phase 1, support for establishing a mechanism for securing the training budget, standardization and utilization of training materials[37], and in Phase 2, making up for lack of understanding due to transfers and retirements of trained staff, and providing training and monitoring for IOs in the remaining 16 irrigation schemes of SSIDP where training was incomplete due to delayed construction works[38]. These reasons are considered changes at the activity level and cannot be considered an extension due to a change in the project scope.

The outputs were achieved by the completion of Phase 2, and there were no problems with the quality, quantity, and timeliness of the inputs. However, project costs exceeded the

[37] Document provided by JICA
[38] Phase 2 PCR in English p. 2, Phase 2 Terminal Evaluation Report p. 1

plan, and the project period slightly exceeded the plan. Therefore, efficiency of the project is moderately low.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

In order for the development of irrigation based on the CGL to continue to be promoted, the Tanzanian government's policies must maintain the direction of promoting irrigation development. As mentioned in the section on relevance, the promotion of irrigated agriculture was consistent with Tanzanian policy from commencement to completion of both phases. Even at the time of the ex-post evaluation, NRDS II (2019–2030), the successor to the NRDS, aims to promote irrigation infrastructure development, and it is believed that irrigation development will continue to be important in terms of policy.

3.4.2 Institutional/Organizational Aspect

For irrigation development based on the CGL to continue throughout Tanzania, F&I and O&M in line with the CGL must be consistently implemented at each level, including the central government, regional offices, district offices, and IOs, in line with the roles of each organization.

During the implementation of this project, the Irrigation Technical Services Department of the Ministry of Water and Irrigation became an independent government agency, the NIRC, and the seven zonal offices were reorganized into 25 regional irrigation offices. This reorganization itself did not have any particular negative impact on irrigation development[39]. Meanwhile, the guidance and monitoring of IOs, which was the role of the LGAs during the implementation of this project, were transferred from the LGAs to the NIRC in March 2023[40]. The difference between the system during the implementation of the project and after the role change is shown in Figure 1. During the implementation of this project, the monitoring results of irrigation schemes were reported to the LGAs, and the NIRC was not the primary recipient. However, suppose the new system is established correctly. In that case, the NIRC can centrally manage the vertical flow of "central government, regional offices, LGA offices, and IOs," which is expected to lead to more effective and efficient management. In response to this change, the NIRC has begun to establish a necessary system. 317 new employees were hired in FY2023, of which 253 were assigned to the district level. However, at present, it is a transitional period, and due to delays in training for newly hired and assigned staff at the district level, many new staff at the district level need to become more familiar with the CGL at the time of the ex-post evaluation. It is necessary to secure the budget for training

[39] Questionnaire to NIRC
[40] Interview with NIRC

required to enhance the capacity of these staff, strengthen the capacity of NIRC district-level irrigation staff quickly, and secure an activity budget for these irrigation staff to visit IOs and provide training and guidance. The number of NIRC staff has increased since the completion of Phase 2 compared to the completion time (Table 12). However, as district-level responses, which were not previously included in the NIRC's role in the past, have been added, more staff will be needed at the region and district levels in the future[41].

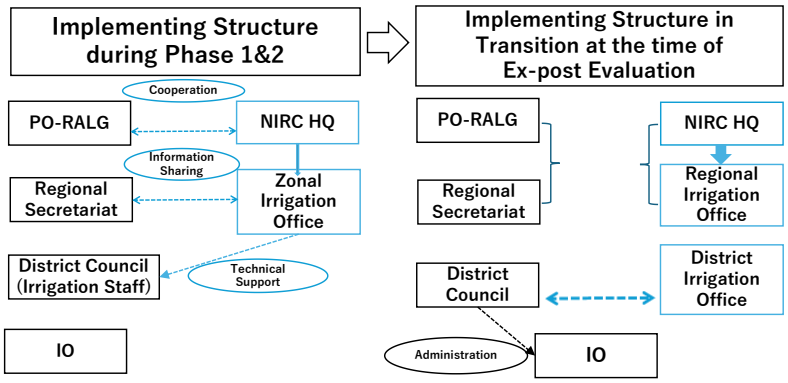


Figure 1 Change of the Role of NIRC

Source: Prepared by the evaluator based on the material provided by NIRC

Table 11 Staff Number of NIRC

(Unit: person)

