

**Ex-Post Project Evaluation 2021
Package II-2 (South Sudan)
Evaluation Reports**

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JAPAN INTERNATIONAL COOPERATION AGENCY

IC Net Limited

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Republic of South Sudan

FY2021 Ex-Post Evaluation Report of Technical Cooperation Project

“The Project for Capacity Development on

Sustainable Road Maintenance and Management in Juba, South Sudan”

External Evaluator: Shima Hayase, IC Net Limited

0. Summary

The project aimed to enhance the road maintenance and management capacity of the Ministry of Transport, Roads and Bridges (MTRB) and the Central Equatoria State Ministry of Infrastructure (MoPI) through the establishment of a cycle of road maintenance and management (inspection, plan, and maintenance/repair). In South Sudan’s national development policy, from the time of project planning to the completion of the project, improving the quality of road infrastructure was a consistent issue. South Sudan was affected by a long-time conflict, and proper road maintenance and management had not been conducted for many years. Because the population had been concentrating in the capital, and cargo transportation had been increasing, the need for road development and maintenance was expected to increase further. Regarding the project plan and approach, since it was a project in a conflict-affected country, the project plan was adjusted flexibly according to the knowledge level and proficiency of the counterparts (C/P) of MTRB and MoPI and emphasized establishing their ownership of nation-building. The project is coherent with the assistance policy of the Japanese government at the time of planning because basic livelihood assistance including the transportation section was one of the policy’s priority areas for establishing peace. Moreover, the project was expected to yield benefits to neighboring countries and contribute to peacebuilding. In the projects by JICA and the Japan Self-Defense Forces dispatched to the United Nations Mission Republic of South Sudan (UNMISS), C/Ps participated in inventory and road repairs, which could increase opportunities for practical on the job training (OJT), which was limited owing to a lack of budget. With other donors, information was exchanged and harmonized with similar projects. Therefore, the project’s relevance and coherence are high.

As for effectiveness, the environment for establishing a road maintenance and management cycle within MTRB/MoPI was established, and a series of outputs was put into practice. Thus, the road maintenance and management capacity was strengthened, and it can be said that the Project Purpose was largely achieved. Owing to the major conflicts in December 2013, just before the project completion and July 2016, and the lockdown due to coronavirus disease 2019 (COVID-19) from the beginning of 2020, the activities of the implementing agencies related to road maintenance and management were suspended each time. From the time of the project completion to the ex-post evaluation, the road maintenance and management cycle have been fragmented. Thus, the continuity of the Project Purpose was at a limited level. After the two conflicts, the restoration of stability was delayed. There was a danger of attacks, unexploded

ordnance, and landmines on the roads. In addition, the government's financial situation did not improve. Up to the time of the ex-post evaluation, the state of road development in South Sudan had not progressed, making it difficult to achieve the Overall Goal of appropriate and sustainable road maintenance and management. The roads and culverts constructed and repaired in the OJT of the project benefitted people's lives. However, maintenance and management had not been implemented appropriately, which worsened the state of the roads and culverts, and the benefit became limited. Some measures in preventing deterioration of the roads and culverts and cleaning them were necessary with the cooperation of the city government and communities. As mentioned above, the impact of this project is limited. Therefore, effectiveness and impact are moderately low.

Although the project cost significantly exceeded the plan, the additional cost was commensurate with the increase in output, and the project period was within the plan. Thus, the project's efficiency is high.

Sustainability is expected in policy/systems, technical aspects, and preventive measures to risk, but financial sustainability is a significant concern. Some issues have been observed regarding the institutional/organizational, environmental, and the current status of the operation and maintenance system. Prospects for improvement or solution in such aspects are poor.

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

1. Project Description



Project Site

Source: Maps & Geospatial services



OJT of road repair using sand bags
(September 2013) Source: Project Team

1.1 Background

In South Sudan, which had been affected by a long-standing conflict, the urban infrastructure in the capital was not sufficiently developed. As for the roads, even if they were repaired, they were not adequately maintained and managed. Consequently, there were many roads with severe irregularities and ditches in the center caused by running water. One of the reasons that roads were not developed and adequately maintained and managed was that both MTRB, which oversaw

improving arterial roads, and MoPI, which oversaw improving roads in Juba, were weak organizations. Both ministries lacked the capacity in planning and designing road projects, contracting and supervising construction, and implementing direct construction work. MTRB was short of human resources; MoPI lacked experience and technologies. In addition, policies, regulations, manuals, and guidelines related to road administration were not developed.

To address the challenges above, the project was implemented to improve the capacity of administrative officers and engineers of MTRB and MoPI regarding road maintenance and management (inspection, planning, maintenance, and repair) and to establish a road maintenance and management cycle in the two organizations. Ultimately, the project aimed to contribute to the safe and sustainable maintenance and management of roads throughout South Sudan. The project's outline is shown below.

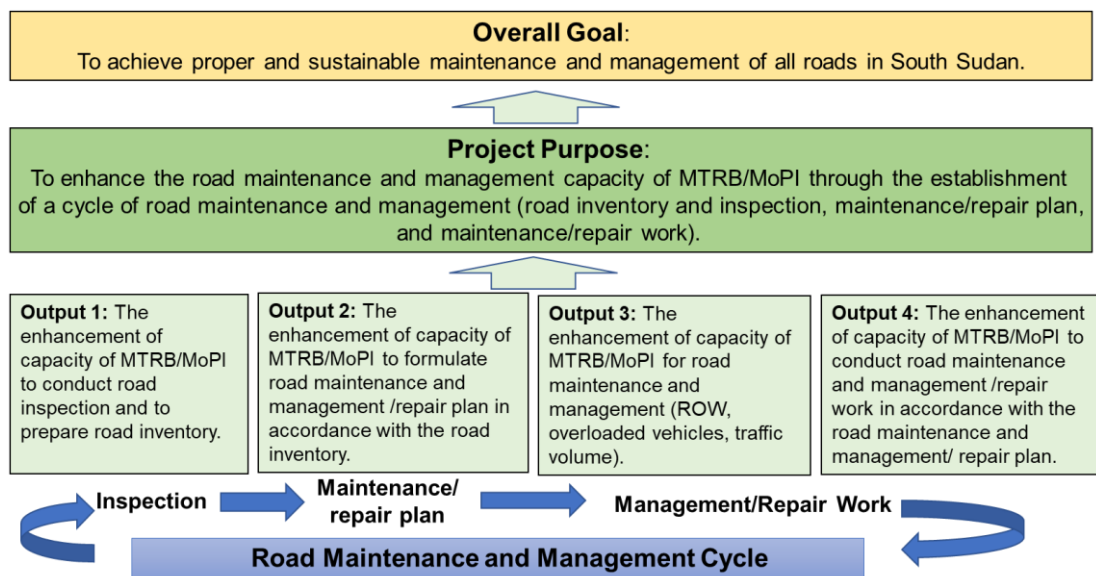


Figure 1: Conceptual diagram of the Road Maintenance and Management Cycle that the Project aimed for

1.2 Project Outline

| | | |
|--|----------|--|
| Overall Goal | | To achieve proper and sustainable maintenance and management of all roads in South Sudan. |
| Project Purpose | | To enhance the road maintenance and management capacity of MTRB/MoPI through the establishment of a cycle of road maintenance and management (road inventory and inspection, maintenance/repair plan, and maintenance/repair work). |
| Output | Output 1 | The enhancement of capacity of MTRB/MoPI to conduct road inspection and to prepare road inventory. |
| | Output 2 | The enhancement of capacity of MTRB/MoPI to formulate road maintenance and management/repair plan in accordance with the road inventory. |
| | Output 3 | The enhancement of capacity of MTRB/MoPI for road maintenance and management (Right of Way [ROW], overloaded vehicles, traffic volume). |
| | Output 4 | The enhancement of capacity of MTRB/MoPI to conduct road maintenance/repair work in accordance with the road maintenance and management/ repair plan. |
| Total cost (Japanese Side) | | 493 million yen |
| Period of Cooperation | | October 2011–March 2014 |
| Target Area | | Juba City in the Republic of South Sudan |
| Implementing Agency ¹ | | Ministry of Transport, Roads and Bridges (MTRB), Ministry of Physical Infrastructure of Central Equatoria State (MoPI) |
| Other Relevant Agencies/ Organizations | | None |
| Consultant/ Organization in Japan | | CTI Engineering International Co., Ltd. (CTII) |
| Related Projects | | [Technical Cooperation] “Juba Urban Transport Infrastructure and Capacity Development Study in Southern Sudan” (2007–2010), “Follow-up cooperation for the Project for Capacity Development on Sustainable Road Maintenance and Management in Juba” (2015–2016) [Grant Aid] “Project for Construction and Rehabilitation of Bridges on Main Roads in Juba City” (EN: November 2009), “Project for Construction of Nile River Bridge” (GA: January 2013) |

¹ When the government system was in 2020, the implementing agencies were renamed to South Sudan Ministry of Roads and Bridges: MoRB, and Central Equatoria State Ministry of Road and Bridges: CE MoRB.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of the Project Purpose at the Terminal Evaluation

It was confirmed that the technical levels of the C/Ps who participated in the training under the project had improved and that an environment to establish a road maintenance and management cycle was created within MTRB and MoPI. Moreover, before the project was completed, MTRB was to approve the road maintenance and management manual, which was expected to take root in the organization. Therefore, the Project Purpose was expected to be mostly achieved.

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

As the Overall Goal, implementation of road maintenance and management nationwide was assumed, but it was unattainable given the scale of the project. Thus, in the terminal evaluation, the Overall Goal was replaced with "functional improvement of the road network in Juba City," which was on a scale that matched the actual situation. Its achievement was confirmed with the replaced indicator, "the length of roads maintained and management and repaired by applying the road maintenance and management cycle established by the project." The Overall Goal was mostly achieved because the project had records of repair works during the project implementation, developed human resources for road maintenance and management cycle, and improved the implementation environment in such aspects as manuals and equipment.

1.3.3 Recommendations from the Terminal Evaluation

In the terminal evaluation, recommendations were made on considering organizations and systems for sustainable road maintenance and management implementation and promoting efforts to establish such organizations and systems at the policy level.

(1) Consideration of organizations and systems:

Measures should be taken within the C/P agencies to maintain the project's achievement as the organizational level. The organizations and systems at MTRB and MoPI for implementing road maintenance and management in the future should be discussed within the South Sudanese government.

(2) Promotion to establish the system at the policy level:

MTRB and MoPI should keep striving to establish a road maintenance and management cycle. Through the project, the working-level staff learned that regular road maintenance and management could reduce road assets' lifetime costs. By using the manuals and other materials developed in the project, the C/Ps and other related organizations are expected to establish the concept of the maintenance and management cycle at the policy level.

2. Outline of the Evaluation Study

2.1 External Evaluator

Shima HAYASE, IC Net Limited

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2021–October 2022

Duration of the Field Survey: January 23–February 13, 2022, June 1–22, 2022

2.3 Constraints during the Evaluation Study

At the time of the ex-post evaluation, eight years had passed since the completion of the project. As a result, some of the experts and C/Ps who had been engaged in the project had either been transferred or retired, and the interviewees were limited. In addition to the passage of time, data and records have been lost or scattered owing to two major conflicts and organizational restructuring, and some of the data related to the project's effects were difficult to obtain. Some of the data for the evaluation include those collected through recollections in the interviews with C/Ps, JICA experts, and staff of the JICA South Sudan office.

As several JICA projects related to urban infrastructure development were implemented in Juba City, residents and representatives of the local community and the C/P side sometimes confused the projects. Thus, it was difficult to identify and confirm the activities and impacts of this project particularly.

Moreover, at the time of planning, the Overall Goal was to "achieve appropriate and sustainable road maintenance and management for all roads in South Sudan," and it was assumed that the road maintenance and management cycle would be applied throughout the country. However, owing to the conflict that occurred in December 2013, which was just before the project completion, and the government's shortage of financial resources, road development itself was not progressing in South Sudan. The terminal evaluation adopted the alternative indicator of "improvement of the road network in Juba City as the Overall Goal based on the situation at the moment," and it was used for the rating.

From the project completion to the ex-post evaluation, the government's budget shortfall was not resolved, and a major conflict recurred in July 2016. Thus, it remained difficult to develop and maintain roads throughout South Sudan. Under these circumstances, the ex-post evaluation also applied the same indicators as the terminal evaluation to confirm the achievement of the Overall Goal.

3. Results of the Evaluation (Overall Rating: C²)

3.1 Relevance/Coherence (Rating: ③³)

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan

The development policy at the time of planning was *the Infrastructure Sector: Budget Sector Plan 2011–2013* of the South Sudanese government. Regarding road infrastructure, it aimed to upgrade 600 km of inter-state earthen roads to asphalt pavement and improve road condition to a level that allows driving at an average speed of 60 km/h. The project's Overall Goal, "roads throughout South Sudan are properly and sustainably maintained and managed," was consistent with this budget plan. At the time of the project completion, *the Infrastructure Sector: Budget Sector Plan 2011–2013*, the same policy as the time of planning, was used as the reference source for the development goal.

The South Sudanese government's infrastructure sector budget plan, both at the time of planning and completion, aimed at asphalt paving and raising the level of domestic roads. This project was to maintain and manage them appropriately and sustainably. Thus, the project's consistency with development policy is high.

3.1.1.2 Consistency with the Development Needs

Owing to long-standing conflicts, roads in South Sudan have been poorly maintained and managed. According to a development study to formulate a transport infrastructure master plan, the road under Central Equatoria State was approximately 614 km. Still, it was almost unrepaired at the beginning of the project, and only about 20 km could be repaired per year. Therefore, the need for road maintenance and management was high and expected for the long term.

Furthermore, the population of Juba City was increasing owing to returnees from Sudan and population influx from rural areas to urban ones. By 2015, the population was expected to be nearly doubled to 520,000, and the economy of Juba City was to grow to 21% of GDP. It was predicted that the need for road development, maintenance and management would increase for the movement of people and transportation of goods.

At the time of planning, such aspects as policies, regulations, guideline systems, and manuals related to road administration had not been developed. Therefore, the project needed to strengthen the capacity of the organization and personnel of MTRB and MoPI while establishing the organizational foundation for road maintenance and management operation. At the time of project completion, the manual for road maintenance and management cycle was developed, but policies and regulations for road administration were still under preparation. For the reasons above, it can be said that this project is highly consistent with the development needs at the time of project

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

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

planning and completion.

3.1.1.3 Appropriateness of the Project Plan and Approach

(1) Appropriateness of the PDM and amendment

Regarding the PDM of the project, there is no specific problem in the logic from outputs to the achievement of the Project Purpose. All the outputs are associated with enhancing MTRB/MoPI's road maintenance and management capacity and contribute to attaining the Project Purpose. The indicators set no specific numerical targets for outputs and the Project Purpose, but this was because the project started by establishing road maintenance and management structure.

The Project Design Matrix (PDM) was modified once, and "Output 3: capacity enhancement for road maintenance and management (right of ways, overloaded vehicle, traffic volume)" was added. This modified PDM, which is the 2nd version, was approved by the 4th Joint Coordination Committee, and it was also used for the terminal evaluation.

In analyzing the results of the first-year activities of the project, Output 3 had to be added for the following reasons. It was necessary to prevent roads from being damaged beyond their planned life. Furthermore, the road zone was unclear, residents disregarded the function and importance of the road zone, and commercial facilities and parked vehicles occupied the road zone. As a result, traffic congestion occurred, and traffic volume concentrated on specific routes. Moreover, because traffic volume surveys were not conducted regularly, the effects of road maintenance and improvement and necessary costs could not be calculated. Thus, activities to reduce road damage and establish a road network were added. In drafting the amended version of the PDM, the experts as a team analyzed problems with the Project Cycle Management method and organized relevant information. Thus, the logic was consistent.

(2) Measures tried in implementing projects in conflict-affected countries

According to the staff of the JICA Sudan Office at the time of planning, South Sudan, which had become independent after years of conflict, was at the stage of starting nation-building; thus, it was necessary to build a relationship of trust between the government and society. The project was intended to show tangible effects at early stage so that people could feel dividends of peace. As this project aimed not only for mere technical transfer but also for the C/P organizations to contribute to nation-building as organizations that provide administrative services, the project's implementation emphasized the formation of ownership.

Implemented immediately after South Sudan's independence, the project was a technical cooperation one to form a foundation for road operation, maintenance, and management from almost scratch. Owing to the country's long-term conflict, the staff of the C/P organizations did not have sufficient learning opportunities and faced challenges such as not being equipped with basic knowledge of road maintenance, management, and operation and being unfamiliar with PCs.

Various measures were devised to meet the needs at the local level, such as the experts volunteering to provide supplementary lessons, and inventory done on paper rather than digitally so that it would take root in the C/P organizations.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

According to the ODA Policy for Sudan in the *Official Development Assistance Country Data Book 2010*, the ODA Charter cites peacebuilding as one of its priority issues. To promote the consolidation of peace, support for basic living, including the transportation sector, was one of the priority fields.

The *Yokohama Action Plan*, formulated in the Tokyo International Conference on African Development (TICAD IV), was held in Yokohama in May 2008, infrastructure development was one of the pillars, and transportation infrastructure development was emphasized. These issues continue to be recognized as a priority at TICAD V (2013).

In addition, this project aimed to strengthen sustainable operation, maintenance and management capacity for basic infrastructure, such as roads and bridges directly linked to people's lives. Those infrastructure items had been supported by the Japanese government since the Comprehensive Peace Agreement (CPA). While other donors had been focusing on humanitarian aid, from the peacebuilding viewpoint, Japan and JICA were aiming to present tangible support so that people could enjoy the dividends of peace.

Thus, the project is highly consistent with Japan's ODA policy.

3.1.2.2 Internal Coherence

In the pilot project in the development study "Juba Urban Transport Infrastructure and Capacity Development Study in Southern Sudan" conducted before the project, MoPI participated in a series of technical transfers (planning, designing, construction, monitoring/evaluation). Thus, MoPI was able to strengthen road maintenance and management skills before the project. Moreover, C/Ps could use the below projects for practicing the skills obtained in the project, such as the "Preparatory Study for the Project for Construction of Lologo Bypass" for road inventory (Output 1), and a grant aid project called the "Project for Construction of Nile River Bridge" for the right of way management (Output 3). Although cooperation did not reach a level to yield developmental cooperative relationships or synergistic effects, a certain degree of internal consistency is recognized.

3.1.2.3 External Coherence

(1) Coherence with projects by other Japanese organizations

MoPI participated in the road construction project by the Japan Self-Defense Forces dispatched to UNMISS. The South Sudanese government had suffered chronic budget shortfalls and could not allocate a budget for road construction and repairs. By obtaining this collaboration opportunity, MoPI was able to practice road repair by using the skills learned by the project.

The Japanese embassy, JICA, and the dispatched Japan Self-Defense Forces held joint meetings every week. Information was exchanged, such as the Self-Defense Forces providing information on the security situation, JICA on the progress of ODA projects, and the embassy on visits by key figures and the political situation. The meetings provided ideas for cooperation, and coordination was implemented through them.

(2) Coherence with Other Donors/International Frameworks

The European Union (EU) was one of the donors conducting capacity-building projects in the road sector. The project and the EU devised coordination through participation workshops held by each other and information exchange. With other donors in the road sector, no specific cooperation was implemented because their target areas differed from the project.

As mentioned above, there was specific cooperation with the Self-Defense Forces in road repair work, which contributed to promoting the effectiveness of the project. Harmonization was achieved through information exchange with the EU. Thus, a certain degree of external consistency was confirmed.

Regarding relevance, the project was consistent with the South Sudanese government's development policy and road maintenance and management needs at the time of planning and completion. Regarding the project approach, the PDM was revised through the formal procedures to add an output to enhance the effectiveness of road maintenance and management. As the project was implemented in a conflict-affected country, flexible responses were taken along with the level of C/P organizations. Moreover, to contribute to the new nation-building, the project emphasized establishing C/Ps' ownership.

The assistance policy of the Japanese government at the time of planning prioritized infrastructure development as a priority area for new nation-building; thus, consistency is high. Furthermore, benefits to neighboring countries and contributions to peacebuilding were expected. Cooperation with other JICA projects and the Self-Defense Forces dispatched to UNMISS provided OJT opportunities that had been limited by the ministry's budget shortfalls. In addition, information exchange and harmonization were achieved through participation in each other's workshops with another donor who was implementing a similar project.

Therefore, the project's relevance and coherence are high.

3.2 Effectiveness and Impact⁴ (Rating: ②)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

As the outputs of the project, strengthening the capacity of C/Ps in MTRB/MoPI regarding each element of the road maintenance and management cycle was aimed. Although no specific numerical targets were indicated for each output, the results shown in Table 1 were confirmed at the time of project completion. Thus, it can be said that the outputs were achieved largely as expected.

As the project was in a conflict-affected country, the project ensured that consideration was given to the knowledge of the C/P and the level of PC proficiency, and strived to expand opportunities to experience road maintenance and management. These efforts facilitated the activities for outputs and contributed to the achievement of the outputs.

Table 1 Achievement of Outputs (at the time of project completion)

| Output 1: The enhancement of capacity of MTRB/MoPI to conduct road inspection and to prepare road inventory. | |
|---|--|
| Indicator | Achievement Status |
| 1-1: Number of teams who can conduct a series of inventory in accordance with the manual (survey work, road inspection, data input to data management) for road inventory | <p><u>Achieved</u></p> <ul style="list-style-type: none"> • Four teams (comprised of 4-5 staff members) were able to conduct road inspections and create inventory. • The achievement test on road inspection (March 2013), the average score of all trainees reached more than 90%, including knowledge and skill level. • The four teams mentioned above completed the road inventory study covering 136 km of the targeted road network in Juba City. |
| 1-2: Number of updated inspection items specified in Manual | <p><u>Achieved</u></p> <ul style="list-style-type: none"> • Starting from inventory reports prepared on a paper basis, Vehicle Intelligent Monitor System (VIMS), and finally GIS, the inspection items below were introduced to C/Ps. <div style="border: 1px solid black; padding: 5px;"> <p>Inspection Items: 1. Road Network Map, (2) Road Diagram, (3) Road Inspection, (4) Structure Inspection, (5) Road Distress Map, (6) Road Registration List, (7) Traffic Volume Distribution Map & Report, (8) Axle Load Survey Report</p> </div> |
| Output 2: The enhancement of capacity of MTRB/MoPI to formulate road maintenance/repair plan in accordance with the road inventory | |
| 2-1: Required standards and criteria are prepared and updated by MTRB/MoPI | <p><u>Mostly Achieved</u></p> <ul style="list-style-type: none"> • Standards and criteria for road maintenance and management plan were formulated, and a manual was developed. The manual was expected to be approved by the South Sudanese government in January 2014. <div style="border: 1px solid black; padding: 5px;"> <p>Contents of the manual: (1) Definition of Service Level, (2) Standard Procedure of Road Condition Assessment, (3) Definition of Road Maintenance Work, (4) Unit Cost/ Break Down, (5) Standard Process for Priority Assessment, (6) Standard Annual Road Maintenance Program.</p> </div> <ul style="list-style-type: none"> • Updating would be done once the C/P accumulate experiences in implementation, and in reflecting technical progress; thus, at the time of terminal evaluation, no updating occurred. |

⁴ Sub-rating for Effectiveness is to be put with consideration of Impact.

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| <p>2-2: Number of teams who can conduct a series of work (Long listing, Evaluation, Shortlisting) of road maintenance and management plan in accordance with the manual (Monitor by skill test, long list, and shortlist)</p> | <p><u>Mostly Achieved</u></p> <ul style="list-style-type: none"> • The number of participants was smaller than the plan, but one team that formulated a road maintenance and management/repair plan was organized in MTRB (3 members: Secretary and 2 Engineers), and another one in MoPI (3 members: 2 Deputy Secretaries and 1 Engineer). • Each team had acquired knowledge of maintenance management plans through lectures, workshops, and pilot projects, and formulated a series of road maintenance and management plans by referring to manuals. • The team's OJT had reached the point of creating a shortlist after prioritizing the road sections subject to maintenance and management work based on objective evaluation items. • In a questionnaire to C/Ps, 4 out of 6 respondents answered that they achieved or almost achieved the indicators for the goals. |
| <p>Output 3: The enhancement of capacity of MTRB/MoPI for road maintenance and management (ROW, overloaded vehicles, traffic volume).</p> | |
| <p>3-1: Number of proposed countermeasures realized to solve the ROW problem.</p> | <p><u>Achieved</u></p> <ul style="list-style-type: none"> • The following measures were proposed by the project and implemented. (1) Piles were installed to visualize the boundaries and to make the roads manageable. At the project site of “Project for Construction of Nile River Bridge,” piles were driven, and the road site was confirmed by the related parties. (2) ROW records were prepared with the participation of landowners and road administrators, who confirmed their land titles and details, then agreed on the same records. The record was recognized as the formal land title and ownership of the individual and shared with the administration (MoPI survey department, road and bridges department, MTRB, and Payam) (3) A road cleaning campaign was implemented with a wide range of participants from such parties as businesses and schools. Garbage and deposited sand on sidewalks and roadways were removed and the original functions of the roads were restored. |
| <p>3-2: Number of the team who can identify overloaded vehicles by simplified axle load scale</p> | <p><u>Achieved</u></p> <ul style="list-style-type: none"> • Two teams consisting of C/Ps were able to conduct the whole process of axle load survey, including planning, preparation, weigh measurement, data processing, and reporting. • The teams surveyed 14 times at Juba-Nimule, Yei, and Terekek roads from June 2012 to October 2013 about 1,100 vehicles and identified 400 overloaded vehicles. |
| <p>3-3: Number of teams who can conduct a traffic survey</p> | <p><u>Achieved</u></p> <ul style="list-style-type: none"> • Under the guidance of the experts, C/P conducted a traffic survey 9 times between August to December 2012. As a result, MTRB/MoPI became able to conduct traffic surveys regularly. According to the project team, four teams became capable of conducting traffic volume surveys including planning, preparation, traffic counts, and report writing. (target area for traffic survey were 13 locations in Juba City, 8 routes) |
| <p>Output 4: The enhancement of capacity of MTRB/MoPI to conduct road maintenance/repair work in accordance with the road maintenance and management/repair plan.</p> | |
| <p>4-1: Number of teams who can implement road maintenance and management work and quality control in accordance with the manual.</p> | <ul style="list-style-type: none"> • Although the number of teams was limited, the number of work items that could be implemented had increased; thus, it is fair to say that the indicator was <u>mostly achieved</u>. • Owing to the number of personnel in the MoPI Machinery Department and the Road Maintenance Department, there were limitations to the number of team formulation. Thus, the number of teams is one. • Through OJT such as pilot projects, the team was able to supervise, implement and control quality as direct management tasks including repair work such as road drainage, damage repair, and culvert construction. |

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| 4-2: Average of deteriorate rank of the maintenance and management road | <ul style="list-style-type: none"> • Road cleaning was implemented by Juba City, but other activities remained in the project; thus, the indicator was <u>mostly achieved</u>. • Owing to the austerity budget caused by the suspension of crude oil exports, and the MTRB/MoPI road maintenance and management budget has not been practically allocated, the target section was limited. However, the following was implemented in the pilot project to improve the deteriorating situation. <ul style="list-style-type: none"> (1) Mauna Road (dirt road): Repair of 550 m of the soft area by sandbag construction method and installation of culverts in wetlands; (2) Lologo Road: construction of culvert under the road in wetlands; (3) Orcelem Road: Connection with other roads by replacing road gutters with pipe culverts; (4) Cololo Road: Road repair work; and (5) pedestrian crossing of 33 locations: painted and repaired. • In 2012, a road cleaning campaign was organized by the project. Deposited sand was removed from the road of 4.2 km, and traffic volume and drainage function was restored. Since then, MoPI cleaned 6.9 km of roads. Since 2013, it has been taken over by Juba City, and regular cleaning of drainage channels and paved roads in the city has been implemented with the budget from the city. |
|---|---|

Source: Terminal Evaluation Report

3.2.1.2 Achievement of the Project Purpose

The objective of this project was to enhance the road maintenance and management capacity of MTRB/MoPI by establishing a cycle of road maintenance and management (road inventory and inspection, maintenance/repair plan, and maintenance/repair work). Since no specific numerical targets were set for the indicators, it is impossible to measure the degree of achievement. However, as shown in Table 2, the C/P organizations gained the capacity for the road maintenance and management cycle and were able to manage each item in the cycle. Therefore, it can be said that the Project Purpose was largely achieved.

