The Democratic Republic of Timor-Leste

FY2022 Ex-Post Evaluation Report of Japanese Grant Aid Project

"The Project for Urgent Relocation of Ferry Terminal in Dili Port"

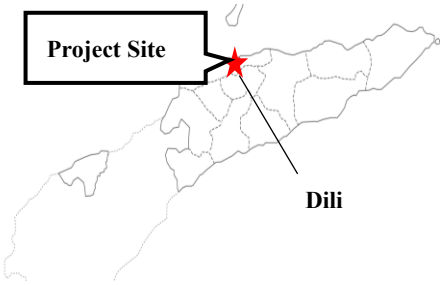
External Evaluator: Toshihisa Iida, OPMAC Corporation

0. Summary

This project was conducted to meet the increasing demand for passenger and cargo transportation and ensure their safe and efficient operation by promoting the separation of cargo and passengers at the international port in the capital city of Dili through the relocation and expansion of the existing ferry terminal, thereby contributing to the improvement of access to the enclave and remote islands, and the promotion of economic activities through the expansion of maritime transport. The project was fully in line with the country's development policy and development needs. The project was fully consistent with Japan's aid policy. While the project was linked to other JICA projects and technical assistances from other donors, the results of these links were not fully confirmed. Thus, the relevance and consistency of the project was high. While the project period exceeded the plan due to design changes during project implementation, the project cost was kept within the plan. Thus, the efficiency of the project is high. The targets for ferry berthing time and the annual number of ferry passengers, which were the operation and effect indicators, were both achieved, and a certain contribution to an increase in the number of ferry operations and efficient operation in handling containerized cargo and so on was confirmed. Through on-site interviews, qualitative effects were recognized such as ensuring the safety of passengers including children, the elderly, and physically challenged people when boarding and disembarking from ferries, efficient ferry boarding, and improved access to remote islands and enclave. In addition, project impacts such as improved quality of life and revitalization of the economic activities of residents of the enclave and remote islands were confirmed. No negative impacts on the natural and social environment due to the project were observed. Therefore, the effectiveness and impact of the project are high. Some minor issues have been observed in technical, financial and environment and social aspects of operation and maintenance including the current status of the facilities. Therefore, the sustainability of the project effect is moderately low.

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

1. Project Description



Project Location (source: evaluator)

New Ferry Terminal (source: Administração dos Portos de Timor- Leste (APORTIL))

1.1 Background

Dili Port is the only international seaport in Timor-Leste[1], and in addition to its role as a port for international cargo ships, it is one of the most important parts of the transportation infrastructure as a port for the residents of enclave (Oecusse) and remote islands (Atauro Island), transporting their daily necessities. The passenger ferry terminal in Dili Port was located in close proximity to the container yard, and for the safety of passengers, the loading and unloading of cargo and carrying operations were stopped when passengers were boarding and disembarking. In addition, ferries were operated with severely restricted berthing during cargo vessel berthing and loading/unloading operations, and during low tides, due to insufficient berthing distance, which resulted in ferry berthing availability of three hours per day in the 2014 actual data. Thus, the efficiency of passenger and cargo transportation was hampered, and the separation of the passenger ferry terminal from the cargo container yard was an urgent issue for the safe and efficient operation of passenger and cargo transportation. In addition, the ferry terminal was designed to accommodate one ferry in operation at a time and had reached the limit of its capacity to transport residents and daily commodities. In response, the government planned to introduce a further ferry each in 2016 and 2017, and it was therefore essential to develop a passenger terminal that could accommodate multiple ferry arrivals.

1.2 Project Outline

The objective of this project is to respond to increased demand for passenger and cargo transportation and ensure safe and efficient operation by promoting the separation of cargo and passengers at the international port in the capital city of Dili through the relocation and expansion of the existing ferry terminal, thereby contributing to the improvement of access to the enclave and remote islands, and the promotion of economic activities through the expansion of maritime transport.

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[1] Until September 2022, when the Tibar port was opened.

<Grant Aid Project>

Grant Limit / Actual Grant Amount	2,197 million yen / 2,122 million yen
Exchange of Notes Date / Grant Agreement Date	September 2016 / September 2016
Executing Agency	Administração dos Portos de Timor Leste (APORTIL)
Project Completion	October 2019
Target Area	The city of Dili, Dili District
Main Contractor(s)	Tobishima Corporation
Main Consultant(s)	Ides Inc., Japan Port Consultants, Ltd..
Procurement Agency	N/A
Preparatory Survey	June 2015 - April 2016
Related Projects	・ Technical Assistance “Advisor for port facilities & security” (2012-2016), “Advisor for port planning and facility” (2017-2020), and “Port Facility Maintenance (Short-Term JICA Expert)” (2015), “The Project on Strategic Port Development Master Plan in Timor-Leste” (2022-2024) ・ Grant Aid “Dili Port Rehabilitation Project” (2006), “The Oecusse Port Urgent Rehabilitation Plan” (2010) ・ Deutsche Gesellschaft fur Internationale Zusammenarbei (GIZ) “Technical Cooperation in the Maritime Transport Sector” (2006-2016), “Technical Cooperation in Advice and Training to the Maritime Related Industries of Timor-Leste” (2017-2021) ・ Kreditanstalt fur Wiederaufbau (KfW) “The construction and commissioning of a second ferry for north coast traffic in Timor-Leste”