	2020	2021	2022	2023
Headquarters	37	32	35	52
Region	108	104	102	213
District	8	11	5	127
Total	153	147	142	392

Source: NIRC

In terms of organization and structure, the organizational structure will become more effective and efficient than before if the necessary personnel are secured and their capacities are successfully strengthened to build a new structure, which is currently in a transitional phase. To achieve this, it is essential to ensure a salary budget for the additional personnel and transportation costs for district irrigation staff to visit irrigation schemes. However, at the time of the ex-post evaluation, difficulty is observed in securing the necessary budget. Looking ahead, co-financing from the World Bank and JICA, described later in the Financial Aspect (3.4.4), is planned. Still, the extent to which this will contribute to securing the salary budget needs to be clarified.

[41] Interview with NIRC

3.4.3 Technical Aspect

This project aimed to promote irrigation development through the application of CGL. To sustain the project effects, it is necessary that the irrigation staff at the zonal (which was subsequently reorganized into regions) and district levels that were trained, as well as the IOs who are the implementors of CGL in Implementation and O&M under the guidance of the district level, have and can maintain the knowledge and skills necessary for implementing CGL.

Although the number of staff who played a significant role as zone coordinators[42] on the Tanzanian side during the project implementation has decreased (at the time of the ex-post evaluation, there were a total of 10 staff, five at the NIRC headquarters and five at the regional offices), they are still employed at the time of the ex-post evaluation, and their capacities were high. At the regional level, some staff who continued to work at regional offices were seen using the CGL and relevant manuals developed through this project as work materials daily[43]. However, many former zonal and district irrigation staff trained during the project implementation have left their jobs due to transfers or retirement. In some districts, more than 90% have left, so the number of staff still working at the time of the ex-post evaluation is limited. At the district level, as mentioned above, it was decided in March 2023 that the NIRC would guide and monitor IOs, which LGAs previously played during the project implementation. In FY2023, NIRC hired 317 new staff members, of which 253 (58 engineers, 99 agronomists/agricultural officers, and 96 technicians[44]) were assigned to the district level. Conversely, however, the training, including CGL provided by NIRC after completion of Phase 2, was limited, and only 32 NIRC staff had received the training at the time of ex-post evaluation. Training for newly hired staff members in FY2023 was hardly conducted, mainly due to budgetary constraints, so they hardly acquired knowledge about CGL. As a result, it is difficult for irrigation staff to implement Formulation and Implementation of irrigation facilities in line with CGL and to instruct IOs on Implementation and O&M in line with CGL. In addition, although CGL and related manuals are posted on the NIRC website, district-level irrigation staff are not provided with PCs or tablets, so it is difficult for them to view and download them. At the time of the ex-post evaluation, NIRC had distributed hard copies of CGL to 62 of these irrigation staff. Still, due to budgetary constraints, they have yet to be distributed to all the irrigation staff.

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[42] The irrigation staff who used to belong to the Zonal Irrigation Office, and the core working-level counterparts in this project. They played a role as a bridge between the Japanese expert team and the Tanzanian side, and also served as trainers in the training of trainers.

[43] Interview with Shinyanga Regional Office of NIRC, and Observation

[44] A technician is a person who possesses a high degree of specialized skills and performs empirical practices as defined by manuals or other means. They are sometimes referred to as people who assist engineers or perform practical work under the direction of engineers. (https://ja.wikipedia.org/wiki/%E6%8A%80%E8%A1%93%E8%80%85 accessed on September 30, 2024).