Table 2 Project Purpose: Status of Establishment of Road Maintenance and Management Cycle

| Indicator | Achievement | |
|---|---|---|
| Level of road maintenance and management capacity of the trained personnel. | <ul style="list-style-type: none"> • At the time of the terminal evaluation, a questionnaire survey was conducted to MTRB/MoPI regarding the achievement of maintenance and management levels. Among the six respondents, four answered that they achieved the goal, and the other two replied that they almost achieved it. • Interviews at the terminal evaluation indicated the following achievement level of each stage. | |
| | Inspection | 4 teams of C/Ps consisting of 4-5 members were able to implement road inspection activities including inspection and formulating inventory by using equipment according to the road maintenance manual developed by the project. |
| | Plan | <p>C/Ps had basic understanding of planning techniques of road maintenance and management.</p> <p>One team of the MoPI Planning Department was able to draft the shortlist considering the priority of road maintenance and management. (Output 2)</p> <p>To prepare a budget plan necessary for road maintenance and management, it was necessary to be in a situation where crude oil exports were resumed, and a budget was allocated.</p> |
| Maintenance/Repair | One team of 12 people consisting of staff from the Machinery Department and Road Maintenance Department was formulated. The team members acquired techniques to implement regular road maintenance and small-scale repair work according to the manuals created in the project. (Output 4) | |

Source: Terminal Evaluation Report

The following factors promoted the achievement of the Project Purpose.

Even if the project strengthened the knowledge of the road management cycle through lectures, there was a problem that C/Ps' motivation declined because there was no place to make use of that knowledge owing to budget shortage. Thus, as described in the consistency section, by expanding opportunities for OJT through cooperation with other projects and peacekeeping operation (PKO) units, the project strived to improve the C/Ps' capability for practical application.

Owing to the large-scale conflict in December 2013, the Japanese experts were forced to evacuate from South Sudan immediately. Although they attempted to continue their work remotely, under the communication environment at that time, it was difficult to contact the C/Ps frequently. As OJT sessions were conducted intensively between June and November 2013, a series of OJT sessions were completed before the evacuation. As a result, the opportunities for practical training were not greatly reduced.

Harassment by the police and others was an inhibiting factor toward the achievement of the Project Purpose. When the experts conducted surveys for inventorying road maintenance, road siding, traffic, and overloaded vehicles, they were repeatedly arrested. In particular, the police strictly prohibited photo taking by foreigners. The following countermeasures were taken by the project team. When conducting field surveys, Japanese experts would not take photos, but the local staff did instead. Through land allocation coordination for roads, MoPI was familiar with the police; thus, the experts asked the C/Ps of MoPI to accompany the surveys. However, the project vehicle was once stopped by the police, and its Ugandan driver was beaten. An expert was traumatized by this incident and resigned.

For the indicators for effectiveness, no specific numerical targets had been set, and the degree of achievement cannot be verified numerically. However, the environment to make the road maintenance and management cycle take root in the C/P organizations was established, and each relevant activity was implemented to a certain extent, it can be said that capability for road maintenance and management had been strengthened. Therefore, the Project Purpose was mostly achieved.

3.2.2 Impact

3.2.2.1 Achievement of the Overall Goal

At the time of the terminal evaluation, owing to the conflict that occurred in December 2013, which was just before the completion of the project, and the lack of financial resources of the government, the road development itself was not progressing. It was pointed out that the Overall Goal, which is "to achieve proper and sustainable maintenance and management of all roads in South Sudan" was not a realistic goal for evaluating the achievement of the project. Therefore, as the alternative indicator, "improvement in the function of the road network in Juba City" through

the improvement of road drainage, leveling, and cleaning of dirt roads was applied and evaluated.

Between the time of project completion and the ex-post evaluation, there was another major conflict in July 2016, no improvement in government finances, and no significant improvement in the state of road network development. Furthermore, after the conflict, there were problems such as the possibility of armed groups' assaults, and remaining unexploded ordnance and landmines. Thus, it was impossible to deploy maintenance and management throughout the country. Since there was no improvement in the possibility of implementing road maintenance and management, this ex-post evaluation also applied "improvement in the function of the road network in Juba City" as the Overall Goal and assessed the achievement status from the number of times of road repair and the road cleaning distance.

The evaluation team requested the MTRB, one of the implementing agencies, to provide data on indicators related to the Overall Goal, but was unable to obtain any data. According to interviews, after two large-scale conflicts, it was not possible to conduct regular inspections of domestic roads because of the difficulty in ensuring safety.⁵ When the risk level became slightly better, in 2021, outsourced contractors conducted inspections limited to the suburbs of Juba, and road repair work for 0.2 km was done with an emergency budget.⁶

Table 3 shows the length of roads maintained and repaired by MoPI, the other implementing agency, applying the road maintenance and management cycle.

Table 3 Length of Road Maintained and Repaired by MoPI

| Indicator | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|------|------|------|------|------|------|------|------|
| Number of repairs implemented in Juba City | 0 | 5 | 0 | 6 | 2 | 1 | 0 | 0 |
| Length of road cleaning in Juba City (km) | 0 | 4.4 | 0 | 5.9 | 5 | 2 | 0 | 0 |
| Reference: Length of road maintained and repaired outside of juba City (km) | 0 | 0 | 0 | 0 | 0 | 68 | 63 | 9 |

Source: CE MoRB's response to the questionnaire

According to the MoPI's road maintenance data from the time of project completion to the ex-post evaluation, neither repair work nor cleaning has been implemented stably. The factors cited by MoPI are as shown below in chronological order. However, as various factors occurred in multiple ways, it is not possible to explain the causal relationship between individual factors and data on a one-to-one basis.

In 2014, after the project was completed, owing to the conflict in December 2013, MoPI's activities including repair work and cleaning were suspended. In 2015, the following year, the activities resumed as the security situation improved. However, in October 2015, the president announced a restructuring of the government system, and the Central Equatoria state was divided

⁵ When the government system was in 2020, MTRB was renamed the Ministry of Roads and Bridges (MoRB).

⁶ Repair work was limited to the sections requiring urgent measures (roads around Juba University, repair of Juba Bridge, and roads around the airport), and the distance was only about 200 m, and the construction work was outsourced.

into three.⁷ MoPI's functions were also divided, and the organization's road maintenance management staff and equipment were divided into three. Until reunification in 2020, MoPI was forced to continue the project's activities with limited resources.

In July 2016, another large conflict occurred, and MoPI's activities were suspended. In 2017, activities were resumed, but owing to the economic crisis, the government's 2018–2019 budget was reduced greatly, and the number of activities was reduced. Furthermore, from January 2020, Juba was locked down because of the COVID-19 pandemic, and activities regarding road maintenance and management were suspended almost for one year.

However, these were ad-hoc measures regarding regular activities, which are for reference because they do not correspond to the Overall Goal of the project, which is "maintenance and management of sustainable roads." Road works in Central Equatoria (outside Juba City) were implemented with special funding from such sources as the vice president. The length of road maintained and managed was 68 km in 2019, 63 km in 2020, and 3 km in 2021.

As mentioned above, from the completion of the project to the time of the ex-post evaluation, both implementing agencies were unable to conduct repair work and clean the roads in Juba City on a continuous basis because of the constraints such as budget, and organizational aspects. These were affected by an uncontrollable external factor of the project, security.

In addition, during the field study for the ex-post evaluation, the evaluation team visited and confirmed the sites where the project OJT and follow-up work were implemented. The team found that culverts were blocked by illegally dumped waste and soil, the road was flooded during the rainy season owing to the lack of water flow, and the repaired dirt road had been scraped away again in all the sites. The leveled roads also deteriorated to a level that hinders traffic because they were not managed properly.

There are difficulties in maintaining and managing the culverts because of the severe natural conditions and insufficiency in the budget. However, MoPI should have considered preventive measures with the cooperation of the city government and local communities.

In light of the above, the achievement of the Overall Goal was confirmed to a limited degree compared to the plan.

⁷ At the time of independence, there were 10 states. In 2015, it was divided into 28 states, and in 2017 32 states. When the 28-state system was established in October 2015, Central Equatoria State was divided into three states: Telekeka, Jubek, and River Yei. The function of MoPI was also divided into three. On February 15, 2020, when the unified Interim Government was established, they decided to return to the 10-state system. The divided three states were reunited into Central Equatoria State.



A new culvert (left) and a road after repair can be driven straight through. (right) (September 2013) source: Project Team



On the same road at the time of the ex-post evaluation, the culvert was filled with garbage, and the road was curved owing to sediment runoff. (February 2022) Source: Evaluator

3.2.2.2 Emergence of Project Effects after the Completion of the Project

The evaluation team confirmed MoRB and CE MoRB regarding the emergence of project effects after completion to the time of the ex-post evaluation by questionnaires and interviews. The results and supporting data are shown in Table 4 to Table 9.

(1) Output 1: The enhancement of the capacity of MTRB/MoPI to conduct road inspection and to prepare road inventory.

After the project completion, MoRB resumed the inspection and inventory in 2019, which had been suspended because of the deterioration of security caused by conflicts and budget shortages. The actual inspection was outsourced to external contractors, and MoRB provided supervision and technical support. Owing to the budget shortage, CE MoRB has reduced the number of teams from four to one since 2014. Activities were suspended in 2016 owing to the conflict, but the teams continued inspection and inventory until the time of the ex-post evaluation.

Table 4 Continuation Status of Output 1

| Organization | Indicator | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|--|------|------|------|------|------|------|-------|-------|------|
| MoRB | 1-1 Number of road inventory team(s) | 0 | 0 | 0 | 0 | 0 | 0 | (4) | (4) | 0 |
| | 1-1 Length of road inspected (km) | 0 | 0 | 0 | 0 | 0 | 0 | (247) | (400) | 0 |
| | 1-2 Number of updated inspection items specified in manual | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CE MoRB | 1-1 Number of road inventory team(s) | 4 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| | 1-1 Length of road inspected (km) | 136 | 813 | 4.6 | 0 | 576 | 67 | 54 | 126 | 6.7 |
| | 1-2 Number of updated inspection items specified in manual | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: MoRB and CE MoRB's response to the questionnaire

* The number of instances of implementation outsourced by contractors is indicated in parentheses.

(2) Output 2: The enhancement of capacity of MTRB/MoPI to formulate road maintenance/repair plans in accordance with the road inventory.

MoRB abolished the team because they could not conduct inventory until 2019, and the budget for road repair was not allocated. At the time of the ex-post evaluation, there is no prospect for resuming repair. The update status of the manual was unclear owing to personnel changes. CE MoRB has one team that has been continuing the activities despite the difficulties, such as two conflicts and the restructuring of the state government organization. They also have not updated the manual.

Table 5 Continuation Status of Output 2

| Organization | Indicator | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|--|------|------|------|------|------|------|------|------|------|
| MoRB | 2-2 Number of teams that can formulate a road maintenance plan | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CE MoRB | 2-2 Number of teams that can formulate a road maintenance plan | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |

Source: MoRB and CE MoRB's response to the questionnaire

(3) Output 3: The enhancement of the capacity of MTRB/MoPI for road maintenance and management (ROW, overloaded vehicles, traffic volume).

MoRB continues activities only on ROW problems. The ROW problems were identified by the information from community calls and reports from the contractors conducting inventory. Since it is impossible to find a solution under the current legal system, the problems are referred to the city government and the police. Overloading and traffic volume survey were not conducted because of harassment by the police and a broken axle weight scale.

CE MoRB identified ROW problems when they conducted road inspections and construction work and addressed issues. They stopped the overloading survey in 2015 and the traffic volume survey in 2014. The main reasons for this are security problems and police harassment.

Table 6 Continuation Status of Right of Way

| Organization | Indicator | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|---|---------------|------|------|------|------|------|------|------|------|
| MoRB | 3-1 Number of ROW problems identified. (number/year) | Joint with CE | (5) | (5) | 0 | (5) | (5) | (5) | (5) | (6) |
| | 3-1 number of countermeasures implemented (number/year) | | (3) | (3) | 0 | (3) | (3) | (3) | (3) | (3) |
| CE MoRB | 3-1 Number of ROW problems identified (number/year) | 3 | 3 | 5 | 0 | 0 | 1 | 3 | 2 | 0 |
| | 3-1 Number of countermeasures implemented (number/year) | 3 | 2 | 3 | 0 | 0 | 0 | 3 | 5 | 0 |

Source: MoRB and CE MoRB's response to the questionnaire

* The number of instances of implementation outsourced by contractors is indicated in parentheses.

Table 7 Continuation Status of Axle Load Survey

| Organization | Indicator | 2012/2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|---|---------------|-----------------|------|------|------|------|------|------|------|
| MoRB | | Joint with CE | not implemented | | | | | | | |
| CE MoRB | 3-2 Number of teams for axle load survey | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Number of surveys conducted in the year (times/year) | 14 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Number of vehicles surveyed (units) | 1,100 | 424 | 720 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Of which number of overloaded vehicles identified (units) | 400 | 30 | 92 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: MoRB and CE MoRB's response to the questionnaire

Table 8 Continuation Status of Traffic Count

| Organization | Indicator | 2012/2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|--|---------------|------|------|------|------|------|------|------|------|
| MoRB | Number of teams for traffic count survey | Joint with CE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Number of traffic surveys conducted (times/year) | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CE MoRB | Number of teams for traffic count survey | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Number of traffic surveys conducted (times/year) | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: MoRB and CE MoRB's response to the questionnaire

(4) Output 4: The enhancement of the capacity of MTRB/MoPI to conduct road maintenance/repair work in accordance with the road maintenance and management/repair plan.

MoRB outsources actual repair work to external contractors, and MoRB provides technical support and supervision to contractors. Therefore, no team for regular monitoring was formulated. CE MoRB has a dedicated department for monitoring the state of deterioration and repairing roads. Still, owing to budget shortage, the actual implementation is irregular. Thus, they no longer form a team, especially for the project. Repair work was implemented only when the budget became available from other resources.

Table 9 Changes in Number of Teams for Maintenance and Quality Control

| Organization | Indicator | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|--------------|---|------|------|------|------|------|------|------|------|------|
| MoRB | 4-1 Number of teams for maintenance and quality control | N/A | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CE MoRB | 4-1 Number of teams for maintenance and quality control | | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |

Source: MoRB and CE MoRB's response to the questionnaire

(5) Project Purpose: To enhance the road maintenance and management capacity of MTRB/MoPI through the establishment of a cycle of road maintenance and management.

As shown above, in both MoRB and CE MoRB, activities on Outputs 1 to 4 have been only at partial continuation from the project completion to the time of the ex-post evaluation, and the road maintenance and management cycle was not continuously implemented. Therefore, the emergence of the Project Purpose is also limited.

3.2.2.3 Other Positive and Negative Impacts

(1) Impact on the Natural Environment

In the ex-ante evaluation, according to the JICA Guideline for Environmental and Social Consideration (April 2010), the project was classified as Category C because it was likely to have a minimal or no adverse impact on the environment and society. According to the Implementing Agency, no negative impact on the natural environment was observed at the time of the ex-post evaluation.

(2) Land Acquisition and Resettlement

In the ex-ante evaluation, because the project focused on the maintenance and management of the existing roads and no new construction was planned, the occurrence of land acquisition or resettlement was not expected. As confirmed with the Implementing Agency, the project did not require land acquisition or resettlement.

(3) Social System, living standard, People's Well-being, and Human Rights

In this project, OJT was provided to put knowledge into practice in such aspects as road repair and culvert construction. The areas for OJT were important transportation hubs in the city, places where roads tend to be flooded and significantly impact people's living, and places where more people move, such as hospitals and schools. Consideration was given so that a larger population could be benefitted.

According to the survey of the residents about the impact on their living yielded by the project's road repair and culvert construction, the benefits below were reported.⁸

- | |
|---|
| <ol style="list-style-type: none">(1) Access to hospitals, markets, and schools has improved.(2) Transportation to the market has become faster and easier. Thus, economic activity has been activated.(3) Traveling at night has become faster and safer.(4) The police and ambulance are now coming sooner.(5) Cars had to slow down on bad roads, making them easy targets for robberies. As roads improved, the cars no longer needed to slow down, making them less likely to be attacked. |
|---|

⁸ The survey consisted of interviews with representative of the areas (4 people), Men/Women/Youth Group interviews (15 participants in total), road users at the repaired spots (2 locations with a total of 15 people).

In the OJT, pedestrian crossings were painted on 20 paved roads near kindergartens, schools, and hospitals in the city. Owing to budget constraints, ordinary paint was used instead of paint tailored for crosswalks. Thus, at the time of the ex-post evaluation (2022), most of the paint had disappeared, and the actual effects could not be confirmed. According to the experts, C/Ps' motivation increased after seeing children happily crossing the newly painted pedestrian crossing. It can be said that it became an opportunity for the C/P organizations to contribute to people's well-being as those that provide administrative services.

Although the effects of the road repair were confirmed, at the time of ex-post evaluation, the road has deteriorated again. In interviews with residents' groups and community leaders regarding this issue, it was found that they have strong awareness that illegal dumping was the problem and that some measures must be taken. However, in interviews, it was also reported that the root of the problem was that garbage was not regularly collected. The interviewees proposed measures, such as requesting the city for regular garbage collection, raising funds to buy trucks for garbage collection, cleaning, and informing residents not to dump garbage illegally. In South Sudan, challenges include severe natural conditions and insufficient road maintenance and management due to the lack of budget allocation for the implementing agencies. However, it is possible to examine prevention measures and implement cleaning with the cooperation of the city government and communities.

The effectiveness and impact of the project are moderately low, as only a certain degree of emergence has been confirmed compared to the plan. As for the Project Purpose, the environment for establishing the road maintenance and management cycle was established, and a series of activities were put into practice. Thus, it can be said that the capacity for road maintenance and management was strengthened; therefore, it was mostly achieved. The achievement of the Overall Goal was affected by multiple external factors which were beyond the control of the project, such as major conflicts, government budget shortages, and the division of functions of the implementing agency due to organizational restructuring. Thus, the project's appropriate and sustainable road maintenance and management were limited. The OJT improved road conditions and brought benefits to people's lives. However, the effects did not continue until the time of the ex-post evaluation because maintenance and management were not conducted appropriately.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

The plan and the actual inputs of the project were as follows.

Table 10 Comparison of Planned and Actual Inputs

| Inputs | Plan | Actual (at the time of Project Completion) |
|---|---|--|
| Dispatch of Experts | Short-Term in 6 fields, 6 person (Total 51 MM) | Short-Term in 10 areas, 16 persons (77.1 MM) Long-Term 1 person (13 MM) |
| Trainees Received | Training in Japan, Training in a third country (Number of the person not provided) | Training in Japan 15 persons, Training in a third country (Kenya) 3 persons |
| Equipment | Provision of equipment 7 types | Provision of equipment Approximately 79 million yen, 36 types |
| Local Cost | 20 million yen | 36 million yen (182% of the plan) |
| Japanese Side Total Project Cost | 300 million yen | 484 million yen (161% of the plan) |
| Inputs of the South Sudanese Side | C/P: 10 persons | C/P: 27 persons in total |

Source: material provided by JICA

* MM stands for man month.

3.3.1.1 Elements of Inputs

(1) Dispatch of Experts

Compared to the plan of short-term experts 6 persons (total 51 MM), the actual dispatch increased vastly to 16 short-term experts in 10 fields and one long-long term expert (90.1 MM in total, which is 177% of the plan). This was because of the addition of an output. The team added experts and restructured experts' fields. As a result, the number of experts and dispatched days increased significantly compared to the plan.

Table 11 Change of Experts' Fields

| Plan | Actual |
|---|---|
| 1. Chief Advisor/ Maintenance and Management Plan, 2. Road and Pavement Design/ Drainage System I, 3. Road and Pavement Design/ Drainage system II, 4. Construction Supervision / Quality Control, 5. Procurement / Equipment & Operation /Management, 6. Formulation of manual/ Capacity development / Coordinator | 1. Team Leader/ Maintenance and Management Plan, 2. Road & Pavement Design/ Improvement of Drainage System, 3. Road Maintenance/ Road Inventory, 4. Construction Management/ Quality Control, 5. Procurement / Equipment & Operation /Management, 6. Road Management, 7. Topographic Survey, 8. Road Inspection, 9. Preparation of Manual/ Training & Development/ Coordinator, 10. Hydrology |

Source: material provided by JICA

(2) Trainees Received

The project provided training in Japan three times and training in a third country once in Kenya.⁹ The date and the total number of participants are shown in the table below. Since the target number of times and the number of days at the planning time are unknown, it is impossible to compare the plan and the actual.

Table 12 Actual Training (unit: persons)

| Affiliation | Training in Japan | | | Training in a Third Country |
|--------------|-------------------|--------------|--------------|-----------------------------|
| | February 2012 | October 2012 | October 2013 | November 2012 |
| MoRB | 3 | 3 | 3 | 2 |
| MoPI | 2 | 2 | 2 | 1 |
| Total | 5 | 5 | 5 | 3 |

Source: material provided by JICA

(3) Provision of Equipment

At the time of planning, construction equipment for road repair was envisioned. In selecting the equipment, small equipment with high fuel efficiency and low spare parts costs was considered because of the financial resources of MoPI, which oversees road repair works. In reality, the project team reviewed the equipment that MoPI already had and re-examined the selection according to the need for a road maintenance and management cycle. For example, MoPI already had large machines such as roller graders and backhoes. However, since they had no transport vehicles, these machines were driven on the road. Considering the engine load and road damage, the machine should have been transported. The trailer was added for that purpose. Equipment to make concrete pipes for culverts used for building road drainage facilities was also added.

Table 13 Plan and Actual Equipment Provision

| Plan a total of 7 types | Actual a total of 36 types |
|--|--|
| 1. Small grader: 1 unit 2. Small backhoe: 2 units 3. Small compactor: 1 unit 4. Truck crane: 2 units 5. 4-ton dump truck: 1 unit 6. Asphalt cutter: 2 units 7. Surveying equipment: 2 sets and other costs for pilot projects. | [Minor road maintenance management by manual construction] 1. Conveyer belt, 2. Dump truck, 3. Truck crane, 4. Light truck, 5. Plate compactor, 6. Rammer, 7. Water jet, 8. Asphalt sprayer, 9. Concrete cutter, 10. Air compressor, 11. Hand breaker, 12. Scoop, Pick, 13. Wheelbarrow, 14. Vibrator load roller, 15. Hydraulic excavator tire type [Equipment for road maintenance machine maintenance] 1. Container workshop, 2. Tools, 3. Generator, 4. Water pump [Construction of road drainage system] 1. Pipe casting framework, 2. Concrete Vibrator, 3. Gantry crane and hanger, 4. Water tank and water distribution pipes, [Traffic control facility repair] 1. Barricade casting framework, 2. Line marker and line remover [Transportation] 1. Trailer head, 2. Floor [Evaluation] 1. VIMS, etc. Total: 36 types |

Source: material provided by JICA

⁹ A three-day training course aimed at learning about overloading regulations and practices in neighboring Kenya

3.3.1.2 Project Cost

Regarding the project cost, as opposed to the planned amount of 300 million yen, the actual amount was 484 million yen, which is 161% of the plan. However, in this project, one output was added through formal procedures. Considering the additional output, although it is a rough estimate, the planned amount is 399 million yen.¹⁰ The actual amount of 484 million yen exceeded this amount by 85 million yen, which was 21% higher than planned. Therefore, the actual project cost exceeded the plan, but it can be said that the increase was in line with the output that was added through formal procedures; thus, the project cost was generally efficient.

3.3.1.3 Project Period

The planned project period was from September 2011 to March 2014 (2 years and 7 months), while the actual implementation period was from October 2011 to March 2014 (2 years and 6 months: 97% of the plan). Thus, the actual period was within the plan.

In light of the above, although the project cost slightly exceeded the plan, the project period was within the plan. Therefore, the efficiency of the project is high.

¹⁰ There were three outputs in the original plan, but one was added and became four owing to changes in the project plan. Since detailed information on the cost of each outcome was not available, the total was estimated by supposing that the amount of all outputs was equal.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

The development policy at the time of the ex-post evaluation, *South Sudan National Development Strategy 2018–2021*, holds the objective of “Consolidate Peace and Stabilize the Economy” and aiming at “people’s safety, stable price, and provision of basic services.” A goal of the economic cluster includes “development of basic economic infrastructure.” Regarding road development and maintenance and management, the following goals have been set to be achieved in three years.

- (1) expand the length of feeder roads rehabilitated or constructed from 750 km to 1,000 km
- (2) expand the length of major highway construction from 250 km to 500 km

Since road construction and rehabilitation is a priority issue in the national development plan, sustainability in policy and system is ensured even at the time of the ex-post evaluation.

3.4.2 Institutional/Organizational Aspect

Table 14 shows an outline of the roles of each organization. Government organizations and local government divisions have been divided and re-integrated. A bill on road maintenance and management was drafted under this project and approved by MoRB. However, it has not yet been approved owing to delays in deliberations in the Ministry of Justice and the Parliament. Accordingly, the MoRB policy formulated in 2012 has been the legal basis.

Table 14 Outline of Organizations Related to Road Maintenance

| Organization | Jurisdiction | Role | Funding source |
|--------------|---|--|--|
| MoRB | International/interstate roads Circular and radial roads | Policy formulation and monitoring responsibility for road management | MoRB |
| SSRA | in part of Juba City | Planning, construction, and maintenance of highways | Construction funded by donors only |
| CE MoRB | Feeder roads: circular, collector, and local roads | Planning, construction, and maintenance of roads in the state | The state budget for construction and maintenance |
| Juba City | Urban roads 19 routes | Planning, construction, and maintenance of city roads, road cleaning | MoRB for construction, city budget for maintenance |

Source: The Policy of the Ministry of Roads and Bridges in the Republic of South Sudan (November 2012)

At the time of the ex-post evaluation, the responsible section and personnel for the road maintenance and management cycle established by this project were allocated within the organizations of the MoRB and CE MoRB (Table 15). Thus, it can be said that the system has been established. However, according to the implementing agencies, owing to the low salaries of civil servants, there is an outflow of personnel to international organizations and NGOs, and the agencies do not have enough engineers. On the other hand, CE MoRB, the city hall, and

communities were working together on road construction and maintenance. It can be said that it is a means to improve efficiency by sharing resources such as budget, equipment, technology, and workers.

Table 15 Staffing to Each Organization Related to Road Maintenance and Management

| Organization | Staffing for road maintenance and management | | | | | | | | | | | |
|---|--|--|---|--|-----------------|---|------------------|--|-------------------|---|------------------------|--|
| MoRB | <ul style="list-style-type: none"> A total of 26 engineers are assigned when work occurs, not for exclusive use because there are no regular budgetary measures. Road inspections and road repair work are outsourced owing to cost-effectiveness considerations. The number of engineers in the ministry is insufficient. Because of low salaries and frequent delays, human resources flow to the private sector and NGOs. | | | | | | | | | | | |
| SSRA | <ul style="list-style-type: none"> The organization was established in 2011. It is operational only when a project is funded. There were road construction projects by some donors from 2014 to 2015, but there has been no project since then. At the time of the ex-post evaluation, there were three engineers, but they were seconded to MoRB because there was no project. Owing to the South Sudanese currency's depreciation, the real salary is too low, and staff employment is not progressing. | | | | | | | | | | | |
| CE MoRB | <p>The roles and number of personnel of each department are as follows.</p> <table border="1"> <thead> <tr> <th>The responsible section within the ministry</th> <th>Role and the number of personnel *The number of personnel is shown in parentheses</th> </tr> </thead> <tbody> <tr> <td>Road and Bridge</td> <td>Inventory (3), axle load survey (9), updating manual (12)</td> </tr> <tr> <td>Road Maintenance</td> <td>Formulating road maintenance and management/ repair plan (3), traffic survey (4), implementation of road maintenance and management/repair (14), monitoring deterioration rank of the maintenance road (4)</td> </tr> <tr> <td>Road Construction</td> <td>Identifying and proposing the ROW problem (3)</td> </tr> <tr> <td>Mechanical Engineering</td> <td>Maintenance of machine and equipment (18), operation of machine (12)</td> </tr> </tbody> </table> <ul style="list-style-type: none"> There is a shortage of engineers in ministries as a whole due to low real salaries. | | The responsible section within the ministry | Role and the number of personnel *The number of personnel is shown in parentheses | Road and Bridge | Inventory (3), axle load survey (9), updating manual (12) | Road Maintenance | Formulating road maintenance and management/ repair plan (3), traffic survey (4), implementation of road maintenance and management/repair (14), monitoring deterioration rank of the maintenance road (4) | Road Construction | Identifying and proposing the ROW problem (3) | Mechanical Engineering | Maintenance of machine and equipment (18), operation of machine (12) |
| The responsible section within the ministry | Role and the number of personnel *The number of personnel is shown in parentheses | | | | | | | | | | | |
| Road and Bridge | Inventory (3), axle load survey (9), updating manual (12) | | | | | | | | | | | |
| Road Maintenance | Formulating road maintenance and management/ repair plan (3), traffic survey (4), implementation of road maintenance and management/repair (14), monitoring deterioration rank of the maintenance road (4) | | | | | | | | | | | |
| Road Construction | Identifying and proposing the ROW problem (3) | | | | | | | | | | | |
| Mechanical Engineering | Maintenance of machine and equipment (18), operation of machine (12) | | | | | | | | | | | |
| Juba City (reference) | <ul style="list-style-type: none"> At the time of the ex-post evaluation, the road department was being established within the city government. The city has purchased the equipment for leveling and digging and is recruiting engineers. CE MoRB is cooperating with the construction and maintenance of roads in the city. It dispatches engineers and operators of heavy equipment to cooperate in design, road repair, and construction. | | | | | | | | | | | |

Source: MoRB and CE MoRB's response to the questionnaire

3.4.3 Technical Aspect

At the time of the ex-post evaluation, the following is the status of MoRB and CE MoRB regarding technology updates related to road maintenance and management, and technology transfer to recruits.

(1) MoRB

Opportunities for road maintenance management were limited owing to security issues such as the danger of attacks and land mines, as well as budget shortages. However, according to MoRB, OJT and internships were used to maintain the technical level and transfer skills. Moreover, MoRB kept the internships introduced in this project, and has been providing opportunities for students. MoRB was affiliated with the University of Juba, which has the Faculty of Engineering, and, at the time of the ex-post evaluation, about 10 students from the university have been accepted. This system created opportunities for recruits to gain practical experience in domestic and donor projects in neighboring countries before joining the ministry.

(2) CE MoRB

According to CE MoRB, about once a month, they hold study sessions using the manuals and other materials created in the project to maintain the level of engineers and transfer technology to successors. In addition, as shown in the impact section, CE MoRB was engaged in road repair design and construction work in Juba City from 2017 to 2021. It can be said that they have been continuing the practice by using the technology strengthened in this project.

As mentioned above, although the practice opportunities are limited, it can be said that technical sustainability is expected to be ensured because of the efforts and creative measures to maintain the technical level and transfer.

3.4.4 Financial Aspect

According to the changes in the annual budget of the Government of South Sudan and the MoRB (Table 16), the budget amount has been fluctuating significantly from year to year. Therefore, it was difficult to proceed with road maintenance and management in a planned manner. As mentioned in the impact section, road maintenance, management, and repairs in and around Juba were promoted when the budget was allocated, but the implementation has been ad hoc. Therefore, there has been a significant challenge in the sustainability of the financial aspect.

Table 16 Changes in the Annual Budget

unit: million U.S. dollars

| | 2015-2016 | 2016-2017 | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 |
|-------------------------------|--------------|---------------|---------------|------------|--------------|--------------|
| South Sudan National | 1,240 | 54,000 | 53,843 | 526 | 1,343 | N/A |
| MoRB | N/A | 207.9 | 28.9 | 3.4 | 681.0 | 262.3 |
| of maintenance and management | 99.9 | 7.3 | 2.1 | 0.2 | 83.1 | 83.1 |
| CE MoRB | N/A | N/A | N/A | N/A | N/A | 144.8 |

Source: Report on the Implementation Review Study on the Project for Construction of the Bridges in Juba (December 2021)

3.4.5 Social and Environmental Aspects

At the time of planning, as points to note in the activities of this project, a rapid increase in vehicle traffic and control of overloaded vehicles were indicated. As there was no continuous

traffic count survey, as the alternative, this evaluation refers to the results of the traffic count survey conducted in the preparatory survey for grant aid cooperation. The comparison of the traffic volume in Juba City during the project implementation (2013) and at the time of the ex-post evaluation (2021) shows that the traffic volume increased for all vehicle types, although it is unclear whether the increase or decrease was as expected. The increase in large-size trucks was particularly significant.

Table 17 Comparison of Traffic Volume

| | Pedestrian | Bicycle | Motorcycle | Passenger car | Minibus | Bus | Light/small truck | Medium-sized truck | Large-sized truck |
|----------------|------------|---------|------------|---------------|---------|-------|-------------------|--------------------|-------------------|
| 2013 | 11,794 | 646 | 19,428 | 13,318 | 1,918 | 311 | 3,626 | 125 | 42 |
| 2021 | 21,442 | 295 | 47,377 | 24,607 | 16,665 | 1,359 | 4,077 | 642 | 379 |
| Increase ratio | 182% | 46% | 244% | 185% | 869% | 437% | 112% | 514% | 902% |

Source: Report on the Implementation Review Study on the Project for Construction of the Bridges in Juba (December 2021)

* Comparison of traffic volume at four sites on the south and east sides of Juba City

Overloaded vehicles have been a major cause of road damage, but laws and regulations to control them were not enacted even at the time of the ex-post evaluation. Thus, there were no domestic weight limits or penalties, which was one of the reasons that the problem of overloaded vehicles has not been addressed.¹¹ Crackdowns by the police and others are implemented irregularly, but it is said that their real purpose is to collect fines.

Although it was not anticipated at the time of planning, the culverts constructed in the OJT for this project were clogged with waste from illegal dumping, and the repaired roads were eroded by flooding. Although the implementing agencies have a countermeasure idea, it has not implemented an actual countermeasure.¹²

3.4.6 Preventative Measures to Risk

At the time of planning, it was pointed out that security deterioration due to political rallies and demonstrations might be a risk to the political and security situation.

Conflicts exceeding assumptions occurred, and the road maintenance and management cycle was disrupted. Even after the conflicts calmed down, there were risks of attacks by armed groups

¹¹ Each country in East Africa has a regulation (55.6 metric tons) for the loading capacity, but it is not applied to South Sudan. For example, trucks leaving Mombasa in Kenya operate according to this regulation, but once they enter South Sudan, transshipment is carried out ignoring the loading limit, and the number of trucks is reduced in order to cut the transportation costs. The reason why such overloading occurs is because the weight is not measured or enforced at borders and bridges, and it is possible to pass inspections by paying a bribe.

¹² MoRB and CE MoRB proposed the following countermeasures for illegal dumping problems: (1) Waste collection is the responsibility of the city government, but it should be done in cooperation with road maintenance and management; (2) Establish regulations; (3) Set collection points for waste; (4) Information dissemination to local leaders; and (5) Educational activities on garbage management, because Juba's population increase is caused by the people coming from areas where no garbage collection has been conducted.

and landmines and unexploded ordnance. Thus, road maintenance and management activities by the MoRB were implemented only in safe areas. Risk assessments have been handled by collecting information in cooperation with other departments of the ministry and contractors.

Road maintenance and management work include inspections and surveys, but harassment by the police and others still hinders smooth implementation. Especially, the activities related to Output 3, which are surveys on overloading and traffic volume, became difficult. In the background were the problems that the development of laws and regulations at the national level was not progressing, and that the fines collected by the police and others reportedly became their personal property. As a countermeasure, the implementing agencies prepare identification cards issued by the ministry and an official government document notifying implementation of the survey to demonstrate the legitimacy of the survey when the police stop them.

3.4.7 Current Status of the Operation and Maintenance System

The equipment provided by this project is managed by CE MoRB. Out of the 20 main types of equipment, six were in good condition, and the remaining 14 were left unrepaired and stored in warehouses and parking lots because spare parts were unavailable owing to a lack of budget. According to CE MoRB, the equipment is repaired in order of priority; thus, if the budget becomes available, spare parts can be obtained, and the equipment items are to be repaired. Because cooperation to repair works with the city government budget was increasing at the time of the ex-post evaluation, there are chances that the priority may rise.



Machines and equipment provided by the project that are unrepaired owing to a lack of spare parts



A river filled with waste dumped illegally

As mentioned above, sustainability is expected in policy/systems, technical aspects, and preventive measures to risk, but financial sustainability is a major concern. Some minor issues have been observed regarding the institutional/organizational, environmental, and current status of the operation and maintenance system, and prospects for improvement or solution are poor. Therefore, the sustainability of the project effects is moderately low.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

The project aimed to enhance the road maintenance and management capacity of MTRB and MoPI through the establishment of a cycle of road maintenance and management (inspection, plan, and maintenance/repair). In South Sudan's national development policy, from the time of project planning to the completion of the project, improving the quality of road infrastructure was a consistent issue. South Sudan was affected by a long-time conflict, and proper road maintenance and management had not been conducted for many years. Because the population had been concentrating in the capital, and cargo transportation had been increasing, the need for road development and maintenance was expected to increase further. Regarding the project plan and approach, since it was a project in a conflict-affected country, the project plan was adjusted flexibly according to the knowledge level and proficiency of the C/P of MTRB and MoPI and emphasized establishing their ownership of nation-building. The project is coherent with the assistance policy of the Japanese government at the time of planning because basic livelihood assistance including the transportation section was one of the policy's priority areas for establishing peace. Moreover, the project was expected to yield benefits to neighboring countries and contribute to peacebuilding. In the projects by JICA and the Japan Self-Defense Forces dispatched to UNMISS, C/Ps participated in inventory and road repairs, which could increase opportunities for practical OJT, which was limited owing to a lack of budget. With other donors, information was exchanged and harmonized with similar projects. Therefore, the project's relevance and coherence are high.

As for effectiveness, the environment for establishing a road maintenance and management cycle within MTRB/MoPI was established, and a series of outputs was put into practice. Thus, the road maintenance and management capacity was strengthened, and it can be said that the Project Purpose was largely achieved. Owing to the major conflicts in December 2013, just before the project completion and July 2016, and the lockdown due to COVID-19 from the beginning of 2020, the activities of the implementing agencies related to road maintenance and management were suspended each time. From the time of the project completion to the ex-post evaluation, the road maintenance and management cycle have been fragmented. Thus, the continuity of the Project Purpose was at a limited level. After the two conflicts, the restoration of stability was delayed. There was a danger of attacks, unexploded ordnance, and landmines on the roads. In addition, the government's financial situation did not improve. Up to the time of the ex-post evaluation, the state of road development in South Sudan had not progressed, making it difficult to achieve the Overall Goal of appropriate and sustainable road maintenance and management. The roads and culverts constructed and repaired in the OJT of the project benefitted people's lives. However, maintenance and management had not been implemented appropriately, which worsened the state of the roads and culverts, and the benefit became limited. Some measures in

preventing deterioration of the roads and culverts and cleaning them were necessary with the cooperation of the city government and communities. As mentioned above, the impact of this project is limited. Therefore, effectiveness and impact are moderately low.

Although the project cost significantly exceeded the plan, the additional cost was commensurate with the increase in output, and the project period was within the plan. Thus, the project's efficiency is high.

Sustainability is expected in policy/systems, technical aspects, and preventive measures to risk, but financial sustainability is a significant concern. Some issues have been observed regarding the institutional/organizational, environmental, and the current status of the operation and maintenance system. Prospects for improvement or solution in such aspects are poor.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) The maintenance and management of roads in Juba City is centrally the responsibility of CE MoRB. However, the cooperation of Juba City and its residents is essential for routine maintenance and management. CE MoRB, in cooperation with Juba City and involving residents, should formulate strategies for road maintenance such as cleaning campaigns, reduction of illegal dumping, and consideration of strengthening waste collection. Such strategies should be incorporated in an annual plan and should promote cooperation from relevant stakeholders.

(2) A mechanism to secure stable funds for road maintenance and management should be considered. An option is to introduce overload vehicle control and use fines from violators as the funding source. As the project provided equipment and skills to make concrete blocks and culverts for CE MoRB, and there is a high demand for such products, obtaining funds through sales of such products is another option. At the time of the ex-post evaluation, parliamentary deliberations resumed; thus, it would be desirable to formulate a concrete proposal on such mechanism in time for deliberation of road-related laws.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) For sustainable road maintenance and management, it is necessary to gain cooperation from local governments and communities.

The roads and culverts constructed and repaired by the project's OJT were not necessarily adequately maintained and managed. The leading cause was that the culverts were clogged with

waste dumped illegally, and the repaired dirt roads were scraped away by flooding during the rainy season. According to interviews with the city government and CE MoRB, they were aware that daily cleaning of the culverts was residents' responsibility, and dumping of waste was prohibited. However, information dissemination to the residents was not sufficient. In formulating the project plan, cooperation and partnership with the city government on information dissemination and promotion to encourage residents to clean the culverts should have been incorporated.

Concrete countermeasures proposed in the interviews with implementing agencies, city government, and the leaders of the communities included formulation of regulations for waste management and information dissemination to residents, awareness-raising activities on illegal dumping, strengthening of waste collection and setting waste collection points, and cleaning culverts and roads by the community.

There are six counties in Central Equatoria state, and each has unique features in geography and rainfall.¹³ MoPI's engineers suggested involving county road administrators in the project's OJT. Although it is difficult for MoPI to repair all the roads in counties, if engineers at the county level learn the sandbag method introduced in the project, they can use the local soil and organize local labor for minor road repairs by themselves.

(2) Collaboration may not be possible owing to restrictions in each organization. It is desirable to consider flexible responses according to local customs as much as possible.

Coordination was made between the project and the Japan Self-Defense Forces that were dispatched to UNMISS. Moreover, MoPI participated in the Self-Defense Forces' road construction. It can be said that efforts were made to yield effects within a limited budget by using all-Japan collaboration. Since the activities of the Self-Defense Forces were non-permanent, there were institutional restrictions such as preclusion of asphalt pavement. While roads were paved one after another in Juba, it was desirable to pave the roads. In the end, a compromise measure was done with alternative soil mixed with crushed bricks and marram, which was then pressed to serve as a substitute for asphalt pavement. MoPI staff and local people also provided labor for the construction. According to local customs, water and lunch are supposed to be provided. However, as the Self-Defense Forces regulations do not allow it, the project side had covered the cost (outside the budget and paid for by the company that the experts belong to). It is customary for the organizers of the construction to provide water and lunch, which is a way of showing gratitude to the workers. It is also conceivable that such custom is related to trust in the organizers.

¹³ For example, Kajo Keji county is a lowland area that requires culverts, and Yei and Lanya counties are areas where road wear is severe owing to heavy rainfall.

5. Non-Score Criteria

5.1. Performance

5.1.1 Objective Perspective

Efforts to develop human resources from almost scratch in conflict-affected countries

In South Sudan, where conflict has continued for many years, it became clear after the project started that some C/Ps did not have sufficient educational opportunities and that some lacked basic knowledge of roads. Since it would be challenging to have C/Ps accumulate knowledge under such circumstances, the project team volunteered to provide lessons outside project hours to supplement basic knowledge on such matters as road design, surveying, and others. At the beginning of the supplementary lessons, participants had difficulties in classroom study or were not punctual. The experts tried to encourage CP participation by providing tea and sweets. The lessons were provided on an ad-hoc basis when an expert in a given field was in South Sudan. Gradually, about ten motivated C/Ps began to participate in the lessons continuously. Among such C/Ps, the project, by using training sessions in Japan and an emerging country (Kenya), managed to develop core human resources for road maintenance and management.

End

Republic of South Sudan

FY2021 Ex-Post Evaluation Report of Technical Cooperation Project
“Project for Capacity Development in Solid Waste Management in Juba”

External Evaluator: Yoshiko Ogawa, IC Net Limited

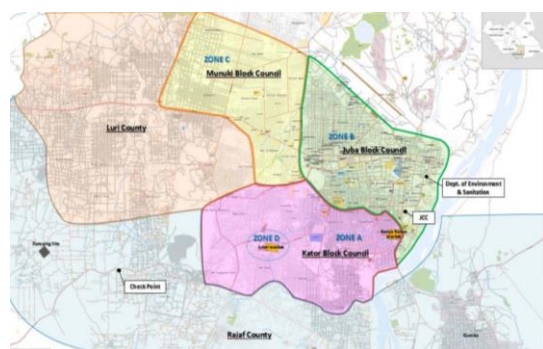
0. Summary

The Project for Capacity Development in Solid Waste Management in Juba (hereinafter referred to as the “project”) was implemented to realize the Project Purpose to establish the basic structure of solid waste management in Juba City, with the Overall Goal that Juba City Council becomes able to conduct solid waste management based on a plan. At the time of planning, there was no structure to manage solid waste in Juba City and solid waste in the city was an environmental and health problem. The importance of solid waste management was recognized in legal documents, as stipulated in the *Local Government Act* and the *Environmental Protection Bill* that the local governments were responsible for solid waste management. Thus, the project was consistent with the development policies and needs of South Sudan. The project was also consistent with the Japan’s ODA policy, which indicated “support to the improvement of basic living” as one of its major areas of assisting South Sudan. Moreover, that the project aimed to improve people’s lives just after the internal conflicts, and that the project carefully proceeded with pilot activity target areas selection so as not to let people feel unfairness between different tribes and communities was an appropriate approach for a project implemented in a conflict-affected country. Although on a small scale, the project conducted collaborative activities with other JICA and non-JICA projects, and played a mutually complementary role to other donors. Therefore, the project’s relevance and coherence are high. The project facilitated the implementation of pilot activities to collect garbage from markets and residential areas and improve the final disposal site and its management, through which the government officials, the counterparts (C/Ps) of the project, gained the basic capacity for regular garbage collection, transport and treatment, and solid waste management. Furthermore, the Department of Environment and Sanitation (DES) of Juba City Council in charge of solid waste management was established; thus, the Project Purpose to formulate the basic structure of solid waste management was achieved. However, owing to the major conflicts in December 2013 and July 2016,¹ which was an external factor to the project, after the completion of the project, regular waste management activities introduced by the pilot activities were interrupted and garbage

¹ In December 2013, clashes between the presidential guards occurred and conflicts spread and continued across the country. In August 2015, the Agreement on the Resolution of the Conflict in the Republic of South Sudan (ARCSS) was signed and the Transitional Government of National Unity was formed in April 2016. However, another clash between those on the president side and the vice-president side flared in Juba in July 2016, which caused continuing conflicts nationwide. In August 2018, the Revitalized Agreement on the Resolution of the Conflict in the Republic of South Sudan was signed and the Revitalized Transitional Government of National Unity was formed in February 2020. Meanwhile, a presidential decree increased the number of states from 10 to 28 in 2015, and in 2017, it further increased to 32. In February 2020, it was decided to return to the 10-state structure and these changes affected management of local governments and their human resources allocation.

collection became irregular. Although the solid waste management plan developed by the project was partially undertaken, the achievement level of the plan, which aimed to continue and expand the regular garbage collection system, was low because of the breakdown of equipment such as garbage collection vehicles and the interruption of a project plan to replace equipment. Although the establishment of the basic structure leading to sustainable solid waste management can be taken as an impact of the project, the Overall Goal was achieved partially and effectiveness and impact are moderately low. The project cost exceeded the plan to some extent, but it is justifiable as the increase in the cost was mainly for the additional supply of a bulldozer indispensable to the final disposal site. The project period was as planned and the efficiency of the project is high. Concerning sustainability, after the completion of the project, the solid waste management system introduced by the project has not been implemented; thus, there is concern on the sustainability of technical capacity. Regarding equipment such as garbage collection vehicles, only a few vehicles are operational because of malfunction. This indicates that there are issues in operation and maintenance (O&M). Financially, there is certain revenue but it is not sufficient to cover all solid waste management needs, and there are issues in the fund management system and revenue increase. Because of such ineffective solid waste management, the population faces environmental problems such as garbage burning and bad smells in the city as well as the final disposal site. Future improvement can be expected in the aspect of policy and system, and regarding the institutional and organizational aspect, the foundation of continuing operation has been formed. However, in the technical, O&M, financial, and environmental and social aspects, some issues are observed and the sustainability of the project effects is moderately low. In light of the above, the project is evaluated as partially satisfactory.

1. Project Description



Project Location²



Garbage collection in Juba City
(June 13, 2022)

² JICA and Yachiyo Engineering Co., Ltd. (2018) Data collection survey on solid waste management in Juba Republic of South Sudan: final report, p.9.

1.1 Background

In Juba City, which became the capital in 2011 after the independence of South Sudan, its sanitation and living environment were worsening because of the population increase resulting from rapid urbanization and economic development, and an increase in solid waste from households and commercial establishments. However, Juba City Council had neither a solid waste management system nor a solid waste management plan. Illegal dumping was a serious problem and heaps of garbage in the city negatively affected the health and environment of people in such aspects as bad smell, insect pests, and the risk of contracting infectious diseases. The local government occasionally sent garbage collection vehicles but disposed of the collected waste in a hole at the disposal site without treatment such as soil cover and compaction. Collected waste was also dumped along the access road leading to the disposal site. This hindered the use of the site. Moreover, Juba City was just established in March 2011 and became the capital city in July 2011 following the independence of South Sudan. Therefore, for Juba City Council to be able to provide a public service, which was solid waste management in this case, it was necessary to establish a basic structure and build the capacity of relevant staff members.

1.2 Project Outline

| | | |
|----------------------------|---|--|
| Overall Goal | Juba City Council will conduct solid waste management based on the “Solid Waste Management Plan in Juba.” | |
| Project Purpose | Basic structure of solid waste management in Juba is formulated. | |
| Output(s) | Output 1 | Solid waste management in model markets in Juba is improved. |
| | Output 2 | Solid waste collection in model areas in Juba is improved. |
| | Output 3 | Fundamental landfill operation and management system is established in Juba. |
| | Output 4 | “Solid Waste Management Plan in Juba” is drafted by “Juba Solid Waste Management Group.” |
| Total cost (Japanese Side) | 384 million yen | |
| Period of Cooperation | October 2011–October 2014 | |
| Target Area | Juba City (3 Payams, ³ that is, Juba town, Kator, and Munuki Payam), and the final disposal site in Rejaf Payam, Juba County | |
| Implementing | Ministry of Environment (Republic of South Sudan: RSS), | |

³ Payam was the name of the administrative sub-division under a city or county. Juba City had Juba Town, Munuki, and Kator Payam. These payams are now called “Block.” Blocks are further divided into Quarters and Quarter Councils (QCs) are the smallest administrative unit. Men and women QC members work on not only solid waste management but also health and other development activities and liaise between each Block and residents, on a volunteer basis.

| | |
|---|---|
| Agency | Juba City Council, Juba County |
| Other Relevant Agencies/ Organizations | Ministry of Health, Ministry of Housing and Physical Planning, Ministry of Finance and Economic Planning, Ministry of Environment (Central Equatoria State: CES) |
| Consultant in Japan | Yachiyo Engineering Co., Ltd. |
| Related Projects | <p><Technical Cooperation></p> <p>Data collection survey on solid waste management in Juba (2017–2018)</p> <p>Preparatory survey for the project for improvement of solid waste management in Juba (2020–2021)</p> <p>Preparatory survey for the Juba clean city project (2021)</p> <p><Grant Aid></p> <p>Project for improvement of solid waste management in Juba (E/N October 6, 2021)</p> |

1.3 Outline of the Terminal Evaluation

No terminal evaluation was conducted. The following are relevant parts from the project completion report.