In irrigation development applying CGL, IOs are expected to play a part in participatory construction management during facility construction and to play a role as the main O&M body for the irrigation scheme after the facility is completed. However, at the time of the ex-post evaluation, it cannot be said that IOs' knowledge and skills in O&M, according to CGL, were sufficiently maintained. At the time of the ex-post evaluation, there needed to be more visits to IOs for guidance and monitoring or regular submission of reports by IOs. In addition, as mentioned in the impact section, of the irrigation schemes visited by the evaluator, only one out of six (Nyida Irrigation Scheme in Shinyanga Region) had documentation of basic documents for IOs to carry out O&M based on CGL at the time of the ex-post evaluation. The reasons for this include the transfer and retirement of former zone and district irrigation staff who received the training, the COVID-19 pandemic, the lack of CGL-related knowledge among newly hired district-level staff, and a lack of transportation costs from district offices to irrigation schemes with IOs[45]. Furthermore, when IO management committee members were periodically re-elected through elections, there was no handover from the previous team members in some IOs. As a result, manuals and standard forms are not being used continuously, as was observed during the evaluator's visit to the irrigation schemes. As mentioned above, although visits to IOs have generally been stagnant, the Nyida Irrigation Scheme was an exception, with an irrigation scheme manager always present to provide necessary technical guidance and monitoring. In addition to support throughout the project period in both phases, the placement of an irrigation scheme manager was also one of the factors that promoted the maintenance of project effects.

From the above, there are issues with maintaining CGL knowledge and skills at the district level and IOs at the time of ex-post evaluation. However, a few personnel with extensive knowledge and experience in applying and improving CGL, such as former zone coordinators, and various manuals have been developed under the project. To improve the sustainability from a technical aspect, it is necessary to utilize these and to secure a budget for training the new staff employed in FY2023 and the district irrigation staff nationwide, whose number is expected to increase in the future, as well as transportation costs for the trained district irrigation staff to provide technical guidance at IOs. However, it is difficult to secure the budget at the time of ex-post evaluation. As for the future budget, as described later (3.4.4. Financial Aspect), although co-financing by the World Bank and JICA is expected, it cannot be said that the degree of securing the budget, expected effects of the above for capacity enhancement of district irrigation staff nationwide, and training and technical guidance for the IOs are sufficient.

[45] Questionnaire to and Interview with NIRC

3.4.4 Financial Aspect

Table 13 shows the NIRC's budget balance. Revenues increased from its establishment in 2015 until FY2017 but declined until FY2022, with a significant increase in FY2023. Of these, the decrease from FY2020 to FY2022 is due to the COVID-19 pandemic. At the same time, the increase in FY2023 is due to the Tanzanian government's implementation of food security measures to mitigate the effects of climate change[46]. Although there are fluctuations, no major problems have been observed.

Table 13 Budget Balance of NIRC

(Unit: Million Tanzanian Shilling)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Revenue	18,965	41,105	47,912	31,949	27,106	20,408	15,085	11,583	113,652
Expenditure	12,075	6,617	26,673	25,290	18,963	18,752	14,404	11,040	112,431
Balance	6,890	34,488	21,239	6,659	8,143	1,656	681	543	1,221

Source: Questionnaire to NIRC

Table 14 shows the trends in NIRC's maintenance expenditures and the maintenance budget for irrigation facility construction and rehabilitation. The maintenance budget fluctuates yearly, making it difficult to predict a consistent trend, but it increased significantly in FY2023. The reason for the increase is the food security measures mentioned above. Although there are fluctuations, no major problems are seen.

Table 14 Maintenance Budget of NIRC

(Unit: Million Tanzanian Shillings)

	2017	2018	2019	2020	2021	2022	2023
Total Maintenance Cost	3,765	498	3,457	5,869	7,545	1,061	79,610
Maintenance cost for construction, rehabilitation, and design of irrigation schemes	3,765	469	3,440	5,869	7,545	1,031	79,192

Source: NIRC

As mentioned above, the overall budget amount is fine. However, regarding training expenses, even if the budget is approved at the beginning of the fiscal year, it is often not allocated until the end of fiscal year[47], and this is an issue. Also, as mentioned above, at the time of the ex-post evaluation, monitoring of irrigation schemes was hardly being carried out. The main reason for this was a lack of budget for travel expenses and transportation costs for district irrigation staff who are supposed to guide and monitor IOs. In the future, it

[46] Interview with NIRC
[47] Interview with NIRC

is necessary to secure the above budget for IOs to carry out maintenance in accordance with the CGL in irrigation schemes nationwide.