1.3.1 Achievement Status of the Project Purpose at the Terminal Evaluation

The project completion report has a section on achievement of outputs, but it does not give a clear description of evaluation for the Project Purpose and the level of achievement of each output. Nonetheless, the overall description of the report seems to have concluded that the indicators of each output had been fulfilled.⁴

1.3.2 Achievement Status of the Overall Goal at the Terminal Evaluation (including other impacts)

There is no description of the prospects for achievement of the Overall Goal in the project completion report.

1.3.3 Recommendations from the Terminal Evaluation

The following are excerpts from the “recommendations to achieve the Overall Goal” in the project completion report.⁵ Among the recommendations, “(2) collection of disposal fees at the final disposal site and part of garbage collection fees” has been continued until the time of the ex-post evaluation. Other recommendations were not realized, although some efforts were made to

⁴ A presentation material prepared by a consultant dated July 11, 2013, describes the situation at that time as exceeding the expected level of Project Purpose achievement based on outputs. The level of the project’s achievement was placed between the Project Purpose and Overall Goal.

⁵ Others are not included here because they are more of lessons learned from the project than recommendations.

implement them during the project period, affected by the conflicts in 2013 and 2016 to some extent.

- (1) Institutional and organizational strengthening: it is desirable to establish a practical and unified organization⁶ after gaining solid waste management experience. Laws on solid waste management need to be enacted as soon as possible.
- (2) Securing funds: a collection of disposal fees and garbage collection fees should be established. The budget must be secured based on an activity plan. Expenses for solid waste management should be shared in the tax system.
- (3) Collection of data on solid waste collection, transport, and treatment: C/Ps should collect and update these data.
- (4) Improving the collection system to cater to large volume dischargers:⁷ C/Ps who gained how to do it should expand the collection activities.
- (5) Improvement and appropriate management of the final disposal site: it is necessary to find a way to reduce the cost of rental of heavy equipment for soil cover because this cost occupies a major part of the O&M expenses. It should be discussed how to secure a construction budget for the disposal site with the support of the Ministry of Environment in receiving subsidized funds from the national government. It is needed to employ staff who can design a disposal site and make a disposal plan. Let the site manager participate in a training course in Japan so that he/she can share the training contents with other staff members.

2. Outline of the Evaluation Study

2.1 External Evaluator

Yoshiko Ogawa (IC Net Limited)

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2021–October 2022

Duration of the Field Study: January 23–February 11, 2022

June 1–15, 2022

2.3 Constraints during the Evaluation Study

That the ex-post evaluation was conducted seven years after the project completion brought difficulties in obtaining some records from the sites, materials on the project costs, etc. Many staff members involved in the project have been transferred within the city for multiple times; a few

⁶ There was a plan to establish an SWM company (Solid waste management company) and the project formed a preparatory committee and held committee meetings. After the conflict in 2013, the plan was abandoned.

⁷ Hotels, restaurants, offices of NGOs and international organizations. DES signs individual contracts with them.

of them transferred outside the city. Some pilot activity areas have new staff members and it was difficult to obtain a record of the history of the solid waste management activities in each pilot area. These constraints made only a few quantitative data available and the ex-post evaluation largely relied on qualitative data such as those from reports and interviews of stakeholders. During the field study, the evaluator was not able to visit Rejaf Payam, a suburb of Juba City, where the final disposal site was situated, because of a security concern. Thus, staff members of the disposal site were invited to Juba City for interviews.

There was another constraint regarding the Project Purpose and its indicators: they do not indicate what level of capacity for solid waste management the project aimed at. Thus, evaluating achievement of the Project Purpose required, in addition to looking at the achievement of indicators, inference of the level aimed by the project based on the situation before the project implementation and project activities so that achievement is evaluated against such inferred level.

3. Results of the Evaluation (Overall Rating: C⁸)

3.1 Relevance/Coherence (Rating: ③⁹)

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of South Sudan

Table 1 presents development policies relevant to solid waste management at the time of planning and the end of the project. Just like the second chapter of the *Environmental Protection Bill of the Southern Sudan Government* (2010) clearly stating the right of the citizen to a clean and healthy environment, all policies recognize the importance of solid waste management. The *Local Government Act* (2009) and *National Environmental Bill* (2015) stipulate that the local governments should take charge of the responsibility for solid waste management. The *National Environmental Bill* (2015) clarifies the responsibility of businesses and individuals for no illegal dumping and cost bearing.

Table 1: Solid waste management-related policies at the planning and the end of the project

| Phase | Names of policies and laws | Main points |
|----------|--|---|
| Planning | <i>National Plan for Environmental Management</i> (2009) | Solid waste management strategic plan for Northern and Southern Sudan. 19 programs specifically prepared for Southern Sudan (improvement of the solid waste management law system, pollution prevention, etc.) were included. |
| | <i>Local Government Act</i> (2009) | This stipulates that solid waste management is part of the public services by local governments (Part IV, Appendix III). |

⁸ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁹ ④: Very High ③: High, ②: Moderately Low, ①: Low

| | | |
|--------------------|---|---|
| | <i>Environmental Protection Bill</i> (2010) (Government of Southern Sudan) | Chapter 10, ‘Solid Waste’ stipulates the responsibility of all citizens for solid waste management though the chapter mainly takes up hazardous waste. |
| End of the project | <i>National Environment Bill</i> (2015) <i>National Environment Policy</i> (2015-2025) | Section 32, Chapter 5, ‘Waste management and sanitation’ stipulates the responsibilities and actions to be taken by the ministry, local government, private enterprises, and individuals. Section 1, Chapter 4, ‘Waste management and sanitation’ states that solid waste management is a major public health and environmental challenge. |

(Prepared by the External Evaluator based on policy and law documents and JICA internal materials)

3.1.1.2 Consistency with the Development Needs of South Sudan

There was no organization in Juba City responsible for solid waste management and garbage was thrown around roadside, markets, and waterways. Only when heaps of garbage grew too big, the government rented a car to collect garbage. Because of this inappropriate and insufficient waste management, scattered garbage in Juba City became an eyesore as well as a sanitary problem. A survey result showed that 95% of the residents in Juba City had never received waste collection services.¹⁰ Garbage was not only a problem in good appearance and sanitation but also affected economic activities when piling up in markets and along the roadside, and the establishment of a waste management system was needed.

During the project implementation, the waste collection was improved through its pilot activities. However, the area covered by the pilot activities was only a limited area in the city¹¹ and much of the solid waste management needs of Juba City were left unmet.¹² Further increase in the population of Juba City and the resulting increase in solid waste management needs were anticipated. Thus, the need for solid waste management had been high throughout the planning to the end of the project.

3.1.1.3 Appropriateness of the Project Plan and Approach

(1) Meaning of the project implemented during the reconstruction from the conflicts

The project started with a focus on the improvement of citizens’ lives among various development needs. It was recognized that, when people saw their homes, surrounding areas, and the city becoming clean with their own eyes, this may make them feel peace and nurture their

¹⁰ AWEPA International (2010) No Time to Waste: Sustainable Environmental Management in a Changing Southern Sudan. p.11.

¹¹ The target areas of the pilot activities were two out of about 20 markets and four out of 58 QCs.

¹² The garbage collection rate of Juba City in 2015 was estimated at less than 20% (project outline of the project for improvement of solid waste management in Juba, 2016).

trust in solid waste management as a public service.¹³ This was in line with the notion of a peace dividend that people feel after a conflict and the legitimacy of a government. Thus, it can be said that the project was appropriately selected as a project for the reconstruction period after a conflict.

(2) Prompt action taken for improvement of the project implementation structure and restructuring in the time of emergency

The project took flexible and prompt action to avoid confusion in its chain of command to set up a structure to ensure smooth implementation of the project. At the beginning of the project, a long-term expert was dispatched as a chief advisor and, in parallel, three short-term experts (consultant team) were to make business trips to perform their tasks. This arrangement was made to provide C/Ps with continuous capacity development support because, if experts would shuttle and visit to stay for a limited period only, the project would not be able to sufficiently build the capacity for waste management, starting from a zero level. However, while the long-term expert was young as chief advisor, the leader of the short-term experts had specialized knowledge and long experiences in solid waste management, which led to C/Ps' confusion about the chain of command. Both C/Ps and Japanese experts raised this issue and the implementation structure was modified; afterward, the long-term expert worked as part of the consultant team and the leader of the consultant team became chief advisor. This prompt change in the implementation structure, just six months after the start of the work of the consultant team, helped to set up a structure for smooth implementation at an early stage.

After the conflict in December 2013, the long-term expert was evacuated and the short-term experts stopped traveling to South Sudan. Even then, the Juba Solid Waste Management Group (JSWVG)¹⁴ weekly meetings were held to discuss issues, and when it was difficult to solve an issue among themselves, the discussion was continued together with Japanese experts. Two local staff members arranged meetings and took minutes, liaising with the Japanese experts and contributing to the remote follow-up activities of the Japanese experts. Activities outside the country were also implemented such as the finalization of the solid waste management plan in Uganda to present at the Joint Coordinating Committee meeting held in Uganda. It is plausible that the project took such timely actions to set up a supporting structure while respecting implementing agencies' initiative and minimizing the influence of the conflict, according to the emergency situation.

¹³ During the field work of the evaluation, the Evaluator tried to find evidence for strengthened trust of the people to public services; however, perhaps because of its abstract nature, she was unable to obtain clear answers. However, the fact that the relationship between residents and shop owners in residential and market areas, QCs, and government officials who were in direct contact with them improved, and that the people who had not known public service itself started demanding provision of solid waste management service (see (1) in 5.1.1) may be an indication of a small but important step toward building trust in public services.

¹⁴ The group consisted of the Ministry of Environment/RSS, Juba City Council, Payams, the final disposal site, staff members of the state governments. They gained understanding on solid waste management and activities through discussion on solid waste management.

(3) Modification of the PDM

Formulation of the Project Design Matrix was done without setting detailed indicators and activities. Instead, it took an approach to add details of the PDM such as indicators, as the project implementation proceeded and the situation became clearer. It was an appropriate approach when the PDM needed to be formulated without clear data on basic statistics such as the population in Juba City, and information on C/Ps' capacity and implementation structure. Nonetheless, the last version of the PDM, version 3 in June 2013, has a few ambiguous indicators. For example, the indicator for the Overall Goal, which is "At least 10% of the projects on the 'Solid Waste Management Plan in Juba' will be implemented," did not specify on what basis the contents of "10%" could be identified (see 3.2.2). The Project Purpose, which is "Basic structure of solid waste management in Juba is formulated," had two indicators: ① improvement of capacity assessment scores, and ② implementation and continuation of regular garbage collection service. These specified neither improvement to what extent was expected, nor the coverage of the collection service. Thus, the PDM does not help clarify what level of capacity development the project aimed at. It is certainly not easy to set goals such as an Overall Goal while foreseeing the future; however, it would have been necessary to consider modification of the indicators during the project.

(4) Selection of the target areas of the pilot activities

In South Sudan where relationships between diverse ethnic groups are complex, the project needed to avoid any risk of causing a sense of unfairness among such groups. Thus, when selecting the target area for the pilot activities, the project gathered information on ethnic groups in the short-listed areas but found no ethnic problems.

After confirming that there was no ethnic problem, the project selected the target areas based on the criteria that could facilitate the implementation of the pilot activities, such as good access to the main road and the existence of supportive leaders in the communities and markets. These criteria were set with an emphasis on finding the areas that were likely to bring successful experiences because it was envisaged to expand solid waste management activities outside the pilot activity target areas based on such success. Thus, the selection process was consistent with the purpose of the pilot activities and appropriate to the project. For the areas not selected for the pilot activities, the project team carefully explained that the pilot activities would be expanded in the future, to avoid the risk that people in non-target areas would feel shortchanged during the project.

(5) Risk analysis

At the time of planning of the project, it was concluded that a large investment would be too risky because the security situation there was still precarious. Therefore, to avoid risks, the plan

was made to start with small-scale pilot activities, and gradually expand undertakings.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

The Ministry of Foreign Affairs of Japan's rolling plan for the Republic of South Sudan in October 2011, around the time of planning of the project, referred to "support to the improvement of basic living" as one of its major assistance areas. The plan showed the policy to address development issues on water and sanitation by administrative capacity development for waste management in the Capital City, Juba. The project aimed to improve the sanitation and environment of Juba City through administrative capacity development and was consistent with Japan's ODA policy.

3.1.2.2 Internal Coherence

Although cooperation with other JICA projects in South Sudan was not contemplated at the time of planning, information exchange with other JICA projects during the project brought cooperation between projects. The Ministry of Physical Infrastructure (MoPI)/CES that was in charge of the construction and repair of roads in Juba City, JICA's "Technical Cooperation Project for Capacity Development on Sustainable Road Maintenance and Management in Juba" (2011–2014) supporting MoPI, and Juba City Council together conducted a clean-up activity along the riverbed under the bridge constructed with the support of JICA's Grant Aid. Regular garbage collection from the area near the bridge was also started. These resulted in reduced illegal dumping into the river. As shown above, it was confirmed that there was a cooperative relationship and collaboration between the projects, but such cooperation did not lead to the realization of synergistic effects.

3.1.2.3 External Coherence

At the time of planning of the project, other organizations such as the United Nations Environment Programme (UNEP) and CESVI,¹⁵ an NGO, provided support in the area of solid waste management. UNEP supported clean-up campaigns, awareness raising activities targeting residents, and the development of an environmental law, while CESVI conducted environmental education and awareness raising activities targeting residents.

During the project implementation, the project convened stakeholder meetings¹⁶ once a month to regularly exchange information, inviting stakeholders including UNEP and NGOs. There were

¹⁵ An Italian NGO named *cooperazione e sviluppo*.

¹⁶ The meetings were held once a month, chaired by a Juba City Council staff member in charge of solid waste management, as part of the project activities. Project progress was reported to the meeting and information was exchanged among the organizations. The members included government organizations such as ministries related to solid waste management, JICA experts, international organizations, NGOs, private businesses, and chambers of commerce.

no overlapping activities among stakeholders and they worked supplementarily. While JICA supported the construction, operation, and management of the final disposal site, UNEP compiled a guideline for waste pickers in the disposal site; both supported the disposal site from different aspects. The project also worked with the Japan Self-Defense Forces (JSDF) seconded to the United Nations Mission in the Republic of South Sudan in improving the access road to the final disposal site, expanding construction of the disposal site, and clean-up activities in the city. During disposal site expansion work, a JSDF bulldozer was used to construct embankments. A media tour was conducted at that time, which contributed to presenting the All-Japan approach to the people of South Sudan although it was a one-off event. As seen above, the project was in loosely cooperative relationships with other donors and implemented concrete cooperation with the JSDF to improve the final disposal site. However, no synergistic effects that could strengthen the achievement of the outputs, Project Purpose, and Overall Goal of the project were found.

The project was consistent with the development policies and needs of South Sudan, and Japan’s ODA policy. The planning and approaches of the project were appropriate although some ambiguity remaining in the PDM made unclear what the project aimed at. The relationship with other JICA projects and donors was complimentary and there were some cooperative activities. Therefore, the project’s relevance and coherence are high.

3.2 Effectiveness and Impact¹⁷ (Rating: ②)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

The Project Purpose was “Basic structure of solid waste management in Juba is formulated”¹⁸ (see Table 2). Based on the two indicators and project implementation status, it is concluded that the Project Purpose was achieved. The reasons for this conclusion are as follows.

Table 2: Achievement of Project Purpose

| Project Purpose | Indicator | Actual |
|--|--|---|
| Basic structure of solid waste management in Juba is formulated. | ① Result of capacity assessment for C/P staff is improved. | The second year’s average score was 2.4, which improved from that of the first year, 2.0. |
| | ② Periodic cleaning service is continuously implemented. | Although affected by collection vehicle breakdown and the conflicts, pilot activities continued regular garbage collection. |

¹⁷ When providing the sub-rating, Effectiveness and Impacts are to be considered together.

¹⁸ The Project Purpose does not give details to clarify what it aimed at was a structure that could cover whole city or fixed-time fixed-point collection. However, considering the situation prior to the project, that is, there was no organization to take charge of solid waste management, and C/Ps’ skills and capacity to manage fix-time fixed-point system were developed for the first time through the pilot activities, it can be inferred that the Project Purpose, that is “basic structure of solid waste management,” meant establishment of a system to implement solid waste management activities, and acquisition of basic understanding and skills based on practice to expand application of the solid waste management model in Juba City in the future. The evaluation was conducted based on the understanding above.

(1) Indicator ①: Capacity assessment

The capacity assessment mentioned in Indicator ① is a self-assessment done by 15 C/Ps from the Ministry of Environment of the Republic of South Sudan, Juba City Council, 3 Payams in the City, and Rejaf Payam in the first and second year of the project. The assessment had six categories: A) management capacity, B) sense of responsibility and will to perform their tasks, C) technical knowledge and skills necessary for the planning of solid waste management, D) technical knowledge and skills about solid waste management system, E) technical knowledge and skills for disposal site management, F) technical knowledge and skills on environmental education and awareness raising activities. The result showed a higher average score in the second year than in the first year. Examined by affiliated organizations of the respondents, the assessment result in the second year showed that the respondents tended to achieve relatively higher scores in the categories relevant to the tasks for which their affiliated organizations are responsible. For example, the staff members from Rejaf Payam where the final disposal site was located scored higher in category E) compared to others. This may indicate the reliability of the assessment to some extent and it can be said that Indicator ① was achieved.

(2) Indicator ②: continuous regular cleaning services

Indicator ② was to assess the management capacity more objectively, examining if C/Ps became able to continue periodic cleaning services. Cleaning service is a series of activities including garbage collection, transport, and treatment. The ex-post evaluation examined if such a service was continuously implemented. As pilot activities, the project collected and transported garbage from markets (Output 1) and residential areas (Output 2) and improved the final disposal site (Output 3) where collected garbage was processed and disposed of. Fixed-time fixed-point collection and transport of garbage from markets (Output 1) and residential areas (Output 2) were conducted following the schedule shown in Table 3 with the support of the Japanese expert team.

Table 3: Garbage collection by the time of the end of the project

(Market)

| Market | Payam | Pilot activity starting date | Collection day | JICA collection day |
|--------|-----------|------------------------------|-------------------------|-----------------------------|
| Jebel | Kator | July 2012 | Monday through Saturday | Monday |
| Juba | Juba town | July 2013 | Monday through Saturday | Tuesday, Thursday, Saturday |

(Residential areas)

| Area | Payam | Pilot activity starting date | Collection day | JICA collection day |
|------------|-----------|------------------------------|---------------------|---------------------|
| Atlabara B | Kator | July 2012 | Tuesday, Saturday | Tuesday |
| Atlabara C | Kator | July 2012 | Wednesday, Saturday | Wednesday |
| Hai Thoura | Juba town | October 2012 | Tuesday, Thursday | Thursday |
| Gudele | Munuki | October 2012 | Thursday, Friday | Friday |

(Source: Project completion report and field interviews)

However, for collecting garbage from the markets and residential areas, the collection was consistent when the project team sent vehicles, but vehicles from Payams, organized by C/Ps, were not always sent as scheduled. The major reason for that was that the second-hand compactors purchased by Juba City Council in 2012 started frequent breakdowns in May 2013. Furthermore, the Japanese long-term expert left the country because of security concerns after the conflict in December 2013, and visits by other experts were suspended. Since then, garbage collection vehicle operation by the project stopped and the Payams were also unable to send vehicles and had difficulty in garbage collection. Nonetheless, around June 2014, Payams started renting vehicles, and garbage collection improved. In May 2014, Kator Payam took the initiative to start garbage collection in the Konyokonyo market outside of the pilot activity scheme. It can be said that, during the pilot activity implementation, overall, regular garbage collection was conducted though some room for improvement remained. According to the stakeholders such as the residents and market union leaders in the pilot activity target areas, their areas became cleaner during the pilot activities than before.

Improvement of the final disposal site (Output 3) was also achieved and contributed to regular garbage collection. The pilot activities set up a controlled dumping system¹⁹ by improving the site, compacting garbage and putting soil cover, conducting water quality and gas tests, collecting disposal fees, and recording incoming vehicles. Open garbage burning at the site was stopped. This achievement went beyond the indicator for Output 3, that is “Operation and management condition of the landfill is recorded constantly.”

As shown above, it is concluded that Indicator ② was also achieved. Incidentally, the categories C), D), and E) of Indicator ① above are about knowledge and skills required to provide regular cleaning service; the achievement of Indicator ② also leads to the conclusion that C/Ps’ knowledge and skills improved.

¹⁹ It means to fill up a disposal site properly and put soil cover in consideration of environmental influence, not simply dump garbage brought into the site (see *Mundi*, May 2018 issue, special feature article “Challenge to garbage,” footnote).

(3) Additional points to examine on the Project Purpose (management, sense of responsibility as a government officer, basic capacity for environmental education and awareness raising)

As described above, Indicators ① and ② were achieved; however, further examination is needed to conclude that the Project Purpose, that is “basic structure of solid waste management in Juba is formulated,” was fully achieved. Given that the basics of solid waste management of the Project Purpose must mean the basics of the government’s public service, the Project Purpose must include basic capacity not only in practical aspects such as those in Indicator ②, but also in those regarding the institutional organization, finance, and sense of responsibility as a government officer. Because of the expansion of the pilot activities envisaged, the building of organizational and managerial capacity to apply the solid waste management model widely was also indispensable (see footnote 14). The categories A) management capacity, and B) sense of responsibility and will of Indicator ① seem to correspond with such capacity; however, these are eventually self-assessment and insufficient as evidence for actual improvement of capacity for solid waste management. Therefore, A) management capacity and B) C/P’s awareness was examined based on obtained materials and field interviews. In addition, given that it was not possible to implement fixed-time fixed-point collection without the cooperation of the residents and shop owners in the markets, F) environmental education and awareness raising was examined.

Management capacity was examined from both organizational and financial aspects. As an organization to implement solid waste management, the JSWGM was organized and had weekly meetings; through such activities, its members gained an understanding of solid waste management, and communication among the member organizations was facilitated. The group was the main actor in making a roadmap for the continuation and expansion of the solid waste management activities after the project completion, the solid waste management plan (Output 4 in the PDM). This plan was meant to be used, after the project, as a supporting document for an annual budget plan to be submitted to Juba City Council to secure funds. Furthermore, DES was established as a section in charge of solid waste management. The division of work between DES and Payams was clarified. A system to manage solid waste was set up and DES opened its bank account to manage collected fees and expenses. A management system of the final disposal site was also improved; it was expected to cover operational expenses of the site with disposal fees collected from incoming vehicles and the funds were managed in an own bank account. Although the issue of garbage fee collection in the residential areas remained, it can be said that the basic organizational structure for solid waste management was established.

Through these practices, changes in the awareness of C/Ps were observed. They explained solid waste management activities to the residents. They received a complaint from the residents when their work was not on time, and they were thanked when the sanitary condition improved. One C/P himself found that, through such interaction, C/Ps understood the role of public services, and

their sense of responsibility was nurtured.²⁰

Environmental education and awareness raising activities were conducted in a variety of ways because their importance was well understood as indispensable work to solicit the cooperation of the residents. As one of the awareness raising activities targeting the residents and markets, meetings were held in the communities and markets to explain the project. In addition, bus tours were planned and conducted targeting government staff, students of primary and secondary schools, and residents to show them garbage collection, transport and treatment operation and facilitate their understanding on solid waste management. Much other awareness raising was conducted such as clean-up campaigns, a drawing design contest for secondary school students, and the production of leaflets about the project activities. C/Ps explained the operation at the disposal site and their work during the community meetings and bus tours.²¹ Through implementing these concrete activities, C/Ps seem to have gained an understanding of various methods of awareness raising.

As seen above, it is confirmed that, through the project activities, the indicators and other additional points were mostly achieved and C/Ps improved their understanding and skills regarding solid waste management. In light of the above, including the establishment of an organizational structure for waste management, the basic structure of solid waste management was formulated and the Project Purpose was mostly achieved.

3.2.2 Impacts

3.2.2.1 Achievement of the Overall Goal

The Overall Goal of the project is that “Juba City Council will conduct solid waste management based on the ‘Solid Waste Management Plan in Juba.’” An indicator of the Overall Goal is “At least 10% of the projects on the ‘Solid Waste Management Plan in Juba’ will be implemented,” but no document clarifies what “10% of the projects on the plan” meant. Project members interviewed said that there had been no discussion on this point and what was meant is not clear. Thus, while the ex-post evaluation looked at the implementation situation of the activities in the solid waste management plan, it examined if the capacity to implement solid waste management according to the plan, as stated in the Overall Goal, would be identified at the time of the ex-post evaluation, assessing the realization of long-term effects. As a result, it is concluded that the project has achieved its Overall Goal to a limited extent.

²⁰ Source: interview with a C/P of Munuki Payam.

²¹ Source: a report by the expert in charge of the final disposal site (JICA internal document).

Table 4: Achievement of Overall Goal

| Overall Goal | Indicator | Actual |
|---|--|--|
| Juba City Council will conduct solid waste management based on the “Solid Waste Management Plan in Juba.” | At least 10% of the projects on the “Solid Waste Management Plan in Juba” will be implemented. | Among 17 items of the short-term activity plan in the plan document, three items related to organizational structure and communication between organizations were started. |

First, the indicator of the Overall Goal was examined. In the solid waste management plan, there are short-term activity plans that were supposed to be implemented within about five years after the finalization of the plan and long-term activity plans aiming at completion in 2023. Because the conflict in 2016 made solid waste management activities significantly regress, it is not realistic to assess the current situation against the plans targeting the year 2023. Therefore, the implementation status of the short-term activity plan is used for assessment. Among the 17 items of the short-term activity plan,²² the following three (about 17% of the 17 items) can be said to have been partially implemented because there are frequent communication and continuing cooperation between Juba City Council and Payams: “to establish communication lines between Juba City Council and each Payam;” “to have regular discussion and supervision between Juba City Council and each Payam;” and “to understand the importance of communication and network.” However, many other items such as those on securing equipment and budget and continuing and expanding regular garbage collection have not been started. Although these activity plans were made on the premise that regular garbage collection would be continued and expanded, as explained above, fixed-time fixed-point collection and waste processing at the final disposal site introduced by the project were not continued and regressed. Thus, it is difficult to say that the indicator was achieved and it is concluded that the indicator of the Overall Goal was only partially achieved.

Next, the ex-post evaluation examined the realization of the long-term effects based on the situation at the time of the ex-post evaluation. At the time of the ex-post evaluation, DES took charge of solid waste management as a responsible organization. Table 5 shows the division of the target areas in the city and those in charge of each area. DES was in charge of markets and large volume dischargers though part of large volume dischargers’ waste was collected by private companies with permission of DES. However, DES was not able to keep the system to collect, transport, and treat garbage implemented during the project time, and after the completion of the project, the fixed-time fixed-point collection and treatment at the final disposal site had not been implemented. The major reason for the discontinuation of the fixed-time fixed-point collection was the breakdown of collection vehicles and disruption of the plan to renew vehicles and

²² There are six items for Juba City Council to implement, seven for the Payams, and five for the final disposal site. All these made the total number 18. However, two of them are about communication between Juba City Council and the Payams and their contents are essentially similar. Thus, the total number is regarded as 17 in the evaluation.

equipment including repair tools.²³ After Juba City Council purchased compactors, during the project, the compactors were distributed to each Payam. However, as of November 2013, seven compactors out of 13 were already unfunctional (see Table 6).²⁴ The garbage collection rate in 2020, putting together Juba City Council and private companies, was only 13%,²⁵ and both the number of collection points and the frequency were largely insufficient. The following describes to what extent the outputs and project effects after the project completion were maintained, in the order of the organizational structure for solid waste management activities, garbage collection in market areas, garbage collection in residential areas, the final disposal site, and awareness raising.

Table 5: Division of labor in solid waste management activities

| Target area | Organization in charge | Fee collection | Management of the collected fees |
|-------------------------|------------------------|-----------------------|----------------------------------|
| Along the main roads | DES | None | None |
| Market | DES | Zone ²⁶ | DES |
| Large volume discharger | DES | Zone | DES |
| Residential areas | Block | (Block) ²⁷ | (Block) |

(Source: Field interviews)

Table 6: Status of garbage collection vehicles

| Type | Number* | Operational vehicles | | | Frequency of use at the time of the ex-post evaluation |
|---|---------|----------------------|------|---------------------------------------|--|
| | | November 2013 | 2018 | At the time of the ex-post evaluation | |
| Compactors purchased by Juba City Council | 10 | 6 | 0 | 2 | Once a day |
| Compactors donated by UNICEF | 3 | — | 2 | 1 | Once a day |
| Trucks | 2 | No information | 2 | 1 | Once a day |
| Tractors | 3 | No information | 1 | 1 | Twice a day |

*The number of vehicles in possession of DES as of 2018.

(Source: JICA report,²⁸ internal documents, and field interviews)

²³ After the project completion, it was planned to provide equipment such as waste collection vehicles, excavators, trucks and bulldozers with spare parts and repair tools in 2016 under a Grant Aid scheme. But this was disrupted by the conflict in July 2016. Afterward, in October 2021, E/N for a Grant Aid project was signed and finally provision of the equipment and heavy machines for garbage collection, transport and treatment has been decided. This clearly shows that the conflicts brought significant negative influence on the impact of the project.

²⁴ That the compactors were second-hand seems to have been the main cause of breakdown, but bad road condition and the climate (under high temperature, the body of a vehicle easily gets hot because of waste compaction) were mentioned as factors leading to breakdown. DES had a workshop but spare parts were hard to come by because they needed to be imported. Mechanics' lack of skills added difficulty in repair work.

²⁵ The Ministry of Environment and Forestry, Central Equatoria State, Juba City Council, Rejaf Payam, JICA project team (2020) Preparatory survey for the project for improvement of solid waste management in Juba in South Sudan, Revised solid waste management plan.

²⁶ Separate from the administrative sub-division system, DES has divided the city into 5 zones and those in charge of zones are responsible for garbage and fee collection from markets and large volume dischargers. Garbage collection in residential areas is taken care of by public health section of the Blocks.

²⁷ In theory, fees were to be collected and managed by Blocks. However, actually fees were not collected and the expenses for garbage collection are covered by Block budget.

²⁸ JICA, Yachiyo Engineering Co., Ltd. (2018) Data collection survey on solid waste management in Juba, Appendix,

Organizational structure for solid waste management activities: DES established in 2013 was functioning as a department responsible for solid waste management at the time of the ex-post evaluation. In the beginning, it was a small department with only two staff members. Later, the organizational structure of the city was changed and those who worked for waste management were put under DES. At the time of the ex-post evaluation, the number of DES staff members exceeds 300 and its total budget amount for the closing account was comparable with that of the three Payams in Juba City.²⁹ The JSWMG established by the project has grown into Juba Rejaf Solid Waste Management Group (JRSWMG³⁰) in 2017 and the JRSWMG was preparing for a new project at the time of the ex-post evaluation.

Garbage collection in market areas: After the conflict in 2013, many shop owners left the country because of the worsening security situation in the markets. Before the number of shops got back to normal, another conflict occurred in 2016 and the number of shops further decreased. For example, most shops in the Jebel market left for other places in and out of the country and the number of shops went down even to 20 at the lowest. In 2018, shops gradually came back to the Jebel market. Because the fee collection from markets was the largest part of DES’s revenue, the decrease in the number of shops was a major blow for DES. Although at the time of the ex-post evaluation, markets pay collection fees, garbage collection in market areas was inconsistent and there was a huge pile of garbage behind the Jebel market. Along the main roads, vehicles dispatched by DES collected garbage thrown by residents and shops nearby.³¹

Garbage collection in residential areas: From the time of project completion to the ex-post evaluation, regular garbage collection had not been conducted and Blocks and QCs irregularly collected garbage. Collection fees were not collected and expenses were requested from the Blocks. Sometimes QCs collected funds to rent a collection vehicle. When a Block lacked funds, DES may supplement it, and vice versa. In residential areas, there were piles of garbage everywhere with traces of burning it.



A heap of garbage behind the Jebel market (February 3, 2022)



There is always smoke under the bridge. Atlabara C, Kator Block (February 10, 2022)

Final disposal site: The final disposal site improved by the project had been used continuously; however, no soil cover had been conducted since the conflict in 2016.³² The final disposal site

presentation material ‘Data Collection Survey’ in ‘minutes of kick-off meeting.’

²⁹ JICA, Yachiyo Engineering Co., Ltd. (2021) Preparatory survey for the project for improvement of solid waste management in Juba in South Sudan final report, Chapter 2, p.5.

³⁰ In July 2022, the name was changed to Juba Council/County Solid Waste Management Group (JC/CSWMG).

³¹ Dumping on the roadside is principally prohibited by ordinance of Juba City Council and subject to fines.

³² Soil cover was continued and equipment was checked until 2016. The leachate tests were conducted in 2011 and

was especially hard hit by the conflict in 2016; the fence, testing facility, and office building constructed by the project were damaged. The bulldozer provided by the project had its blade broken and became unfunctional. The security situation around the disposal site also got worse; armed groups stayed in the area and demanded tolls from incoming vehicles. While the final disposal site was not used, a new illegal dumping site³³ on the other side of the river Nile in the east of Juba City became in use, and garbage was dumped there. The staff of Rejaf Payam collected fees at this illegal site as well. Around 2018, the use of the final disposal site was resumed. Afterward, the final disposal site or the illegal site was used depending on the distance for transport and access to the final disposal site.³⁴

At the time of the ex-post evaluation, garbage was dumped at the final disposal site without being treated. Waste pickers burned dumped garbage and there was a bad smell. The access road to the site was sometimes blocked because of illegal dumping on the road. Fee collection from incoming vehicles was continued and managed by Juba County at the time of the ex-post evaluation.



Left: Access road to the final disposal site which was recently cleaned.
 Middle: Dumping site of the final disposal site.
 Right: Current situation of the office building constructed by the project
 (Photographs by the site manager, June 10, 2022)

Awareness raising activities: Through the awareness raising activities of the project, the residents who participated in the pilot activities understood the importance to keep the area clean and how to dispose of garbage, trying not to dump garbage around their homes. They still have such understanding. After the project completion, awareness raising activities such as bus tours and drawing contests organized by the project were not conducted but clean-up campaigns, community meetings, and radio talk shows have been conducted in the Blocks. Nonetheless, because of the influx of new residents, these activities are not sufficient.

As can be seen above, DES established during the project still took charge of solid waste management and the successor group of the JSWGMG worked on coordination of solid waste management activities at the time of the ex-post evaluation. It is plausible that the basic structure for solid waste management built by the project has continued after the project completion and

2013 by the project, and the government and JICA conducted them in 2014, 2015, and 2016.

³³ Although government staff collected fees, the site was classified as illegal because it was not recognized as a disposal site in the government land use plan.

³⁴ When garbage dumped along the access road accumulated, vehicles cannot enter the final disposal site.

contributed to the activities that were getting resumed as the political situation became stable. The residents and people in the markets who participated in each pilot activity gained an understanding of garbage disposal and sanitation through the pilot activities and kept their understanding. Awareness raising activities have been continued after the project completion. Nonetheless, that did not suffice. Solid waste management activities have been continued but irregular, and the effects brought by the awareness raising activities in the markets and communities by the pilot activities were largely reduced. In light of the above, only partial achievement of the Overall Goal was identified against the plan.

3.2.2.2 Other Positive and Negative Impacts

(1) Impact on the natural environment

At the time of planning, the project was classified as category C, with minimum negative environmental impact, based on the JICA Guidelines for Environmental and Social Considerations (April 2004). During the project, no negative impact on the environment was identified and the sanitary environment in the pilot activity target areas improved. After the project completion, as a result of insufficient garbage collection and improper disposal, everywhere in the city, including the pilot activity target areas, many piles of garbage and burning were found. Much garbage is dumped in the waterways, blocks culverts under roads, and damages the roads, resulting in a negative impact on the environment and infrastructure. At the final disposal site, there are bad smells and burning. There has reportedly been no complaint about leachate water quality or gas; however, the disposal site manager said that there was an issue on gas, which is an environmental concern.

(2) Other indirect impacts

Before the project started, waste pickers in the final disposal site burned waste to pick up valuables such as metals. Although burning had to be banned to improve disposal site management, the prohibition of burning and the introduction of soil cover could have made it difficult for waste pickers to pick up valuables, leading to their income loss. Therefore, after dumping, waste was not compacted immediately, letting waste pickers take time to pick up valuables so that they could secure income. In this way, the co-existence of the project and waste pickers was managed. This method to collect valuables might not be as effective as burning, but at least they could pick up valuables to secure income.³⁵

Many workers who collect garbage are women including many war widows. For example, at the time of the ex-post evaluation, Kator Block had 44 workers of which only 3 were men. While some said that cleaning is a suitable job for women as an extension of housework, others said that

³⁵ At the time of the ex-post evaluation, waste was simply dumped in the disposal site and waste pickers burned waste to pick up valuables.

it was because many women needed money. This shows that the need for women’s employment opportunities was recognized. To supplement the meager salary prescribed by the government and secure workers, Juba City Council decided to pay 1,000 South Sudanese pounds³⁶ per day as an incentive. The payment was made daily so that they could have money at hand to pay for daily needs. In this way, waste management activities have been conducted with consideration for the socially vulnerable, such as waste pickers and widows.

Since this project’s effects were identified only partially against the plan, the effectiveness and impact of the project are moderately low. For the Project Purpose, through the practice of collection, transport, and treatment, C/Ps gained basic knowledge and skills necessary for solid waste management and developed the solid waste management plan for expansion of the work. The Project Purpose was mostly achieved. However, after the project completion, garbage collection became irregular and garbage was dumped untreated; waste management went back to the way practiced before the project. The Overall Goal has been partially achieved; part of the short-term activity plan of the solid waste management plan, such as those to improve organizational structure and communication between organizations, were initiated, while regular garbage collection, recruitment of full-time staff, and purchase of vehicles and heavy machines had not seen progress.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Planned and actual inputs from Japan and South Sudan for the project are as follows.

| Inputs | Plan | Actual |
|--|---|--|
| (1) Experts | About 3 Experts (62 MM*) ³⁷ | 1 Long-Term (about 26 MM) 7 Short-Term (36.88 MM) |
| (2) Trainees received | Training in Japan: 5 persons | Training in Japan: 4 persons Third-country training (Bangladesh): 7 persons |
| (3) Equipment | Vehicles for garbage collection and transport, Truck scale | Bulldozer (320,000 US dollars) |
| (4) Other overseas operation expenses/local operation cost | Overseas operation expenses: 100 million yen | Local operation cost: 32 million yen |
| Japanese Side Total Project Cost | 310 million yen | 384 million yen |

³⁶ This is about 330 yen (based on the JICA exchange rate in January 2022; 1 South Sudanese pound was 0.329600 yen).

³⁷ The ex-ante evaluation report states “Dispatch of expert (62 MM): Chief Advisor/solid waste management, waste collection, final disposal site management,” without specifying the number of experts.

| | | |
|--|---|---|
| <p>Republic of South Sudan Side Total Project Cost</p> | <ol style="list-style-type: none"> 1. C/Ps 2. Land and facilities: facilities necessary for project implementation, meeting rooms, office space for the project experts, the cost for utilities (water, electricity, and gas) 3. Tax exemption, and domestic transport and storage cost for equipment 4. Salary and allowances for C/Ps | <ol style="list-style-type: none"> 1. C/P 15 persons 2. Land for the final disposal site, meeting rooms, office space in Kator Payam office, cost for electricity for the office (April to December 2012), compactors (10), tipper trucks (5), tractors (6) 3. Tax exemption 4. Salary and allowances for C/Ps (April 2012 to October 2014) |
|--|---|---|

* MM stands for man month.

3.3.1.1 Elements of Inputs

(1) Dispatch of experts

Although the dispatch of the long-term expert was planned for 36 MM, the duration was shortened owing to evacuation after the conflict in 2013. The team of short-term experts (consultants) had four people at the beginning of the project but three experts (organizational system/finance, final disposal site designing, and geological and groundwater survey) were added to the team in the second year. This addition was to cater to the needs for institutional strengthening of the government for solid waste management and understanding of the impacts of disposal site expansion work and leachate. Thus, it was appropriate addition based on the needs that had emerged as the project progressed.

(2) Trainees received

The training in Japan was conducted in January 2013, and the third-country training was in Dhaka, Bangladesh in early December 2013. During the third-country training, practical learning was gained from the successful case in Bangladesh. During the field interviews, those who were trained through the project, training, and workshops said that they gained knowledge and became able to think analytically, showing their confidence in their learning. Their learning was appreciated by other staff members who said that those who joined training understood solid waste management well. Those who did not join training also said that they learned from trained colleagues. Although the current situation does not allow them to fully employ what they had learned, C/Ps highly appreciate the training.

(3) Equipment provision

At the beginning of the pilot activities in the final disposal site, the site rented a bulldozer for compaction and soil cover but the rental cost was high and put pressure on management. This caused concern for sustainability. Therefore, after making a long-term cost estimation, the provision of a bulldozer for the project was discussed and decided. The provision of a bulldozer

removed the rental cost and, before the conflict in 2013, the site became able to manage to cover the cost for the disposal site operation with collected disposal fees.

3.3.1.2 Project Cost

The planned project cost of the Japanese side was 310 million yen and the actual project cost was 384 million yen (124% of the planned amount). The actual amount was higher than planned. Information on details of this cost increase was not obtained; however, given that more than 40% of the increase was spent on the purchase of the bulldozer, and that this increase includes additional costs for the final disposal site construction, the third-country training, and project office space rental, this increase seems to be an appropriate one coming from the needs of the project.

3.3.1.3 Project Period

The planned project period was from October 2011 to September 2014, for 36 months. The actual period was from October 31, 2011, to October 31, 2014, for about 36 months (100% of the planned period) within the plan. Completion of the project within the planned period, despite the experience of a serious conflict, was made possible partly by the prompt setup of the remote supporting structure as described in 3.1.1.3 (1) Relevance.

Therefore, the efficiency of the project is high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

As policies and laws relevant to solid waste management at the national level, the *Environmental Protection Bill of the Southern Sudan Government* (2010) was enacted, followed by the *National Environment Bill* (2015) and *National Environment Policy* (2015–2025). These stipulate that state and local governments should establish a solid waste management system and the local governments take responsibility for waste collection and treatment, that the Ministry of Environment and state and local governments should conduct environmental education and awareness raising activities, and that businesses and households should pay for solid waste management service. The *National Environment Bill* (2015) and *National Environment Policy* (2015–2025) have not been approved by the national assembly yet, but this is not a problem in the solid waste management area. This delay comes from the political process since 2016 and it is expected to be solved in due course. Thus, the national-level policy and system forming the basis for solid waste management are expected to be improved.

Along with the national policies, Juba City Council issued an ordinance related to solid waste management in 2013 to prescribe maintenance of a sanitary environment in commercial areas,

roads, and public spaces, and to prohibit illegal dumping. The ordinance also clarifies the responsibility of private organizations including households and private enterprises for cleaning up and also prohibits dumping of garbage on the roadside and open spaces. At the time of the ex-post evaluation, the city was in the process of revising penalty regulations to make them stricter, reflecting on new environmental standards and economic situation. Rejaf Payam, which has the final disposal site, also issued a similar ordinance in 2016. Thus, there is a legal structure to support the sustainability of solid waste management activity at both the national and local government levels.

3.4.2 Institutional/Organizational Aspect

Solid waste management of Juba City is taken care of by DES. DES has divided the city into five zones for solid waste management and assigned a zonal coordinator who supervises zone-level work, public health officers, environmental officers, supervisors, rate collectors, guards, the police, and workers³⁸ for solid waste management work in each zone and collects waste except for that from residential areas. Each zone collects fees and conducts waste collection, and has to report to the Director of DES. Operational budget requests are made to DES which manages funds. The division of labor and chain of command within DES is clear and it is expected that DES should continue to fulfill its function. Waste collection in residential areas is under the responsibility of the Blocks. Although there is still a need for an increase in staff and budget to expand the solid waste management activities to the whole city, it can be said that the basic organizational structure is established.

The final disposal site and illegal dumping site on the east side of the river Nile are under the management of Rejaf Payam. The site manager is to report to the Rejaf Payam Director, and the director reports to Juba County. The line of reporting for supervision is clear and reporting is made regularly.

It is the Ministry of Environment/CES that should supervise the solid waste management activities of these local governments. The JRSWMG, consisting of the Ministry of Environment/RSS, the Ministry of Environment/CES, DES, three Blocks in Juba City, and Juba County, continues its activities. Afterward, although there must be more need for further coordination to manage a new project and supervise private companies, the JRSWMG is expected to take such a role.

As seen above, while many organizations are involved in solid waste management activities, there is an organizational structure, in which coordination and decision-making are under the JRSWMG and operation is managed by DES. This basic foundation can contribute to

³⁸ Although the number of the staff members is different from zone to zone, in total, there are 10 public health officers, 13 environmental officers, 29 supervisors, 47 rate collectors, 22 guards, 18 police officers, and 354 workers under DES. One zone coordinator is assigned to each zone except for E zone directly managed by DES, and the total number of zonal coordinators is 4 (Source: interviews with DES officials).

sustainability of the activities.

3.4.3 Technical Aspect

Waste collection following the solid waste management system introduced by the project and waste treatment at the final disposal site have not been implemented since 2016 and this made it difficult to assess the technical capacity and its sustainability at the time of the ex-post evaluation. “If we can secure a sufficient number of collecting vehicles and bulldozers, we can resume the waste management activities in the same way as when the project was implemented because we have the capacity necessary for that” was an assessment of the environment and sanitation advisor to Juba City Council. However, although C/Ps gained a basic understanding of solid waste management by the end of the project, they learned it through the pilot activities conducted only in limited areas. Thus, it may not be easy to cope with an increasing need for solid waste management in the future.

About the final disposal site, the site manager who had fled the country temporarily after the conflict returned in the end of 2021. At the time of the ex-post evaluation, the site manager had started preparatory work for personnel arrangement and repair and maintenance of the bulldozer for the final disposal site. He managed to solicit support from the United Nations to clean the access road; he was proceeding with the preparation, using external resources. He seems to have a basic understanding and technical capacity necessary for disposal site management.

As for all C/Ps, many of those who worked for the project still work in the area relevant to solid waste management even though they experienced transfer, and showed their willingness to contribute to solid waste management even after transfer.³⁹ On the other hand, in some cases, an administrative staff member without solid waste management experience was appointed as a zonal coordinator of DES but did not have sufficient support and time for handing-over of documents and records. There is room for improvement in the succession of work and knowledge.

Thus, in the technical capacity aspect, it would be possible to continue the current level of solid waste management work with irregular waste collection; however, to meet the unfulfilled needs for garbage collection at the time of the ex-post evaluation and future needs to cope with an increasing amount of garbage, recruitment and training of new staff and re-training of the current staff are required so that they can manage more collection vehicles and more complex vehicle allocation arrangement.

3.4.4 Financial Aspect

The major income source of DES is garbage collection fees from large volume dischargers such

³⁹ For example, a C/P who worked in Kator Payam during the project and later got transferred to Rejaf Payam, was working for Juba Block at the beginning of the ex-post evaluation. He has been further assigned to the Department of Revenue of Juba City Council as Director and said that he would like to contribute to solid waste management through revenue management.

as hotels and markets, permits for private companies collecting garbage, and fines. At the time of the ex-post evaluation, DES decided on the allocation of personnel and collection vehicles based on the resources at hand coming from such revenue. During the project, a bank account of DES focused on solid waste management was opened to improve financial management. However, this account was not used at the time of the ex-post evaluation, because the former mayor instructed to unite the bank accounts of Juba City Council. Given that some people from hotels and shops complain that they pay fees but do not receive garbage collection service, it would be better to have a separate bank account to ensure independence and transparency of revenue and expense management of DES.

The Blocks do not systematically and regularly collect fees from their residents. It is because that some residents do not have much trust in garbage collection services, and that many residents, including government staff, are poor. Some Blocks tried to collect fees in the past, but it often did not go well. For garbage collection in the Blocks, the public health department of a Block requests a budget for the Block and uses that fund for garbage collection. Further, sometimes DES and Blocks mutually supplement funds to collect garbage, which could be an issue that affects the budget planning of each organization.

As shown above, efforts to secure revenue have been continued. However, the collection and management methods have been changed frequently and are not stable. Furthermore, when private companies enter the solid waste management work, company staff and government staff work together to collect garbage collection fees. This may complicate the flow and management of collected fees.

In light of the above, a certain level of revenue can be secured, but the funds are not enough to meet the solid waste management needs and there are some issues in an increase in revenue and improvement in transparency and planning of the financial management system.

3.4.5 Environmental and Social Aspect

At the time of the ex-post evaluation, there were environmental problems in Juba City due to insufficient solid waste management. There were many piles of garbage in the city, which seriously affected the environment with bad smells and smoke from garbage burning. The garbage piled up and blocked waterways and dirty water stagnated. Garbage in waterways will be washed away downstream during the rainy season, which will cause water pollution problems in a wide area in the lower section of the waterways. This situation will likely deteriorate if solid waste management remains the same. At the time of the ex-post evaluation, there had reportedly been no complaints about the final disposal site and illegal dumping site from the residents in the neighboring areas, but it was reported that there were burning and bad smell. Environmental issues exist as there are also concerns about leachate and gas.

3.4.6 Preventative Measures to Risks

The highest concern in South Sudan is political instability; however, at the time of the ex-post evaluation, the political situation was stable; the National Assembly had been formed and it had started a discussion on the approval of important laws. The laws related to solid waste management were also expected to be approved in due course. No concerns about political or conflict-related risks were expressed by C/Ps.

3.4.7 Status of Operation and Maintenance (O&M)

The project provided the final disposal site with a fence surrounding the disposal site, one office building, 14 degassing holes, and one bulldozer. The provided bulldozer had been unfunctional since the conflict in 2016, but at the time of the ex-post evaluation, it was under repair and maintenance and expected to get functional again. The fence, office building, and degassing holes damaged in 2016 have not been repaired since then. The site manager trained by the project was actively working to proceed with maintenance and management of the site. Thus, the disposal site may be improved if the budget is secured.

The compactors used for the collection and transport of garbage were not provided by the project; however, this section takes up the compactors because their use has a strong influence on the expansion of solid waste management activities of Juba City Council. The second-hand compactors purchased by Juba City Council started frequent breaking down around May 2013. At the time of the ex-post evaluation, the O&M situation was bad; out of 13 compactors owned by Juba City Council, 3 compactors, 1 out of 2 trucks, and 1 out of 3 tractors were functional. At the time of the ex-post evaluation as well, it was difficult to secure spare parts. The lack of skills of the technician of the DES garage was also an issue. Thus, the O&M of collection vehicles is not satisfactory.

In light of the above, regarding the policy/systems and institutional/organizational aspects, although not fully satisfactory, there has been an organizational structure to support continuing solid waste management work. On the other hand, regarding the technical, financial, and environmental and social aspects, the preventative measures to risks, and the O&M status, there are some issues and prospects for improvement are low, which make it difficult to sustain the effects brought by the project. Thus, the sustainability of the project effects is moderately low. Nonetheless, the new Grant Aid and Technical Cooperation projects related to solid waste management have started. These projects plan to provide equipment and heavy machines, establish a management system, and improve the systems of waste collection, transport, and treatment. Prior to that, Juba City Council had also planned to recruit engineers and secure spare parts. Improvement after the start of the new projects can be expected.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

The project was implemented to realize the Project Purpose to establish the basic structure of solid waste management in Juba City, with the Overall Goal that Juba City Council becomes able to conduct solid waste management based on a plan. At the time of planning, there was no structure to manage solid waste in Juba City and solid waste in the city was an environmental and health problem. The importance of solid waste management was recognized in legal documents, as stipulated in the *Local Government Act* and the *Environmental Protection Bill* that the local governments were responsible for solid waste management. Thus, the project was consistent with the development policies and needs of South Sudan. The project was also consistent with the Japan's ODA policy, which indicated "support to the improvement of basic living" as one of its major areas of assisting South Sudan. Moreover, that the project aimed to improve people's lives just after the internal conflicts, and that the project carefully proceeded with pilot activity target areas selection so as not to let people feel unfairness between different tribes and communities was an appropriate approach for a project implemented in a conflict-affected country. Although on a small scale, the project conducted collaborative activities with other JICA and non-JICA projects, and played a mutually complementary role to other donors. Therefore, the project's relevance and coherence are high. The project facilitated the implementation of pilot activities to collect garbage from markets and residential areas and improve the final disposal site and its management, through which the government officials, the C/Ps of the project, gained the basic capacity for regular garbage collection, transport and treatment, and solid waste management. Furthermore, DES of Juba City Council in charge of solid waste management was established; thus, the Project Purpose to formulate the basic structure of solid waste management was achieved. However, owing to the major conflicts in December 2013 and July 2016, which was an external factor to the project, after the completion of the project, regular waste management activities introduced by the pilot activities were interrupted and garbage collection became irregular. Although the solid waste management plan developed by the project was partially undertaken, the achievement level of the plan, which aimed to continue and expand the regular garbage collection system, was low because of the breakdown of equipment such as garbage collection vehicles and the interruption of a project plan to replace equipment. Although the establishment of the basic structure leading to sustainable solid waste management can be taken as an impact of the project, the Overall Goal was achieved partially and effectiveness and impact are moderately low. The project cost exceeded the plan to some extent, but it is justifiable as the increase in the cost was mainly for the additional supply of a bulldozer indispensable to the final disposal site. The project period was as planned and the efficiency of the project is high. Concerning sustainability, after the completion of the project, the solid waste management system introduced by the project has not been implemented; thus, there is concern on the sustainability of technical

capacity. Regarding equipment such as garbage collection vehicles, only a few vehicles are operational because of malfunction. This indicates that there are issues in O&M. Financially, there is certain revenue but it is not sufficient to cover all solid waste management needs, and there are issues in the fund management system and revenue increase. Because of such ineffective solid waste management, the population faces environmental problems such as garbage burning and bad smells in the city as well as the final disposal site. Future improvement can be expected in the aspect of policy and system, and regarding the institutional and organizational aspect, the foundation of continuing operation has been formed. However, in the technical, O&M, financial, and environmental and social aspects, some issues are observed and the sustainability of the project effects is moderately low. In light of the above, the project is evaluated as partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Establishment of a stable solid waste management system (clarity of financial and operational responsibility and allocated tasks in solid waste management activities, and dissemination of information to the residents)

At the time of the ex-post evaluation, DES and the Blocks shared solid waste management activities, according to the categories of the sources such as large volume dischargers, markets, and residential areas. Moreover, new private companies had just entered in the solid waste management operation and started garbage collection in the assigned areas including residential areas. Although DES is a responsible organization for solid waste management, many other actors, such as the Ministry of Environment of RSS and CES, Juba County, the Blocks of Juba City, and private companies, were involved and formed a complicated structure. There is a concern that it may seem to the residents of Juba City that it is unclear who does what, who collects fees, and who takes responsibility. Fee collection requires people's trust in solid waste management services. To gain their trust, stable implementation of waste management activities and transparent financial management are indispensable. To establish a stable solid waste management system, with the support of JICA's new projects, the following will be needed: to streamline the stakeholders who are involved in solid waste management, in finance and activities to collect, transport, and dispose of garbage, and to clarify responsibility and workflow; to implement stable and regular waste collection; and to continue awareness raising and information dissemination activities for the residents.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

(1) Solid waste management work can contribute to building the trust of people toward public services in a conflict-affected country

At the beginning of the project, C/Ps did not have enough experience in providing public service, and the residents were not used to receiving public service. The government side obtained an understanding of the role of public service through doing solid waste management together with the Japanese project team and seeing what solid waste management does and what outputs are brought. The residents saw the solid waste management activities and resulting cleanliness in the neighborhood and understood that there was a service provided by the government to improve their lives. From this understanding, the residents started demanding service if service is not provided as expected (for example, a garbage collection vehicle did not come as scheduled). The government further understood its role by receiving such demand. Moreover, if public service is provided regularly, trust in the service will be built and this can motivate people to pay collection fees. Government officers will be motivated by feeling that they are trusted and acknowledged. Such a virtuous cycle emerging as a result of mutual interaction has a positive influence on trust building between the government officers and residents in general as well as solid waste management work.