At the time of the ex-post evaluation, difficulty was observed in the Tanzanian government securing the necessary budget. On the other hand, the World Bank's "Tanzania –Food Systems Resilience Program[48] (TFSRP)", which aims to strengthen the resilience of the food system, had been launched at the time of the ex-post evaluation, and the Ministry of Agriculture was procuring consultancy services. The TFSRP includes infrastructure development in rural areas, and CGLs will be used to conclude Operation, Management, and Maintenance (OMM) contracts for irrigation schemes. In addition, manuals developed under the cooperation of JICA will be fully used in OMM training[49]. JICA plans to co-finance with the World Bank program and conclude L/A by the end of FY2024. This financing is expected to strengthen the capacity of NIRC staff and IOs[50]. However, there was not enough information available on how many irrigation schemes will be targeted by this project and how much specific improvement is expected. For this reason, it cannot be said that the perspective for improvement is high at this stage.

3.4.5 Environmental and Social Aspect

This project aimed to improve the skills of government staff and IOs through training and strengthening the mechanisms for planning, implementing, and maintaining irrigation facilities. Given the project's content, no negative impacts on the environment were anticipated, and no negative impacts were observed during and after implementation. It is unlikely that any negative impacts will occur in the future.

3.4.6 Preventative Measures to Risks

Risks anticipated at the time of planning included the security situation in the target area, changes in the rainy season that would affect the construction schedule, unexpected price increases for construction materials, and the continuation of employment of trained irrigation staff at zonal and district offices.

No major problems were observed during project implementation. At the time of ex-post evaluation, many district irrigation staff had left their jobs due to transfers or retirement. IO's guidance and monitoring activities were limited due to budget shortages. These have affected the technical and institutional sustainability. As mentioned in the Financial Aspect (3.4.4), there is the possibility that the problem of budget shortages will be improved in the future. Still, at this stage, it cannot be said that the possibility is high due to insufficient

[48] 2023 – 2031, 2,750 million dollars (TFRP Program Appraisal Document World Bank 2023)
[49] Economic Development Department, JICA, and TFRP Program Appraisal Document, Expression of Interest and TOR
[50] JICA Tanzania Office

information.

3.4.7 Status of Operation and Maintenance

The operation and maintenance status of irrigation facilities at the time of ex-post evaluation is described in 3.2.2.1 Achievement of Overall Goal. Although the application of CGL is seen in the Formulation and Implementation of irrigation facilities, the effects of training and the measurement of training effects, technical guidance to IOs, and the revision of CGL and manuals have yet to be sustained mainly due to budgetary reasons.

As stated above, some issues have been observed in the institutional/organizational, technical, and financial aspects. It cannot be said that there are good prospects for improvement/resolution at this stage. Therefore, sustainability of this project effects is moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to strengthen the framework for improving and promoting irrigation development in line with the CGL by enhancing the F&I capacities of irrigation staff at zonal irrigation offices and districts, as well as the O&M capacities of these staff and IOs. The project, which aimed to promote irrigation development, was consistent with Tanzania's development policies and needs from the commencement to the completion of both phases. And the project plan and approach were appropriate. The project was consistent with Japan's ODA policy at the time of planning. Regarding internal coherence, while there was collaboration with other JICA projects during implementation, the intended specific effects were not confirmed. As for external consistency, there was no collaboration with other donors, but the project was consistent with an international framework. Therefore, its relevance and consistency are high. Although the project achieved its overall goal only to a certain extent at the time of the ex-post evaluation, positive impacts were observed. The project purpose, i.e., strengthening the framework for irrigation development in line with the CGL, was achieved more than planned. Therefore, effectiveness and impacts are high. The outputs were achieved by the completion of Phase 2, and there were no problems with Japanese inputs' quality, quantity, and timeliness. However, the project cost exceeded the plan, and the project period slightly exceeded the plan. Therefore, efficiency is moderately low. Some issues have been observed in terms of institutional/organizational, technical, and financial aspects. It cannot be said that there are good prospects for improvement/resolution. Therefore, sustainability of the project effects is moderately low.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Rapid capacity building on CGL for newly hired district irrigation staff

NIRC needs to immediately secure a budget for distributing CGL, related manuals, and other documents, as well as training the 253 district irrigation staff newly hired in FY2023 and to implement these as soon as possible. For this reason, it is recommended that the Ministry of Agriculture make maximum use of the World Bank's TFSRP, for which consulting services are currently being procured at the time of the ex-post evaluation and the co-financing presently being planned by JICA.