Trust between the government and people in a conflict-affected country tends to be low. Trust in the entire government cannot be built easily or in a short time, but efforts to continue steady and direct interaction and trust building between government officers and residents is important, especially in a conflict-affected country.

(2) Continuing awareness raising activities can help residents gain understanding and facilitate solid waste management activities

The residents who were affected by conflicts till recent times and did not know public services tend not to be aware of their right to public services and obligations on their side. Cooperation of the residents is indispensable for effective and efficient solid waste management, but it is not easy to have them take appropriate action (to put garbage in a plastic bag and discharge it properly at fixed time at fixed point, clean the surroundings and pay attention to sanitation). When starting the waste management activities of the project, the Japanese experts and C/Ps gave the residents detailed explanations to facilitate an understanding of the importance of solid waste management. In addition to community meetings, they actively sent messages and conducted awareness raising activities, organizing bus tours for residents to see the activities and clean-up campaigns. The residents who participated in the pilot activities understood how to discharge garbage, sanitation, and what they should do as residents. One C/P regards the promotion for the residents to participate in the activities as an achievement of the project.

However, the pilot activities covered only some of the residents of Juba City. Many new

residents continue to come. The residents as a whole do not have sufficient understanding and some just think that they can do away with garbage by discharging it in waterways and letting garbage washed away during the rainy season. This negatively affects the environment and road maintenance. Against this situation, the government recognizes the need for awareness raising activities. In implementing solid waste management work, it is necessary to solicit residents' participation until their understanding is built. Awareness raising needs to be continuously done along with solid waste management activities so that the contents and effects of the solid waste management work and individuals' responsibility are understood.

(3) PDM formulation for Technical Cooperation projects in a conflict-affected country

At the time of planning of the project, because there was a serious lack of the information necessary for planning, a flexible PDM was formulated with basic outlines without prescribing all details to make it easy for the project team to make proposals. For example, activities, such as "to conduct a survey and identify issues" and "to design pilot activities," were set so that details of the activities could be proposed and decided as the project proceeded. This was an appropriate approach when there is a lack of basic data and the situation and potential of the implementing agencies were not clearly understood. Actually, an indicator and an implementing agency were added as the project progressed, to adjust the plan according to the actual circumstances. The Project Purpose also matched the actual situation. When formulating PDMs for projects in conflict-affected countries, it would be realistic to set outlines first, as this project did, and make a flexible PDM to which detailed activities and adjustments are added as needed.

On the other hand, it is understandable that work in conflict-affected countries is hectic facing daily happenings, and that it may not be easy to frequently discuss details of the PDM because discussion and process for revision take considerable time and energy. However, especially in conflict-affected countries in a complex and fluid environment, it is important to build a clear consensus on what the project goal is, and how to reach such a goal, among all stakeholders. From the viewpoint of external accountability, it is desirable to formulate a clear PDM matching to an actual situation. For that purpose, review and revision of PDM can be included in the activity plan from the beginning.

5. Non-Score Criteria

5.1. Performance

5.1.1 Subjective Perspectives (retrospective)

(1) Solid waste management as part of nation building (Japanese experts)

At the beginning of the project, there was no full-time person in charge of solid waste management with knowledge and technical capacity for solid waste management. In some cases, those who were recognized for their distinguished service during the civil war were appointed to government posts and they, including C/Ps in the implementing agencies, often do not have experience as government officers. On the other hand, residents were not accustomed to receiving public services and did not have trust in public services.

In this situation, the project expert team implemented the project with the recognition that this is a solid waste management project and, at the same time, an administrative institution-building and nation-building project to build trust in public services by the government through the provision of public service to the people. The expert team emphasized that C/Ps should understand their responsibility to provide service as government officers. At the beginning of the project, the project led garbage collection activities, and through its practice, C/Ps gained knowledge and technical capacity and understood solid waste management activities. The residents also saw garbage collection and understood what public service is, and started demanding the provision of public service, that is, garbage collection in this case. Furthermore, they started to understand that they should pay collection fees to receive the service.

The project also held many community meetings and raised awareness on the importance of garbage collection and a sanitary environment. Through the community meeting process in which C/Ps interacted with the residents to understand and respond to their needs, the project let the residents “train” the C/Ps. During the bus tours conducted as part of awareness raising activities targeting residents, C/Ps showed the residents the activities of garbage collection, transport, and final disposal. This activity also aimed that C/Ps should fully understand and be proud of their work by explaining what they were doing.

As the pilot activities progressed, the residents were happy with the cleaner neighborhood. C/Ps started to be aware of their responsibility and take pride while being thanked by the residents. At the beginning of the project, it was not clear to what extent the project could proceed and what outputs the project could achieve. But in the end, within three years, in such a short time, both C/Ps and the residents could understand public service well.

(2) Cooperative relation building between the JICA team and implementation agencies (Japanese experts, JICA staff in charge of the project)

Juba City itself had been just established and the solid waste management activities started with no policies, equipment, staff, and project office space. While many government organizations

were involved in solid waste management, their work and jurisdiction were vertically divided and there was no department in charge of solid waste management.

Therefore, the JSWVG, consisting of the Ministry of Environment/RSS, Juba City Council, the Blocks, the final disposal site, and state government staff, was established and held weekly meetings to develop its capacity as an organization. A group with strengthened organizational capacity can cope with the transfer of its members. The group issued newsletters, which were used by the members to make their reporting to their supervisors easier. The project reported to the Executive Director of Juba County every week. The JICA South Sudan Office also helped keep communication with the old and new mayors, with emphasis on cooperative relationships with the Juba City Council. The project strived to strengthen communication with relevant organizations to deepen their understanding of solid waste management.

Despite such efforts by the project, some stakeholders did not pay much attention to solid waste management activities and the project had difficulty in gaining their support as desired. However, as the pilot activities proceeded, their understanding also deepened. When the project became able to present visible results, for example by organizing an opening ceremony of the improved final disposal site, the leadership and staff members began taking a strong interest. The Minister of Environment, who planned to request the African Development Bank or World Bank to improve the disposal site at the beginning of the project, was very happy with the result of the improvement.

As a result, it became easier to receive cooperation in the implementation of the project.⁴⁰ The leaders of the South Sudan side became active in meetings.

(3) Flexible actions taken under the conflict in 2016 (then Rejaf Payam Director)

With the support of the project, the fence and office building were constructed and recording of incoming vehicles became routine work at the final disposal site. Waste was disposed of properly with compaction and soil cover, and burning stopped. As a result, the site became more hygienic.

However, owing to the conflict in 2016, the office, fence, and all facilities were damaged. The blade of the bulldozer stationed at the disposal site was also damaged. Because there was a risk of further damage to the bulldozer if it had been kept at the disposal site, the Director immediately rent a vehicle that could carry the bulldozer to transport to Rejaf Payam's office. Afterward, the security in the neighboring area of the disposal site deteriorated; the Director contacted commanders of armed groups to get an agreement with continuing waste collection activities to ensure uninterrupted solid waste management.

However, because there were still problems such as the one in which the armed groups illegally

⁴⁰ One C/P attributes provision of the office space in 2013 to this improvement in the relationship.

collect tolls on the way to the disposal site from the drivers of incoming vehicles, the drivers started going to the temporary dumping site on the east side of the river Nile. The Director proposed to use this site as a legal disposal site, but because that area was not recognized as a dumping site according to the Land Use Act, it was kept illegal. An agreement about its use with the residents in the neighboring area of the illegal site was made.

Just after the conflict was a time of many changes and uncertainty and it was difficult to make any predictions. Flexible actions made it possible to continue solid waste management activities even to a limited extent.

End

Republic of South Sudan

FY2021 Ex-Post Evaluation Report of Technical Cooperation Project
“The Project for Enhancement of Operation and Management Capacity
of Inland Waterway in Southern Sudan¹”

External Evaluator: Shima Hayase, IC Net Limited

0. Summary

This project was to strengthen the capacity for operation and management of the Juba River Port by establishing the foundation for the Juba River Port Administration (JRPA), the maintenance and operation of port facilities, safe and efficient cargo handling and port management, and the compilation of statistics. It also aimed to help facilitate inland water transportation and enhanced the transportation capacity of South Sudan by sharing the knowledge and the learnings at the Juba River Port with personnel of major ports other than Juba.

The consistency of the project with South Sudan’s development plan and needs, and Japan’s assistant policy for South Sudan is high. External coherence was achieved through cooperation with the Japan Self-Defense Forces (JSDF) dispatched to the United Nations Mission in South Sudan (UNMISS). Regarding internal coherence, with a significant delay in port facility development through the Japan International Cooperation Agency (JICA)’s grant aid project², expected synergistic effects did not materialize. As for the project plan and approach, there were some problems in setting indicators of the Project Purposes and changing the Overall Goal and project plans. Therefore, the project’s relevance and coherence are moderately low.

Regarding effectiveness, the two project purposes were mostly achieved at the time of project completion. Among the two purposes, as for Project Purpose 1, which is to strengthen operation and management capability the operation procedures were developed and put into practice through on-the-job training (OJT) and third country training programs. As for Project Purpose 2, which is to continuously share the knowhow on the port management system established at the Juba River Port with other ports in South Sudan, although the functions of regional ports were suspended owing to security issues, training for strengthening the capacity of the personnel of four ports among the six major domestic ones was implemented. In addition, the knowhow was shared with the personnel evacuated to Juba through day-to-day work at the Juba River Port. The Overall Goal, which is to facilitate transportation and enhance the transportation capacity of river ports in South Sudan, was expected to be achieved by enhancing cargo handling efficiency, increasing cargo volumes, and improving services at regional ports. However, it was impossible to identify an impact of this project alone in achieving the Overall Goal because such achievement

¹ At the time of the ex-ante evaluation of this project and the project formulation study, Southern Sudan was part of the Republic of Sudan. Upon independence on July 9, 2011, it became a nation named the Republic of South Sudan.

² The contract for the grant aid project was renewed in May 2016. However, the project was suspended again due to the conflict in July of the same year. At the time of the ex-post evaluation (2022), port facilities have not been developed through the grant aid project.

was to be derived from the development of infrastructure. Moreover, many external factors³ worsened considerably, such as the deterioration of the security situation in South Sudan and a drastic decrease in cargo due to the border closure between Sudan and South Sudan. The project's prerequisites were not met owing to delays in the development of port facilities through the JICA's grant aid project and staff deployment to regional ports. Thus, it was not possible to confirm the achievement status of the Overall Goal and identify an alternative indicator to measure the impacts at the level expected at the time of planning. No particular negative impacts on the natural environment due to this project has been observed. Requests for preventive measures against such accidents as fires and fuel spills were made to relevant stakeholders, and the Juba River Port was regularly cleaned. Neither land acquisition nor resettlement occurred. Based on the above, it is impossible to determine the sub-rating for the project's effectiveness and the impacts.

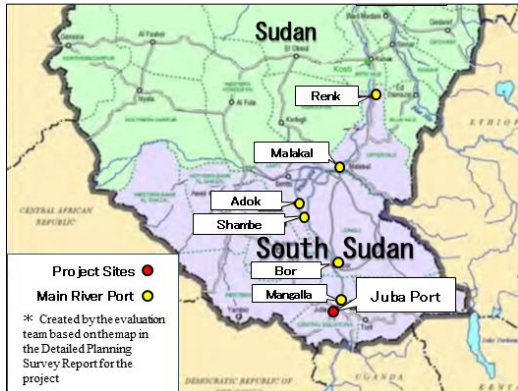
Efficiency is high because the project cost was within the plan, although the project period slightly exceeded the plan.

Regarding sustainability, the policy and system aspect has been secured. However, significant problems were observed in the financial aspect owing to chronic government budget shortfalls. Many issues were also found in the institutional/organizational and technical aspect. In the environmental and social aspect, waste dumping, a concern at the time of project planning, was resolved by constructing fences. However, regarding preventive measures to risks, there are a need for spot dredging, and other issues to be addressed such as delays in the recovery of logistics due to ongoing border closures between Sudan and South Sudan, and the collection of tolls at illegal checkpoints. As mentioned above, there are serious concerns, so the sustainability of the project effects is low.

In light of the above, it is impossible to determine the sub-rating for the project's effectiveness and impacts, which are essential evaluation criteria for overall rating. Therefore, the overall rating of the project is indeterminable.

³ As there were logical contradictions in the external conditions and preconditions set in the ex-ante evaluation of this project, in this ex-post evaluation, factors such as conflicts, security, diplomatic relations, national finances, and politics, which are not controllable by the project, are considered as external factors. Factors that must be fulfilled for the project implementation, and are indispensable for the execution, such as the construction of the port through grant aid project, deployment of C/Ps, and securing financial resources for this project, have been reorganized as preconditions in this ex-post evaluation.

1. Project Description



Project location



Boats moored in the Juba River Port (February 2022)

1.1 Background

In South Sudan, the inland waterway of the White Nile River, which connects Sudan with the capital city of Juba, was a stable and efficient transportation route, so that 60% of the domestic cargo was transported through the route before the Second Sudanese Civil war. However, during the civil war, which started in the 1980s and ended in 2005 with the Comprehensive Peace Agreement (CPA), infrastructure facilities related to internal water traffic were destroyed. In addition, cargo handling and transportation capacity in the Juba River Port were limited owing to problems such as the lack of mooring facilities. South Sudan, which depended on imports, had limited means of transporting them: alternatives to inland water transportation were air transportation with a high cost and land transportation using unpaved highways. Moreover, on top of unpaved roads, a vast wetland stretched along the White Nile, so many roads became impassable during the rainy season, resulting in detours around the wetlands. Thus, it was not fair to say that land transportation was a stable and efficient means of shipping material goods.

Owing to this background, JICA planned to develop facilities at the Juba River Port, such as piers and cranes, under the "Project for Improvement of Juba River Port," a grant aid project.

Then there emerged a need for maintenance and management of port facilities and equipment the grant aid project would provide. Therefore, this technical cooperation project was implemented in order to establish the foundation for port maintenance and strengthen its capacity.

1.2 Project Outline

| | | |
|--|-------------------|--|
| Overall Goal | | Inland water transport in South Sudan is facilitated and its capacity enhanced. |
| Project Purpose | Project Purpose 1 | Management capacity of Juba port is continuously strengthened. |
| | Project Purpose 2 | Port management system established at Juba port is continuously shared among other ports in South Sudan. |
| Output | Output 1 | Roles and responsibilities of JRPA are established and executed properly. |
| | Output 2 | Budget and accounting system of JRPA are established. |
| | Output 3 | Facilities of Juba port are properly maintained and managed. |
| | Output 4 | Cargos are handled safely and efficiently at Juba port. |
| | Output 5 | Juba port is managed and operated safely, securely, and environmentally friendly. |
| | Output 6 | Statistical data of Juba port are collected, maintained, and utilized. |
| | Output 7 | Knowledge and experiences accumulated at Juba port is shared among other port staff in South Sudan |
| Total cost (Japanese Side) | | 543 million yen |
| Period of Cooperation | | March 2011 - August 2015 |
| Target Area | | Juba port and six other major ports in the Republic of South Sudan (Mangalla, Bor, Shambey, Adok, Malakal, and Renk) |
| Implementing Agency ⁴ | | South Sudan's Ministry of Transport, Roads and Bridges (MTRB), Ministry of Physical Infrastructure of Central Equatoria State (MoPI), and Juba River Port Administration (JRPA) |
| Other Relevant Agencies/ Organizations | | None |
| Consultant/ Organization in Japan | | The Overseas Coastal Area Development Institute of Japan (OCDI) Katahira & Engineers International (KEI) |
| Related Projects | | [Technical Cooperation] "Juba Urban Transport Infrastructure and Capacity Development Study in Southern Sudan" (August 2007–February 2010), The Project on Monitoring Support and Improvement of Operation and Management of River Port in the Republic of South Sudan (March–July 2017) [Grant Aid] "The Project for Improvement of Juba River Port" (GA: January 2013), |

⁴ When the government system was restructured in 2020, the implementing agencies were renamed as the South Sudan Ministry of Transport (MoT), and the Central Equatoria State Ministry of Road and Bridges (CE MoRB).

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

Regarding Indicator 1: “the new terminal at Juba port is operated smoothly,” actual operation of the new terminal was not achieved during the project implementation because of a delay in the construction work under the grant aid project.⁵ However, the port management capacity of the existing facilities has improved through the development of the manuals on Juba River Port operation and management and OJT. If the new terminal had been constructed, the enhanced capacity would have contributed to its smooth operation. Regarding Indicator 2: which is “capacity of port staff in South Sudan are improved,” although intensive courses and technical transfers were provided to port masters of the four main ports, it was difficult to share the port management procedures developed at the Juba River Port with other ports by the time of project completion. Therefore, some of the indicators were not to be fulfilled by the end of the project, but the Project Purposes were mostly achieved.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (Including other impacts.)

As international river logistics between Sudan and South Sudan was stagnant due to the border closure between the two countries, and the use of inland waters was limited to the transport of UN relief items, the movement of returnees, and the cargo by small boats. At the time of the terminal evaluation, the transport capacity was unlikely to be enhanced significantly. However, it was expected that, when the border between Sudan and South Sudan opens up in the future, the capacity might grow rapidly, and prospects for achieving the Overall Goal were regarded as moderate. In this regard, the terminal evaluation also indicated that it was necessary to develop the facilities and equipment of the Juba River Port through grant aid projects, improve the facilities and system of the ports covered by this project, and develop more human resources.

1.3.3 Recommendations from the Terminal Evaluation

The following are the recommendations from the terminal evaluation on both achieving the Project Purposes and the Overall Goal and the direction of future assistance.

(1) Short-Term Recommendations to Achieve the Project Purposes

- 1) to share the items developed by the project, such as manuals, with the right personnel to smoothly manage and operate the existing facilities and equipment and new ones the grant aid project will develop
- 2) to ensure continuity in improving technical capabilities through port management activities based on the existing facilities and equipment

⁵ In the terminal evaluation in April 2015, PDM Version 3, the final version, was applied. The indicators of Version 2 were used only with the assessment of the Project Purposes. The reason for this was not stated in the evaluation report. Although the evaluator asked about the reasons in the interviews with experts and JICA officials, the cause was unknown.

(2) Long- and Mid-Term Recommendations to Achieve the Overall Goal

Improving inland water transportation needs not only development of port facilities but also various efforts related to the following: vessel traffic lane, navigation rules and regulations, ship registration and inspection, ship's crew training and license, search and rescue, pollution prevention, navigation aids, and spot dredging, etc. As MTRB has been working on the River Transport Bill, this legal system should cover all of the above.

(3) Direction of Future Assistance

Some activities have not started yet, and follow-up is needed. Delays in the grant aid project and the recovery of cargo volume caused restrictions in implementing these activities. Information must be collected on such activities. After examining the results and progress of the activities, the content of cooperation for subsequent projects would be reviewed.

2. Outline of the Evaluation Study

2.1 External Evaluator

Shima Hayase, IC Net Limited

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2021–October 2022

Duration of the Field Survey: January 23–February 13, 2022, and June 1–22, 2022

2.3 Constraints during the Evaluation Study

At the time of the ex-post evaluation, seven years had passed since the completion of the project. In addition to the passage of time, some data and records related to the project's effect were difficult to obtain owing to two major conflicts and organizational restructuring. For the evaluation, some information and data were also collected through recollections in interviews with JICA staff, experts and counterparts (C/P) concerned in the project.

As the Overall Goal of this project, the indicators were to improve cargo handling efficiency, increase cargo volume, and improve services at river ports throughout South Sudan. However, these were indicators mainly to measure the effects of infrastructures, and it was not possible to identify the intangible impacts yielded solely by this project. In addition, during the project's implementation, external conditions worsened considerably, such as the deterioration of security in South Sudan and the drastic decrease in cargo due to the closure of the Sudan-South Sudan borders. The prerequisites for the projects, such as the development of port facilities through the grant aid project and deployment of staff to regional ports, were not realized. Thus, it was not possible to measure the achievement status of the Overall Goal set at the time of planning. Discussions to apply alternative indicators based on the actual situation in conflict-affected countries were held. However, as the planned construction by the grant aid project was not implemented, it was not possible to set alternative indicators that matched the impact of port facility development expected at the time of project planning. Regarding "Performance" in "5. Non-Score Criteria", considering the background and the significance of the project implementation and the importance of contribution to nation-building which was the goal of peacebuilding, the item was also especially noted in the section of "Appropriateness of the Project Plan and Approach" in Relevance Section.

3. Results of the Evaluation (Overall Rating: N.A.⁶)

3.1 Relevance/Coherence (Rating: ②⁷)

3.1.1 Relevance

3.1.1.1 Consistency with the Development Plan

The development plan at the time of the ex-ante evaluation was called the *Sudan Joint Evaluation Mission Report (2005-2011)*, which was the interim framework of North and South Sudan development formulated by CPA. The plan's priority was the development of transportation infrastructure. As a mid-term prospect of inland transportation development, it mentioned the need for comprehensive investment in the development of inland water transport between the Juba River Port, a hub port in southern Sudan, and the Kosti port, in northern Sudan. Moreover, the *Transport Sector Policy 2007* of the Ministry of Transport and Roads of the Southern Sudan government stated the importance of inland water transport in economic development. The policy also included the importance of building a safe and efficient waterway system and the need to develop port facilities such as piers, wharves, and warehouses and spot dredging work to expand routes. At the time of project completion, the *South Sudan Development Initiative 2013–2020* (January 2013) had set the development of inland water transportation infrastructure, navigation aid facilities, and relevant laws as high-priority issues. It also emphasized the development of staff training programs and stated the need for technical assistance to develop and implement the training. Regarding policy for the transportation sector, the *Transportation Sector Policy* (MOT/RSS, April 2013) referred to the importance of establishing an efficient logistics network, providing safe transportation services, and strengthening the operational capacity of MoTRB as a key of the policy.

At the time of the ex-ante evaluation and the project completion, both the government development plans and sector ones emphasized inland water transportation. The project's consistency with the development plans is high because the project was to strengthen the capacity of personnel in charge of inland water transportation services.

3.1.1.2 Consistency with the Development Needs

Inland water transportation along the White Nile River has been an essential means of transportation for people's lives and economic activities in South Sudan, which has wetlands where roads are submerged and impassable during the rainy season. The approximately 1,500-km transport route connecting the Kosti port at the southern tip of Sudan with Juba, the capital of South Sudan, runs through five states. The river ports in the route have been the vital infrastructure for the people living nearby. The importance remained the same at the time of the ex-ante evaluation and the project completion. Development needs for inland water transportation and

⁶ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁷ ④: Very High ③: High, ②: Moderately Low, ①: Low

river ports have been consistently high.

3.1.1.3 Appropriateness of the Project Plan and Approach

(1) Appropriateness of the Project Scope

1) Project in a Conflict-Affected Country

According to the JICA South Sudan Office at the time of the ex-ante evaluation, South Sudan, which became independent after years of conflict, was at the stage of starting nation-building, and it was necessary to build a relationship of trust between the government and society. The project plan emphasized showing early visible effects so that people could see the dividends of peace. As this project aimed not only to provide technical transfer but to assist C/P organizations in their effort to contribute to nation-building through administrative services, emphasis was placed on the development of ownership.

Therefore, the project formulated task forces and working groups for each activity so that the C/Ps would recognize their responsibility for the activity. In addition, while the amount of cargo at the Juba River Port was almost nonexistent, and the work of JRPA was decreasing, C/P staff recognize through the activities that they were contributing to forming the foundation of JRPA and establishing the operation and maintenance procedures for the port facilities so that their motivation was maintained and boosted by the working group activities.

The technical transfer activities involved not only the implementing agencies but also those related to the operation and management of each relevant port. In the operation of a port, many other parties were involved, such as barge operators and ship owners who use the port, as well as shipbuilding companies, port workers, truck transport, and the port police and fire departments responsible for safety management. Therefore, the project held seminars and workshops inviting the parties above, and used the occasions as a platform for exchange of opinions between river port users and JRPA. In the beginning, the participation rate of the parties was low. However, as the seminars and workshops were held numerous times, the participants deepened their understanding and even made presentations. Eventually, they acquired a sense of camaraderie that they would work together at the existing port and hold discussions for smooth operation of the new port.

2) Additional Project Purpose

In January 2011, a meeting on detailed planning of the project was held between JICA and the South Sudanese side.⁸ The latter raised the following points: (1) Training was essential for not only the personnel of the Juba River Port, which was the cargo recipient, but also those of other regional ports, which were senders; (2) As the gap between Juba and other regions had been

⁸ The Detailed Planning Survey Report for the Project for Enhancement of Operation and Management Capacity of Inland Waterway in Southern Sudan, January 2011

widening in South Sudan, input for regional ports was also essential from the viewpoint of promoting balanced development. Therefore, Project Purpose 2, which is “Port management system established at Juba River Port is continuously shared among other ports in South Sudan,” was added. Six main ports other than the Juba River Port (Renk, Malakal, Adok, Shambey, Bor, and Mangalla) were added to the target areas for the project. On the other hand, according to the ex-ante evaluation sheet, the six ports above were not managed by the government and had no personnel assigned. Moreover, it was noted that the activities in the regional ports would be limited to on-site studies by Japanese experts for collecting information and finding issues within the areas where the security situation allowed access.

At the time of the mid-term review in February 2013, Malakal was the only port that had personnel among the six main ports, and it was difficult to conduct technical transfer to all the ports. Therefore, the review assessed that Project Purpose 2 would be difficult to achieve. However, as it was indicated that the C/Ps would continue to take responsibility for staffing, Project Purpose 2 was not revised. Moreover, it was known that human resource development for personnel of the six ports would be conducted at the Juba River Port before their assignment. Based on these, the mid-term review suggested that the technical transfer to JRPA at the Juba River Port would also include support for the personnel to be assigned to the six regional ports. As the indicator of Project Purpose 2 was "to share the port management procedures established at Juba River Port among the ports in South Sudan", a detailed development scenario with details should have been presented, such as how to develop human resources of the regional ports including how to contribute to solving the gap between Juba and other areas, and how the achievement was to be measured. At the time of the ex-ante evaluation, there was little information on the baseline, and it is presumed that the project was to start with what could be done in the ports that could accommodate any relevant activity. As the indicator was just the number of participants in the training and seminars held by the organization managing the six regional ports, it turned out that the project went on without a clear scenario, and the path from the outcome to the impact was left ambiguous. It can be assumed that assistance toward nationwide development was considered necessary from the perspective of peacebuilding. However, from project management’s perspective, it would have been better to make an achievable plan which was consistent with the actual circumstances. For example, the Project could have added Output 7 at the stage when personnel had actually been deployed or started with establishing a model of JRPA organizational structure and port maintenance and management at the Juba River Port first and then could have considered expanding it to other regions in stages.

3) Setting the Overall Goal in the Project Plan

The project’s objective was to strengthen the operation and maintenance capacity of port facilities through a grant aid project. The project's logic was based on the grant aid project's

construction and installment of Juba River Port terminals and cargo handling facilities. Therefore, the project's Overall Goal was to increase the cargo volume handled at inland water ports in South Sudan, improve cargo handling efficiency, and improve services at the ports. In reality, the construction of the facilities through grant aid project did not take place in time, and technical transfer using the facilities was not conducted before the project completion. Therefore, it was not possible to measure the project's effectiveness with the indicators that measure the combined effects of this project and the grant aid project's facility and equipment development. At the stage when it was decided that the new facilities could not be used for technical transfer because the construction of the facilities under the grant aid project was way behind schedule, it was decided that technical transfer could not be conducted in the facilities as planned, and then the project plan was changed. At that time, the Overall Goal and its indicators should have been changed to measure the effects of capacity development by the project.

Moreover, there was also a leap in logic from the Project Purposes to achieving the Overall Goal. The project aimed to strengthen the port management and operation capacity of the Juba River Port and to share the port management know-how developed at the port with the personnel of major ports in South Sudan through training and seminars. Therefore, this project was expected to have some impacts, such as improving cargo handling efficiency, cargo handling volume, and services at the Juba River Port and other inland water ports in South Sudan. However, to realize such impacts, the following conditions needed to be met: as for intangible conditions, a foundation for the operation and management of not only the Juba River Port but also the regional ports should have been formed, personnel should have been deployed as security was restored, and as the result, the ports should have been properly operated and maintained; as for tangible conditions, the Juba River Port and its facilities should have been improved through grant aid project, and regional ports and facilities should have been developed. The project started with establishing the basis of a structure for port maintenance operation. It was necessary to ensure that the port management and operational capabilities established by the project take root in the actual operation of the Juba River Port. In addition, the activities to disseminate the knowhow at Juba River Port to national level were limited to information sharing through training and seminars. With all those things considered, the Overall Goal of the project was the one that could only be achieved through efforts beyond this project's scope, and logically higher level.

(2) Revisions of PDM

As indicated in Table 1, the Project Design Matrix (PDM) of the project was revised three times. All the revisions were made through the formal procedures by examining the revision proposal with the C/P organization, then approved by the Joint Coordination Committee (JCC).

Table 1: History of PDM Changes

| PDM version* | Time of PDM change | Contents of change |
|--------------|--------------------------------------|---|
| Version 1 | May 2011 1 st JCC | <ul style="list-style-type: none"> Revision of indicators based on the baseline survey |
| Version 2 | February 2013 4 th JCC | <ul style="list-style-type: none"> Partial revision of the Outcome indicators (Outcomes 2 and 4) based on the findings in the mid-term evaluation. Addition of PR activities requested by C/Ps. |
| Version 3 | November 2013 5 th JCC | <ul style="list-style-type: none"> Since the provision of facilities through the grant aid project was not completed in time, the Project Purposes, indicators, and means of obtaining indicators were revised on the premise that the new terminal could not be used. |
| Version 4 | No change was made | <ul style="list-style-type: none"> Owing to the travel restrictions on the experts, the activities were shifted to the development of JRPA's operational manuals in Japan and technical transfer using training in Japan and third-country training. A revised PDM was drafted 3is, but it was not kept as a record. |

Source: materials provided by JICA

* The PDM for this project did not have a version number, but the evaluator assigned a number to each version to make the chronological explanation more understandable.

At the time of the ex-ante evaluation, it was expected that the construction of a new terminal at the Juba River Port through grant aid project would start in April 2013, and OJT was to be conducted using the partially completed facilities of the new terminal. However, it turned out that the start of the construction was delayed significantly.⁹ Therefore, a revision of the PDM was proposed including changes in the activities and an indicator of the Project Purposes (Table 2) based on the precondition that OJT could not be conducted by using the new terminal. PDM Version 3 was presented and approved in the JCC in November 2013.

Table 2: Changes in PDM Version 3

| Project Purposes | Indicator | Means of Verification |
|--|---|---|
| 1. Management capacity of Juba port is continuously strengthened. 2. Port management system established at Juba port is continuously shared among other ports in South Sudan. | Before the Revision (Version 2) | |
| | 1. The new facility of Juba River Port is operated efficiently. | 1. Operation records of each division of JRPA |
| | 2. Capacity of staff at the ports in South Sudan is strengthened. | 2. Interview with the C/Ps and port users. 3. Evaluation of port management and operation by checklist |
| | After the Revision (Version 3) | |
| 1. <u>Efficient operation</u> of the new facility of Juba port <u>is examined.</u> | 1. <u>Understanding of JRPA operation manuals</u> | |
| 2. <no change> | 2. <no change> 3. <eliminated> | |

⁹ According to the JICA South Sudan Office at the time, the exchange of notes (E/N) for the grant aid project had been concluded before the start of this project. However, owing to the country's independence, the name of the country was changed, and the E/N had to be revised. The delay was also caused by the procedures for handing over international agreements signed with the Sudanese government to the South Sudanese government and replacing all the personnel in charge. Furthermore, after the E/N was re-contracted, the government of South Sudan requested the withdrawal of the input items that it was supposed to cover, which also caused a significant delay.

In December 2013, a conflict occurred shortly after the approval of PDM Version 3. The project was suspended for half a year to wait for the restoration of security. Subsequently, although the project was resumed, owing to travel restrictions, it continued under the constraint that Japanese experts were unable to visit the project sites. The project was completed by taking alternative measures as the experts communicated with C/Ps remotely and developed JRPA operation manuals in Japan, and technical transfer to the C/Ps was done by training in Japan or a third country. Because of such changes in the project contents, the experts prepared PDM Version 4¹⁰. However, no change for Version 4 was made because it was impossible to discuss changes at the JCC. For the terminal evaluation, PDM Version 3 was applied. Considering the communication environment at the time, it was difficult to coordinate things remotely. Although formal approval could not be obtained, Version 4 should have been kept on record. For the terminal evaluation, it was desirable to use Version 4, which reflected the reality on the ground better than Version 3.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

In the *Project Deployment Plan for the Republic of South Sudan* (October 2011), at the time of planning, infrastructure development for nation-building was one of the priority areas, and transportation infrastructure development was expected to bring benefits not only for the target country but also the neighboring countries and contribution to peacebuilding. In the *Yokohama Action Plan*, formulated in the *Tokyo International Conference on African Development (TICAD IV)*, held in Yokohama in May 2008, infrastructure development was one of the pillars, and transportation infrastructure development was emphasized. These issues continue to be recognized as a priority at *TICAD V* (2013).

No other donor was involved in inland water transportation, and Japan was the only donor. Since the CPA, Japan has been supporting the development of basic infrastructure directly linked to the lives of the people and economic activities of South Sudan. The project was intended to strengthen the capabilities to continuously operate, maintain and manage infrastructure. Therefore, it is highly consistent with Japan's assistance policy.

3.1.2.2 Internal Coherence

This project was to develop human resources to maintain and operate the port facilities developed by a grant aid project named the "Project for Improvement of Juba River Port." Based on the premise of the expansion of piers, the provision of cargo handling equipment, and a new terminal through grant aid project, the project was to develop manuals and conduct training on

¹⁰ At the time of the ex-post evaluation (2022), the evaluator searched for the revised PDM (version 4), but there was no record of it in the materials provided by JICA. The evaluator also interviewed the project's experts, but none of them remembered the background or content of the draft for revision.

the operation and maintenance of the new facilities and equipment. However, as the grant aid project was not completed by the time of this project's completion, the expected synergistic effects could not be generated.

3.1.2.3 External Coherence

At the time of the ex-ante evaluation, there was no plan for coordination with other Japanese organizations or development donors. Japan was the only donor supporting the river transportation field, and there was no donor coordination. The only cooperation was the maintenance of the Juba River Port by the JSDF dispatched to UNMISS. As part of the preparations for the grant aid project "the Project for Improvement of Juba River Port", a grant aid project, the JSDF used their heavy equipment to remove bulk waste and abandoned vehicles scattered around the port and constructed fences around the port. In grant aid projects, these are usually the responsibility of the recipient country, but the government of South Sudan was unable to undertake them owing to a lack of budget. Through this cooperation, the problem of the South Sudanese government's responsibility was resolved, and discussions with the Japanese government on the construction of the port proceeded. In addition, the construction of the fences helped to prevent unauthorized individuals from entering into the port and reducing illegal dumping, contributing to improving the operation of the port and the natural environment. Although it was not envisioned at the time of the ex-ante evaluation, concrete cooperation was realized. Thus, external coherence was confirmed.

This project is highly consistent with South Sudan's development policy, development needs, and Japan's development cooperation policy. Regarding internal coherence, the expected synergistic effects were not realized because collaboration with the JICA grant aid project did not materialize. Regarding external coherence, collaboration with the JSDF dispatched to UNMISS contributed to the promotion of negotiations with the partner country's government, and to improving the port environment. Regarding the project plan and approach, there were efforts for nation-building, but problems were observed in the setting of the Project Purposes and Overall Goal, as well as in the process of changing the project plan.

Therefore, the project's relevance and coherence are moderately low.

3.2 Effectiveness and Impacts¹¹ (Rating: N.A.)

3.2.1 Effectiveness

3.2.1.1 Project Outputs

The purpose of this project was to strengthen the management and operation capabilities of the Juba River Port terminal facilities that were to be developed through a grant aid project. The project consists of seven outputs. By establishing the roles and responsibilities of JRPA (Output 1) and the budget and accounting system (Output 2), JRPA was to form its basis. By improving the operation and maintenance capacity of port facilities (Output 3, 4, 5) and the collection and management of port statistical data (Output 6), the operation and maintenance procedure of port facilities was to be established. Through seminars and training for personnel of six other main commercial ports in South Sudan, the knowledge and experience accumulated at the Juba port (Output 7) were to be shared, and the project was intended to strengthen the maintenance and management capacity of regional ports in South Sudan.

Table 3 presents the achievement of each output at the time of project completion. The new facilities could not be operated because the grant aid project's construction work was not completed. However, according to the status of operation and maintenance of the existing facilities of Juba River Port, it can be said that Outputs 1 to 6 were mostly achieved. Although there was no specific numerical target for Output 7, such as the number of trainees and skill level, training and seminars were held inviting four port staff out of six regional ports. Owing to security problems, staffing for six regional ports was delayed, so it is not possible to confirm the effects at each regional port. However, as the personnel of the regional ports evacuated to Juba, there were opportunities to share knowledge and experience through the day-to-day work at the Juba River Port. Therefore, it can be estimated that Output 7 was mostly achieved.

¹¹ When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 3: Achievement of Outputs at the Time of Project Completion

| |
|---|
| Output 1: Roles and responsibilities of JRPA are established and executed properly. |
| <ul style="list-style-type: none"> ➤ A draft port management bill was made and submitted to the Ministry of Justice. ➤ A manual describing the roles and responsibilities of JRPA was developed and is used in the operation of the existing facilities. ➤ PR magazines for the Juba River Port were issued. |
| Output 2: Budget and accounting system of JRPA are established. |
| <ul style="list-style-type: none"> ➤ JRPA prepared budget request materials and submitted a budget request to the Ministry of Finance. ➤ Tariffs for ports and regulations on leasing facilities have been drafted. However, none of them were implemented by the time of project completion. |
| Output 3: Facilities of Juba port are properly maintained and managed. |
| <ul style="list-style-type: none"> ➤ Surveying techniques were transferred, and facility management and inspection manuals were developed. ➤ The existing facilities are managed, but inspection and maintenance of the new facilities have not been conducted because the grant aid project was not completed. |
| Output 4: Cargos are handled safely and efficiently at Juba port. |
| <ul style="list-style-type: none"> ➤ Cargo handling manuals, berth adjustment systems, and materials on safe cargo handling for the existing and new facilities and equipment were developed. |
| Output 5: Juba port is managed and operated safely, securely, and environmentally friendly. |
| <ul style="list-style-type: none"> ➤ In addition to developing manuals for safety and environmental management, technical transfer was implemented through OJT. However, repeated training was not possible. |
| Output 6: Statistical data of Juba port are collected, maintained and utilized. |
| <ul style="list-style-type: none"> ➤ Statistical data were formatted, digitized, and stored in a database. Through OJT, the data were entered in the database and updated. However, the data were not used for port management. |
| Output 7: Knowledge and experiences accumulated at Juba port are shared among other port staff in South Sudan. |
| <ul style="list-style-type: none"> ➤ Port administrators of four among six ports were invited to training and seminars. ➤ Through day-to-day work, knowledge and experience of the Juba River Port were shared with the personnel of regional ports who were evacuated to Juba. |

Source: Terminal Evaluation Report

3.2.1.2 Achievement of the Project Purposes

By the time of project completion, the operation and management manuals, including contents on the existing facilities and the new terminal were developed, and a series of activities related to the manuals were executed. In addition, discussions on the procedures for operating the new terminal smoothly were conducted with stakeholders' participation. Therefore, it is fair to say that Project Purpose 1, which aimed to strengthen port management and operation capacity, was mostly achieved. Regarding Project Purpose 2, because the function of regional ports has stopped due to security issues, the extent of the project's effects cannot be determined. However, efforts were made to improve the capacity of the personnel of four out of the six main ports and state government officials were implemented, and it is assumed that technical transfer through day-to-day work was done because the personnel of the regional ports were evacuated to Juba. Thus, both Project Purposes 1 and 2 were mostly achieved.

Table 4: Achievement of the Project Purposes at the Time of Project Completion

| Indicator | Achievement |
|---|--|
| Indicator 1: Efficient operation of the new facility of Juba River Port is examined. | <p><u>Mostly achieved because the procedures to operate the new terminal smoothly were examined.</u></p> <ul style="list-style-type: none"> Stakeholder meetings and seminars were held to have port administrators and stakeholders exchange opinions and information on the use and problems of the Juba River Port and examine how to operate the existing facilities and the new terminal smoothly. |
| Indicator 2: Capacities of staff at the ports in South Sudan are strengthened. | <p><u>It is assumed that the capabilities of personnel at other ports had improved to a certain extent.</u></p> <p>The experience of the Juba River Port was shared with the Malakal, Shanbey, Mangala, and Renk port personnel through the training for Output 7. However, the extent of improvement in the personnel’s capacity cannot be measured because the operation of local ports stopped almost completely.</p> |

Source: Project Completion Report

* As PDM Version 2’s indicators were used in the terminal evaluation, the achievement status was reconfirmed by applying the indicators in the final version (Version 3).

3.2.2 Impacts

3.2.2.1 Achievement of the Overall Goal

The project's Overall Goal was to facilitate inland water transport in South Sudan and enhance its capacity. The achievement of the Overall Goal was to be confirmed by the extent of an increase in the country's domestic cargo volume, and improvement in both cargo handling efficiency and service level. Table 5 presents the results on the Overall Goal's indicators. It was impossible to confirm the achievement status of any indicator. Given the situation of South Sudan, a conflict-affected country, the possibility of verifying the achievement status through alternative indicator was considered. However, it was not possible to set appropriate indicators for the project and matching the scale envisaged at the time of project planning. As a result, it was impossible to confirm the achievement level of the Overall Goal.

Table 5: Achievement of the Overall Goal at the Time of the Ex-Post Evaluation

| Indicator | Achievement at the time of the ex-post evaluation |
|---|---|
| Indicator 1: Cargo handling capacities and performances at the ports in South Sudan are enhanced. | After the conflicts in 2013 and 2016, operations at all the ports except Juba have been suspended. Since the independence, cargo volume has been almost zero because of the border closure between Sudan and South Sudan. Some humanitarian relief items are loaded at the Juba River Port, but there is no JRPA engagement. It is impossible to measure the changes in cargo handling performance because the cargo handling volume has decreased drastically. |
| Indicator 2: The service level of the ports in South Sudan is improved. | After the conflicts, facilities in most ports in South Sudan have been inoperable. The port personnel have been evacuated to Juba, and no personnel have been assigned to local ports. Therefore, it is impossible to assess whether the service level improved by using the operating procedures of the Juba River Port shared by the project. |

(1) Indicator 1: Enhancement of cargo handling capacities and performances at the ports in South Sudan

1) Changes in Cargo Volume

After the two conflicts in 2013 and 2016, operations at all the regional ports except Juba were suspended. Table 6 indicates the changes in the cargo handling volume at the Juba River Port until the time of the ex-post evaluation. The commissioned logistic companies transported the relief items of the World Food Programme (WFP). The shallow waters around Juba in the White Nile route make it difficult for barges to pass through. Thus, transportation to the Juba River Port has been continued by taking measures such as transferring cargo to small boats at other ports or reducing cargo and raising the barge's waterline.

Although the cargo volume increased significantly in 2018, it was relief items to support the victims of the floods that occurred in the central and northern parts of South Sudan. At the time of the ex-post evaluation, the number of internally displaced people is still significant, and the transportation of relief items through inland waterways is expected to continue. Recently, relief items have been sent directly to the hardest-hit areas without going through Juba.

WFP's relief items have been unloaded by a logistics companies entrusted with cranes. Thus,

there has been no unloading work by JRPA. Moreover, as humanitarian relief items are exempt from port tariffs, no tariff collection work has been conducted by JRPA, and no revenue has been generated.

Table 6: Changes in Cargo Handling Volume at the Juba River Port

| Year | Relief items by WFP | | Boat transport by the private sector | |
|------|---------------------|----------------------|--------------------------------------|-----------------------|
| | Food items (MT) | Non-food items (CBM) | Fish and fish products (MT) | Food items, etc. (MT) |
| 2016 | 900 | N.A | 15 | 3 |
| 2017 | 1,215 | 1,559 | 19 | 7 |
| 2018 | 504,315 | 1,019 | 25 | 10 |
| 2019 | 23,185 | N/A | 35 | 6 |
| 2020 | 12,647 | 1,857 | 20 | 10.6 |
| 2021 | 12,317 | N/A | N/A | N/A |

Source: JRPA's response to the questionnaire

* MT = metric ton, CBM = cubic meter

Before the independence, the cargo volume by private barges sailing between Sudan and South Sudan averaged 75,000 MT annually. Around the time of the independence in July 2011, the border was closed because of the tensions between the two countries, and the cargo volume significantly decreased. Since then, the relations between the two countries have improved. At the time of the ex-post evaluation, there were moves such as discussions between the two countries at the political level regarding lifting the border closure.¹²

Since the 2013 and 2016 conflicts, more illegal checkpoints have been set up along the shipping lanes, and tolls have been collected, affecting the cargo volume changes.

2) Cargo Handling Efficiency

Regarding the cargo handling efficiency at the Juba River Port, the only ongoing unloading has been the WFP humanitarian relief items. Logistic companies contracted with WFP have been dealing with the items and are entrusted with cranes. Therefore, there is no JRPA cargo handling. As a result, at the time of the ex-post evaluation in July 2022, JRPA decided to outsource cargo handling operations. If JRPA continued its cargo handling operation, machine maintenance and management costs and labor costs would be incurred, which is not cost-effective given the small cargo volume.

(2) Indicator 2: The service level of the ports in South Sudan is improved.

The conflicts in 2013 and 2016 prevented the operations of many regional port facilities in South Sudan. Port personnel have been evacuated to Juba and are expected to be deployed to each port when security is restored. Even at the time of the ex-post evaluation, as personnel had not

¹² There are moves toward resuming the ports' operation, including talks between the South Sudanese and Sudanese governments and an agreement by the South Sudanese president to restore economic relations. Sudan Tribune, June 7, 2022 (<https://sudantribune.com/article259941/>)

been assigned to the regional ports, it was impossible to confirm whether their service had improved by using the port operation procedures of the Juba River Port shared by the project.

Furthermore, in the evaluation team's interviews with private barge ship companies on the status of service provision at the Juba River Port, the companies answered that they did not know if there had been any change in the service provision status due to the capacity enhancement by the project. The companies, the service users, expected improvement in the ports' infrastructure through the "Project for Improvement of Juba River Port" rather than any improvement in the ports' services by capacity building.



Dried fish unloaded at the port (left), sacks of salt being transported by a small boat (right)
Photos taken at the shipyard on a tributary of the White Nile River

3.2.2.2 Emergence of Project Effects after the Completion of the Project

Table 7 shows the emergence of the project effects from the project's completion to the ex-post evaluation. Even at the time of the ex-post evaluation (June 2022), it was unclear when the Juba River Port expansion construction by grant aid project would take place. Moreover, the cargo volume, which saw a sharp drop due to the tensions between Sudan and South Sudan, has not recovered. Furthermore, owing to the conflict in 2016, regional ports have suspended their operation. As a result, it was impossible to achieve Output 4 related to cargo handling at the Juba port. Outputs 1, 2, 3, 5, and 6 continued only as much as possible within the constraints above. At the time of the ex-post evaluation, evacuation of the regional port personnel was continuing. As they have been engaging in day-to-day work with the JRPA personnel at the Juba River Port, sharing experiences related to Output 7 has been taking place.

Table 7: Emergence of Project Effects at the Time of the Ex-Post Evaluation

| |
|--|
| <p>Output 1: Roles and responsibilities of JRPA are established and executed properly.</p> <ul style="list-style-type: none"> ➤ Although the bill prepared for this project was submitted, the approval of the Ministry of Justice and the National Legislature has been delayed. ➤ The project developed a manual to define the roles and responsibilities of JRPA. It has been applied in the operation of the existing facilities. ➤ Information dissemination through the media (South Sudan national television, newspapers, South Sudan Cooperation Radio, and international broadcasts) has been continuing. |
| <p>Output 2: Budget and accounting system of JRPA are established.</p> <ul style="list-style-type: none"> ➤ JRPA has been preparing and requesting budgets. However, the JRPA budget and accounting system has not operated continuously because no budget was allocated. ➤ The draft bill on tariff and lease was prepared but not implemented. A provision was enacted so that all the collected tariffs would be incorporated into national revenues but would not be allocated to the cost of maintaining the ports. |
| <p>Output 3: Facilities of Juba port are properly maintained and managed.</p> <ul style="list-style-type: none"> ➤ Surveying has not been implemented because the surveying equipment has not been handed over to JRPA. Only depth measurement and recording have been done using a stick with the depths painted on it. ➤ Although there was a ledger of facilities and equipment, it was not updated since 2016. The staff member in charge of the ledger died of COVID-19, but it has not been handed over to any staff member, so nobody knows where it is. As a result, the ledger must be recreated. |
| <p>Output 4: Cargos are handled safely and efficiently at Juba port.</p> <ul style="list-style-type: none"> ➤ No cargo handling has been implemented by JRPA. The reason is that the Juba River Port has not been renovated by the grant aid project, so the port has not had necessary equipment items in place, such as cranes. The original cargo handling equipment was transferred to the Mangala port in preparation for the construction by the grant aid project. ➤ The number of large barges has decreased sharply, and there was almost no cargo handling at the Juba River Port. There were some humanitarian relief items and UNMISS cargo, but each logistics contractor has been hiring cranes and porters. ➤ It was decided that until the completion of the construction by the grant aid project, JRPA outsource the cargo handling work to external contractors (two South Sudanese companies) for cost-effectiveness and efficiency. |
| <p>Output 5: Juba port is managed and operated safely, securely, and environmentally friendly.</p> <ul style="list-style-type: none"> ➤ No regulations have been approved for port management services, including proposed regulations on suppliers of port-related services. Therefore, the draft regulations produced by the project have been applied to the current port-related services. The Risk Management Department has been responsible for security planning and risk management (such as fires and oil spills). Because of delays in approval, the rules and regulations of the Ministry of Transport have been applied. |
| <p>Output 6: Statistical data of Juba port are collected, maintained and utilized.</p> <ul style="list-style-type: none"> ➤ The JRPA statistics department has been collecting data on loading and unloading, and recording and updating them regularly. The department personnel gained skills in data collection and management. Because the number of available PCs has been limited, data have been recorded on paper. Analysis and use of data have not been achieved. |
| <p>Output 7: Knowledge and experiences accumulated at Juba port are shared among other port staff in South Sudan.</p> <ul style="list-style-type: none"> ➤ Owing to security issues, personnel of major ports other than Juba continue to be evacuated to Juba. Although it is being considered, it has not been possible to assign personnel to the regional ports. ➤ The personnel of other regional ports have been working daily in Juba River Port. Therefore, the experiences at the Juba port have been shared among other staff of the regional ports. |

Source: C/Ps' responses to the questionnaire and interviews in the field survey

3.2.2.3 Other Positive and Negative Impacts

(1) Impact on the Natural Environment

No negative impact on the natural environment by the project has been observed. Measures to prevent negative impacts on the environment, such as measures for preventing fuel spills, ship inspection, and fire prevention, were taken. Moreover, the Ministry of Transport has been calling for the stakeholders to participate in cleaning up the existing port.