(2) Securing the necessary budget for district irrigation staff to guide IOs

For irrigation facilities to be adequately maintained in line with the CGL after construction, it is necessary for the newly employed district irrigation staff to conduct training at IOs and to provide guidance to IOs regularly and as needed, in addition to the acquisition of knowledge on the CGL by themselves. NIRC is recommended to secure the necessary budget for district irrigation staff to provide on-site guidance to IOs and to re-establish a situation in which O&M is applied seamlessly in the farmers' participatory irrigation development cycle in line with the CGL. In addition, deploying irrigation scheme managers stationed at irrigation schemes throughout the country should be expedited.

4.2.2 Recommendations to JICA

JICA is recommended to ensure that its currently planned co-financing plan should be designed to enable NIRC to steadily implement the following: capacity building for new district irrigation staff, securing a budget for visiting IOs after their capacity building and ensuring the development of high-quality training instructors, to ensure the continuity and quality of training in the mid-to-long-term. This will support the restart of the farmers' participatory irrigation development cycle in line with CGL.

4.3 Lessons Learned

<u>The usefulness of on-site technical assistance to IOs/farmers</u>

In this project, due to financial and organizational reasons, it became difficult for district irrigation staff with knowledge of CGL to continue visiting irrigation schemes after the project was completed. IO members who were irrigation farmers had difficulty continuing to practice irrigation agriculture based on CGL. On the other hand, in the Nyida Irrigation Scheme in Shinyanga State, which is a good practice of CGL application, an irrigation

scheme manager[51]who is familiar with irrigation agriculture based on CGL was stationed at the irrigation scheme and a system was established where necessary technical guidance and monitoring could be provided at any time. In addition to the support throughout the project period in Phases 1 and 2, the placement of an irrigation scheme manager proposed by the Phase 2 project is one factor that promotes continued project effects. Stationed-type technical support is considered useful in a project that aims to continue practicing the knowledge and techniques of participatory irrigation development by IO members even after the project is completed.

Establishing trust between Experts and Counterparts (CPs)

The achievement status of the project purpose was high by the time of project completion. However, this project did not achieve its overall goal due to issues such as insufficient guidance and monitoring of irrigation development by district irrigation officials to IOs, mainly due to financial and organizational issues. As a contributing factor of the former, in addition to the appropriateness of the project plan and the participatory approach, the strong relationship of trust established between the Japanese experts and the CPs during the implementation of this project is also assumed to have contributed significantly to the execution of activities and the achievement of the outputs. In addition to the qualities of the people involved, the establishment of such a relationship of trust and the improvement of awareness were largely due to the attitude of the Japanese experts in their daily activities and the tangible and intangible messages that they continued to convey to the CPs in various forms during their activities. For example, at the end of the training, they always raised issues and made proposals about efforts to sort out and solve problems, which showed their knowledge and experience as experts. In addition, the Japanese experts repeatedly emphasized that the CPs were the leading players in solving problems and that it was important for them to be proactive and involved in the project with a sense of mission. The effect of these could be seen from the proactive attitude of the CPs at the time of the ex-post evaluation. In this way, experts need to work closely with CPs and strive to build relationships of trust while continuing to convey tangible and intangible messages not only about technical guidance but also about their attitude toward the project to achieve objectives and improve sustainability.

[51] As for irrigation scheme managers, it is already mentioned before (3.2.2.1 Achievement of Overall Goal). NIRC intends to promote the placement of irrigation scheme managers in the future.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

The support provided by JICA experts and the JICA Tanzania office to the implementing agency and the building of communication and cooperative relationships were good.

5.2 Additionality

None.

(End)