(2) Resettlement and Land Acquisition

There was no land acquisition or resettlement because the project was for capacity building related to the operation and maintenance of port facilities.

(3) Gender Equality

None.

(4) Marginalized People

None.

(5) Social Systems and Norms, Human Well-Being, and Human Rights

The project was expected to establish a basis for efficient inland water transportation, enabling mass transportation and the economic effects of lowering commodity prices. However, in reality, after the conflicts of 2013 and 2016, illegal checkpoints that collect tolls continue to increase and they have become the cause of raising transport costs and, in turn, the higher commodity prices that reflect those transport costs. The increase in illegal checkpoints has been hindering the recovery of security and cargo volume. It was also one of the reasons why the project's impacts did not materialize as expected.

(6) Other Positive and Negative Impacts

At the time of the ex-ante evaluation, as a negative impact, there were concerns about the loss of employment opportunities for porters with mechanization. It was avoided because JRPA decided to outsource cargo handling at the time of the ex-post evaluation and then it was also decided that the contractors would employ the porters and provide them with safety management and insurance.

As for other positive impacts, the project helped South Sudanese government officials raise their sense of mission and take ownership of their work. It also had the effect of raising the Ministry of Transport's awareness of the importance of policy development and helping the ministry start drafting policies on transportation and river ports.

By the time of the project's completion, an operation and management manual including items corresponding to the existing facilities and the new terminal was prepared, and all activities related to the manual were put into practice through OJT and third-country training. Of the six main regional ports except Juba, the capacity building of port personnel of four ports and state government officials was implemented. Owing to security issues, the personnel of regional ports have been evacuating to Juba, and knowledge and experiences at the Juba River Port were shared with them through day-to-day work. Therefore, it is fair to say that the Project Purposes were mostly achieved. On the other hand, many of the external conditions worsened considerably, such as the deterioration of the security situation, and the drastic decrease in cargo due to the closure of the border between Sudan and South Sudan. Moreover, the prerequisites of the project were not met owing to significant delays in port facility development by the grant aid project and the uncertainty of port personnel deployment to regional ports. As the project was implemented under such circumstances, it was not possible to assess the achievement of the Overall Goal. Moreover, it is impossible to identify alternative indicators equivalent to the level of the original plan.

In light of the above, the project's sub-rating for effectiveness and impacts cannot be determined.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Table 8 presents the planned and actual inputs of the project.

Table 8: Comparison of Planned and Actual Inputs

| | Plan (at the time of ex-ante evaluation) | Actual (at the time of project completion) |
|----------------------------------|--|---|
| Dispatch of Experts | Short-Term: 11 people (120 MM) | Short-Term: 19 people (105 MM) |
| Trainees Received | Training in Japan, training in a third country | Training in Japan: 12 people; Training in a third country: 30 people (Kenya: 19; Cambodia: 4; and Sudan: 7) |
| Local Operation Cost | 20 million yen | 36 million yen |
| Japanese Side Total Project Cost | 631 million yen | 537 million yen |

Source: materials provided by JICA

* MM stands for man month.

3.3.1.1 Elements of Inputs

(1) Dispatch of Experts

Against the plan of dispatching 11 short-term experts (120 MM in total), 19 were actually dispatched (105 MM in total, 88% to the plan). The whole dispatch period was shorter than the plan. The reason for the decrease was that the conflict that occurred in December 2013 prevented

experts from traveling to South Sudan for five months, and the activities that were planned to be implemented during that time were substituted for the development of manuals in Japan. Although the number of experts has increased from 11 to 19, multiple experts were taking part in the same field (Table 9). Because the project was a technical cooperation one to strengthen the C/P organization by forming its basis, JICA proposed increasing the number of experts not to create a vacuum period. The project was able to support the C/P organizations in a relay-like fashion by minimizing the absence period of experts.

Table 9: Changes in Experts' Fields

| Plan | Actual |
|--|--|
| (1) Port Laws and Regulations, (2) Chief Advisor/ Port Policy, (3) Port Administration, (4) Accounting System, (5) Port Management, (6) Port Statistics, (7) Cargo Handling, (8) Security and Safety Management, (9) Operation and Maintenance of Port Facilities, (10) Operation and Maintenance of Port Equipment, (11) Project Coordination/ Junior Port Management | (1) Team Leader/ Port Policy, (2) Assistant Leader/ Port Administration, (3) Port Administration/ Public Relations, (4) Port Management, (5) Port Accounting System / Port Statistics, (6) Port Operation, (7) Port Safety Management, (8) Port Safety Management / Port Security / Port Operation, (9) Facility Maintenance (Infrastructure) / Training Planning / Project Administration, (10) Facility Maintenance (Equipment), (11) Project Administration / Port Management Assistant / Training Planning |

Source: materials provided by JICA

3.3.1.2 Project Cost

Regarding the project cost, as opposed to the planned amount of 631 million yen, the actual amount of 537 million yen (85% of the planned amount) was within the plan. The actual cost was less than planned because the experts had to evacuate from South Sudan owing to the conflict, and the travel expenses during that period were reduced. It can be said that the outputs were at the same level as planned because manuals were prepared in Japan instead of the activities planned. Regarding the addition of public relations activities requested by the C/Ps, there was almost no cost increase because other experts covered the activities.

3.3.1.3 Project Period

The actual project implementation period was from October 2011 to August 2015 (4 years and 6 months), while the planned period was from March 2011 to February 2015 (4 years). Owing to the conflict in December 2013, the experts were evacuated, and the activities were suspended for 5 months (January to May 2014). Excluding this period, the project period was 4 years and 1 month (102% of the plan), slightly longer than planned.

Although the project period slightly exceeded the plan, the project cost was within the plan. Therefore, the efficiency of the project is high.

3.4 Sustainability (Rating: ①)

3.4.1 Policy and System

South Sudan's development policy at the time of the ex-post evaluation, the *South Sudan National Development Strategy 2018–2021*, held the objective of “Consolidate Peace and Stabilize the Economy” and aimed at “people’s safety, stable price, and provision of basic services.” Priority issues were set for each of the four clusters (governance, economy, social services, and cross-cutting); the social services cluster included “improvement and expansion of social infrastructure.” Since inland water transport was a social infrastructure that contributed to improving the lives of the people of South Sudan, its construction and maintenance were included in the priority issues of the national development plan. Therefore, there are no issues with the sustainability in the aspect of policy and systems.

3.4.2 Institutional/Organizational Aspect

The implementing agencies, Ministry of Transport, the Central Equatoria State Ministry of Roads and Bridges (CE MoRB), and JRPA have developed their organization charts, so the division of roles and the chain of command are clear. At the time of the ex-post evaluation, the number of large barges calling at ports and the cargo volume had not recovered and there was almost no practical work; thus, there was no shortage of personnel in each organization. However, once the port facilities are completed with grant aid project, the number of personnel must be increased to operate and manage them.

At the time of the ex-post evaluation, JRPA, which is responsible for the operation and management of the Juba River Port, had been jointly operated by 12 staff members of the Ministry of Transport and 10 staff members from CE MoRB. Owing to the small amount of cargo, no operator for cargo handling equipment was placed; it is planned to outsource the task to an external contractor for cost-effectiveness.

At the time of the ex-post evaluation, the functions of the Juba River Port were divided into two: one at the existing Juba River Port located in the mainstream of the White Nile River, and the other at the shipyard in the tributary. In addition to the existing facilities, the shipyard has been used since May 2016 when the contract for the grant aid project, “Project for Juba River Port Improvement Project,” was renewed. The functions of the Juba River Port were moved in preparation for the construction. The JRPA office and stakeholders such as the National Boats Union, the Porter Union, ship repair companies, and many vendors also moved to the shipyard. Once the grant aid project's construction of the port facilities is completed, the functions are expected to be integrated into the new facilities at the Juba River Port. However, the functions have been divided as the grant aid project has been suspended.

Since the ex-ante evaluation, the Ministry of Transport and CE MoRB have jointly managed the Juba River Port. However, both ministries have been claiming ownership of the port. The

argument was still going on at the time of the ex-post evaluation.

No issue was observed regarding the organizational structure and number of personnel of the implementing agencies for the existing Juba River Port. However, it is necessary to resolve the differences in recognition of the ownership of the Juba River Port and the division of port functions between the Juba River Port and the shipyard.

3.4.3 Technical Aspect

After the completion of the project, each implementing agency had few opportunities to update the technical level regarding maintenance and management of port facilities, and technical transfer among personnel had depended mainly on OJT. No mechanism was established for regular and systematic technical transfer. Moreover, the manuals developed by the project have not been updated. At the time of the ex-post evaluation, a self-evaluation of JPRA's technical levels was conducted. According to the results of the self-evaluation, the individuals' technical level was maintained at the time of the ex-post evaluation while the level as the organization declined because the opportunities to use the acquired skills were limited.¹³

There was no outflow of C/Ps for the project because transfers were limited to related departments. However, seven years have passed since the completion of the project, four of the C/Ps have died, and the senior engineers are approaching their retirement age. A mechanism to transfer skills within the organization must be formed immediately. The senior engineers were trained during the pre-independence period in Sudan and have experience in port management, repair, and maintenance of port facilities, such as diving and underwater work.

Regarding the technical aspect, it seems that the individual technical skills that the project has strengthened have been maintained. However, some issues are observed in ensuring sustainability because there is no mechanism for updating or transferring technical in organizations.

3.4.4 Financial Aspect

As shown by the changes in the annual budget up to the time of the ex-post evaluation (Table 10), the national budget has fluctuated yearly. Therefore, it is hard to say that stable financial resources are secured for conducting port facility operations and management systematically.

Looking at the budget and execution amount of the Ministry of Transport (Table 11), the execution rate was low at 51% for 2019–2020 and 21% for 2020–2021. It is uncertain whether there is an actual allocation for the budget. JRPA submits a budget request for maintenance and management work every year. Nevertheless, only the staff salaries and fuel costs have been allocated, and the cost of maintaining the port facilities was not included. Moreover, although the

¹³ According to the respondents, regarding the skill level regarding Outputs 1 through 6, the average score of JRPA as an organization was 2 on a 5-point scale. On the other hand, the average score of the individual skill level was 4.

project formulated a draft bill on tariffs for port use, the port tariffs have been collected by the national treasury owing to an announcement by the national government; thus, the tariffs will not be allocated to the port operation management cost. In South Sudan, the budget is allocated in order of priority. Therefore, once the grant aid project starts, there is a possibility that it might get prioritized and the budget might be allocated. However, even at the time of the ex-post evaluation, the outlook for its start is unknown.

Based on the above, there are significant concerns on financial sustainability.

Table 10: Changes in the Annual Budget Unit: million U.S. dollars

| | 2015–2016 | 2016–2017 | 2017–2018 | 2018–2019 | 2019–2020 | 2020–2021 |
|------------------------------------|--------------|---------------|---------------|------------|--------------|--------------|
| South Sudan National Budget | 1,240 | 54,000 | 53,843 | 526 | 1,343 | N/A |
| CE MoRB | N/A | N/A | N/A | N/A | N/A | 144.8 |

Source: Report on the Implementation Review Study on the Project for Construction of the Bridges in Juba (December 2021)

Table 11: Budget and Execution Amount of Ministry of Transport

unit: million South Sudanese pounds

| | 2019–2020 | | 2020–2021 | | 2021–2021 |
|--------------------------------------|--------------|-----------------------------------|--------------|-----------------------------------|--------------|
| | Budget | Actual | Budget | Actual | Budget |
| Ministry of Transport | 1,653 | 839 (51% to the budget) | 1,206 | 252 (21% to the budget) | 1,779 |
| Of Inland Water Transport Department | N/A | N/A | 2.9 | N/A | 5.7 |

Source: Draft Budget Book Ministry of Finance and Planning

3.4.5 Environmental and Social Aspect

At the time of the ex-ante evaluation, illegal dumping into the Port of Juba was confirmed, and it was suggested to implement awareness-raising activities targeted not only the port personnel but also the residents of the port area to improve the environment. During the project's implementation, fences were constructed around the Juba River Port to restrict the entry of residents around the area. Awareness-raising activities were not implemented, but the problem of illegal dumping was solved because of the entry restriction. At the time of the ex-post evaluation, the Ministry of Transport was calling for cleaning activities every week, and the port has been kept in good condition. Therefore, the sustainability in social and environmental aspect is expected to hold.

3.4.6 Preventative Measures to Risk

At the time of the ex-ante evaluation, an independence referendum was scheduled, and there was a risk that the political situation could hinder the movement of goods and people. Therefore, the project was to be conducted while paying close attention to the situation. The border between Sudan and South Sudan was closed around the time of independence in July 2011. Even at the

time of the ex-post evaluation, river cargo transport between Sudan and South Sudan remains stagnant. At the time of the ex-post evaluation, dialogues between Sudan and South Sudan at the political level are underway, and there are good prospects for the situation to improve.¹⁴

In addition, although it was not assumed to be a risk at the time of the ex-ante evaluation, many illegal checkpoints have been set up in South Sudan on both land and waterways. They are a factor in hindering smooth and safe traffic. Illegal checkpoints collect tolls, which inevitably add to the retail prices of goods transported and negatively affect people's lives with a decrease in goods distribution and soaring prices. In response, the National Boats Union and JRPA petitioned the Vice President to address this issue. Moreover, the Ministry of Transport proposed to hold a meeting with UNMISS and WFP, which uses barges to transport humanitarian aid, and security agencies. Despite the efforts described above, prospects for solving the risk are dim.

Moreover, at the time of the ex-ante evaluation, the need for spot dredging work was pointed out, but it was not implemented until the ex-post evaluation. A survey conducted in 2018¹⁵ pointed out that the riverbed on the section between Bor and Juba, a part of the White Nile route that cuts through South Sudan, had sediment, making it difficult for barges to pass. According to interviews with the logistic companies that transports humanitarian relief supplies, when they travel to the shallow area owing to sediment accumulation, they have been taking countermeasures such as reloading the cargo onto smaller boats, reducing barge loading to raise the waterline, and shortening the operation section to Bor. Occasionally, they switch to land transportation. However, additional labor and costs have been incurred. At the time of the ex-post evaluation, there was almost no barge transport other than humanitarian aid supplies. Nonetheless, once relations between Sudan and South Sudan are restored, and barge operations are to be resumed, cargo volume is expected to increase significantly. It is ideal to conduct dredging work on the section before barge operations are restored. However, as was the case at the time of the ex-ante evaluation, there is no prospect of securing the budget for the spot dredging. Appeals to donors are a way to ensure funding for it.

As mentioned above, the sustainability in policy and systems and social and environmental aspects has been ensured. However, there are serious concerns because there are major issues with financial aspect, and many issues are found with the institutional/organizational and technical aspects, and risks.

Therefore, the sustainability of the project effects is low.

¹⁴ Kiir lauds South Sudan-Sudan border reopening, Sudan Tribune, June 7, 2022
<https://sudantribune.com/article259941/>

¹⁵ Report on River Barge System Feasibility Study Project, South Sudan, UNOPS, March 2018

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

This project was to strengthen the capacity for operation and management of the Juba River Port by establishing the foundation for the JRPA, the maintenance and operation of port facilities, safe and efficient cargo handling and port management, and the compilation of statistics. It also aimed to help facilitate inland water transportation and enhanced the transportation capacity of South Sudan by sharing the knowledge and the learnings at the Juba River Port with personnel of major ports other than Juba.

The consistency of the project with South Sudan's development plan and needs, and Japan's assistant policy for South Sudan is high. External coherence was achieved through cooperation with the JSDF dispatched to the UNMISS. Regarding internal coherence, with a significant delay in port facility development through the JICA's grant aid project, expected synergistic effects did not materialize. As for the project plan and approach, there were some problems in setting indicators of the Project Purposes and changing the Overall Goal and project plans. Therefore, the project's relevance and coherence are moderately low.

Regarding effectiveness, the two project purposes were mostly achieved at the time of project completion. Among the two purposes, as for Project Purpose 1, which is to strengthen operation and management capability the operation procedures were developed and put into practice through OJT and third country training programs. As for Project Purpose 2, which is to continuously share the knowhow on the port management system established at the Juba River Port with other ports in South Sudan, although the functions of regional ports were suspended owing to security issues, training for strengthening the capacity of the personnel of four ports among the six major domestic ones was implemented. In addition, the knowhow was shared with the personnel evacuated to Juba through day-to-day work at the Juba River Port. The Overall Goal, which is to facilitate transportation and enhance the transportation capacity of river ports in South Sudan, was expected to be achieved by enhancing cargo handling efficiency, increasing cargo volumes, and improving services at regional ports. However, it was impossible to identify an impact of this project alone in achieving the Overall Goal because such achievement was to be derived from the development of infrastructure. Moreover, many external factors worsened considerably, such as the deterioration of the security situation in South Sudan and a drastic decrease in cargo due to the border closure between Sudan and South Sudan. The project's prerequisites were not met owing to delays in the development of port facilities through the JICA's grant aid project and staff deployment to regional ports. Thus, it was not possible to confirm the achievement status of the Overall Goal and identify an alternative indicator to measure the impacts at the level expected at the time of planning. No particular negative impacts on the natural environment due to this project has been observed. Requests for preventive measures against such accidents as fires and fuel spills were made to relevant stakeholders, and

the Juba River Port was regularly cleaned. Neither land acquisition nor resettlement occurred. Based on the above, it is impossible to determine the sub-rating for the project's effectiveness and the impacts.

Efficiency is high because the project cost was within the plan, although the project period slightly exceeded the plan.

Regarding sustainability, the policy and system aspect has been secured. However, significant problems were observed in the financial aspect owing to chronic government budget shortfalls. Many issues were also found in the institutional/organizational and technical aspect. In the environmental and social aspect, waste dumping, a concern at the time of project planning, was resolved by constructing fences. However, regarding preventive measures to risks, there are a need for spot dredging, and other issues to be addressed such as delays in the recovery of logistics due to ongoing border closures between Sudan and South Sudan, and the collection of tolls at illegal checkpoints. As mentioned above, there are serious concerns, so the sustainability of the project effects is low.

In light of the above, it is impossible to determine the sub-rating for the project's effectiveness and impacts, which are essential evaluation criteria for overall rating. Therefore, the overall rating of the project is indeterminable.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Large barges cannot pass through the waterway around Juba owing to sediment accumulation on the riverbed. At the time of the ex-post evaluation, almost no barge traffic was seen because of the border closure between South Sudan and Sudan. However, before the cargo volume increases and the barge ships resume operation, spot dredging on the section between Bor and Juba must be conducted. The implementing agencies should continue their efforts to secure the budget within the organization and start asking donors for necessary funds.

At the time of the ex-post evaluation, many illegal checkpoints have been set up along the White Nile route. Tolls are collected at these checkpoints, which are detrimental to the safety and efficiency of river transportation, hinder the distribution of materials, and cause soaring prices of goods. As a countermeasure, the first step would be to petition politicians to take action. It is desirable that the Ministry of Transport organize a forum inviting UNMISS, WFP, which is the shipper of relief supplies, and security-related organizations such as the port police to discuss ways to secure the safety of the shipping route and countermeasures for checkpoints as soon as possible.

4.2.2 Recommendations to JICA

After the completion of the project, the implementing agencies were supposed to monitor the continuation of activities and report to JICA what they find on a quarterly basis, but this task was discontinued at some point. At the time of the ex-post evaluation, the prospects for constructing facilities at the Juba River Port under the grant aid project are unclear. Nonetheless, it is desirable to resume and continue monitoring to maintain the capacity of the personnel of the implementing agencies. On the other hand, from the perspective of the implementing agencies, the postponements of the construction by the grand aid project could lead to disappointment in Japan and JICA and loss of motivation for nation-building.

When the grant aid cooperation is resumed, it is desirable to consider cooperation such as training opportunities related to port operation and facility maintenance. As seven years have passed since the completion of the project, the implementing agencies have indicated a high need for refresher training, which is believed to contribute to the establishment and sustainability of the project's effects.

At the time of the ex-post evaluation, four C/Ps have passed away, and the older C/Ps are approaching retirement age. Senior engineers have been trained during the Sudanese time and have skills related to the maintenance and management of port facilities, such as diving and underwater work, and port management. It is also necessary to promote technical transfer from these personnel to the younger generation and prepare for the maintenance of port facilities which may be developed through grant aid project in the future.

4.3 Lessons Learned

When developing a project plan, if there are uncertainties, set attainable plans and goals first, then add activities when preconditions are in place.

At the time of project planning, JICA faced many uncertainties such as the system and finances, the relationship between the national and state governments, and public order in a project in a conflict-affected emerging country. However, the project plan was formulated on the assumption that these issues would be resolved during the project's implementation. For example, six main ports other than Juba were targeted in the logic leading from activities to the Overall Goal. Except for the Malakal port, operation by the government had not started, and no specific staffing arrangements had been made. In addition, owing to the closure of the border between Sudan and South Sudan, the distribution of goods was reduced to almost zero, and cargo handling, which was the original purpose of the port, was hardly performed. If the conditions essential for project implementation and the realization of effects are not in place, or if the prospects for them being met are uncertain, the outputs and the Project Purposes that require those conditions should be added at the later stage when the conditions are actually in place to make the project plan feasible. Moreover, it may be worthwhile to consider an alternative plan in anticipation of the project's

preconditions not being fulfilled.

For the terminal evaluation, use a PDM that reflects realities of the project. If it is not possible to hold a JCC, consider using a draft or un-signed version of the PDM.

Owing to the conflict during the project's implementation, travel restrictions were imposed on experts, and the project's content had to be changed significantly. However, the PDM, which was the basis of the project plan, was not changed because the JCC could not be held. Although the experts drafted the revised PDM (Version 4), PDM Version 3 was applied for the terminal evaluation. It was difficult to hold discussions with C/Ps and obtain signatures because of travel restrictions and communication in distance, but the Japanese side (JICA and experts) alone could have considered the draft, and it would have been important to keep its own records. It might have been worth considering using a draft or unsigned version for project management purposes such as evaluation.

For a capacity-building project to strengthen personnel for operation and management of infrastructure, clarification of roles and raising awareness of ownership as well as cooperative relationships with stakeholders involved in operation and management, are effective in vitalizing activities and promoting sustainability.

With the border closures between Sudan and South Sudan, suspension of the operation of regional ports due to deteriorating security, and illegal checkpoints on the White Nile route, smooth operation of waterway transportation and safety have been hindered. In addition, the project to expand the Juba River Port through grant aid project, a prerequisite for this project, has been suspended. Although many of the premises and external conditions were either not met or deteriorated considerably, the good practices below kept the project's activities going at a certain level at the time of the ex-post evaluation.

(1) Clarification of C/Ps' roles and raising their sense of ownership: The project established the task forces to make the C/Ps' roles clear and held opportunities for OJT by their expertise field. This helped establish the awareness of responsibility and ownership as administrators and show concrete tasks to the person responsible. Moreover, although it was not included in the original project plan, C/Ps were able to identify the formulation of policies related to river transport as the most critical issue and involved a legal advisor from the Ministry of Justice and the ministry itself in forming such policies.

(2) Activities involving stakeholders: Technical transfer activities included not only the implementing agencies but also stakeholders on port operation and management. This contributed to smooth execution of the technical transfer and increased interest in river ports and implementing agencies. Stakeholder meetings (13 times in total; including such parties as shipping companies, the Porters Union, and the Truck Drivers Union) were held as a forum for

exchanging opinions between the implementing agencies and port users. It created a sense of commitment and an excellent cooperative relationship among the stakeholders. Furthermore, it was used for discussions to consider smooth operation of the new port.

5. Non-Score Criteria

5.1. Performance

5.1.1 Objective Perspective

See section 3.1.1.3 Appropriateness of the Project Plan and Approach, (1) Appropriateness of the Project Scope, 1) Project in Conflict-Affected Country.

5.1.2 Subjective perspectives (Look-back)

Clarification C/Ps' roles and raising their sense of ownership

Government officials in South Sudan, an emerging country that had just become independent from Sudan, lacked mid-level and field-level human resources. The director-general class had to make direct judgments on details of all the projects. The project intended to focus on developing mid-level and field-level staff. However, it had to start with clarifying overall port administration schemes and establishing a system for each organization and collaboration among them. The Japanese experts tried various measures to have the central government and state governments, which had never worked together, sit at the same table and cooperate to create a mechanism for port administration.

For example, at the first JCC, three task forces (TFs) were established for each activity area. Moreover, four working groups were formed under TF-3, which covers all the field-related activities, and had a wide variety of responsibilities. The groups became the platform for the project within the implementing agencies. Since the groups were subdivided for each activity, the members clearly understood their roles in their work and the organization's goals. Moreover, they led to agreements among the departments related to the activities and the discovery of additional C/Ps.

Although it was not included in the original project plan, with the cooperation of the relevant departments of the Ministry of Justice, the project was able to start drafting bills on transportation and river port policies, which were a priority of the Ministry of Transport.

For the JRPA personnel, who almost lost their day-to-day work due to delays in the construction of a new terminal with the grant aid project, and a drastic decrease in cargo due to the closure of the Sudan-South Sudan border, the working groups served as a place where they could participate in port management and operation and maintain the awareness of their work and motivation. As a result, this initiative contributed to the entire JRPA, the creation of administrative systems, and changes in the awareness of administrative officials.

Efforts to Involve Stakeholders Related to Port Operation and Management

At the beginning of the project, the C/P agencies were aware that JRPA was the organization in charge of the operation and management of the ports and had no intention of cooperating with other stakeholders. Japanese experts organized seminars and workshops involving stakeholders such as barge ship logistic companies and boat owners that use the ports, as well as shipbuilding companies, porters, truck logistics, port police, and fire departments responsible for safety management. The occasions were also used as a forum for collecting and sharing their opinions and a place to think of solutions to the problems facing them. At first, the participation rate was low because the parties did not understand the importance of the seminars and workshops. Gradually, a sense of working together at the existing port began to emerge, and JRPA and the stakeholders were able to consider the operation of the new port together.

Even after the project's completion, good relations with the stakeholders are lasting. A C/P of the project became the director of the River Traffic Department of the Ministry of Transport and has demonstrated leadership to involve stakeholders such as the National Boats Union, the Porters Union, and shipbuilders. Close working relations with stakeholders have been established. For example, the cooperation includes thorough cleaning of the port every Friday, disseminating safety management practices of boats, the submission of cargo manifests, procedures for permits to enter and leave the port, and the issuance of boat registrations and licenses.

5.2 Additionality

None.

End