2. Outline of the Evaluation Study

2.1 External Evaluator

Toshihisa Iida, OPMAC Corporation

2.2 Duration of Evaluation Study

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

Duration of the Study: October 2022 – December 2023

Duration of the Field Study: January 15 – 27, 2023 and May 30 – June 3, 2023

2.3 Constraints During the Evaluation Study

In this ex-post evaluation, an interview survey was conducted to determine whether there was heterogeneity in the project effects among children, elderly, and physically challenged ferry users as well as other ferry users in terms of ensuring safety when boarding and disembarking from ferries which was assumed as a qualitative effect of the project. It should be noted that in the interview survey, (i) there are large individual differences in the judgment of the sense of safety, (ii) the information obtained may not necessarily be representative of ferry users due to the small sample size (11 persons in total, including children, the elderly, and the physically challenged), and (iii) since the old ferry terminal had major problems in the safety when boarding and disembarking from ferries, such as the need to pass nearby container cargo handling operations, it is possible that the relocation of the new ferry terminal is the only reason for the passengers' decision that the safety has been improved at the time of ex-post evaluation.

3. Results of the Evaluation (Overall Rating: B[2])

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

3.1.1. Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Timor-Leste

At the time of planning, the *Strategic Development Plan (2011-2030)* had the target of the country becoming an upper middle-income country by 2030 and infrastructure development in the port sector was identified as one of the priority areas to achieve this goal. In addition, the *Program of the Seventh Constitutional Government (2012-2017)*, a government strategic program that embodied the aforementioned *Strategic Development Plan,* stated that the expansion of seaport capacity was necessary for Timor-Leste's economic growth and identified seaport infrastructure development as essential for importing essential goods, building major infrastructure, and supporting export industries for petroleum products, coffee, fish and meat,

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

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

fruits, and grains, in order to revitalize the economy.

At the time of the ex-post evaluation, in addition to the aforementioned *Strategic Development Plan*, in the *Program of the Eighth Constitutional Government (2018-2022),* seaport infrastructure development continued to be included as one of the key policy measures due to the importance of enabling the import of critical goods to strengthen and diversify the national economy. For Dili Port, the redevelopment plan of Dili Port, being prepared by the United States Agency for International Development (USAID)[4], calls for the development of hotels, apartments, commercial facilities, cruise terminals, marinas, parks, and other facilities as a Public-Private Partnership (PPP). Under this plan, the new ferry terminal at Dili Port will continue to be operated and maintained by the Administração dos Portos de Timor Leste (hereinafter referred to as "APORTIL"), while also serving as a ferry terminal for domestic passengers between Dili Port and regional seaports, which are under consideration for future development.

As shown above, from the time of planning to the ex-post evaluation, seaport infrastructure development has been one of the priority issues for economic revitalization, and in the redevelopment plan for Dili Port currently under consideration, the new ferry terminal will function as a ferry terminal for domestic passengers connecting not only the existing ferry route but also regional seaports. This is consistent with the development policy of the Timor-Leste government.

3.1.1.2 Consistency with the Development Needs of Timor-Leste

At the time of planning, the old ferry terminal at Dili Port was in close proximity to the container cargo yard, and the flow lines of ferry passengers and container cargo handlers were intermingled, making it very dangerous for ferry passengers as container cargo-related vehicles passed by passengers as they were getting on and off the ferries. For the safety of ferry passengers, the loading and unloading of containerized cargo and other transportation works had to be stopped when passengers were boarding and disembarking. Ferry berthing was also severely restricted during containerized cargo ship berthing, cargo handling operations, and low tide, which hindered the efficient cargo handling and ferry operations[5]. Furthermore, the ferry terminal was designed to accommodate only one ferry vessel, which was forced to operate over capacity, limiting its ability to transport residents and daily commodities[6]. Thus, in addition to these safety issues, the efficient operation of ferries and cargo transportation was

[4] Initially, USAID prepared the plan, but at the time of the ex-post evaluation, the work had been transferred to the International Finance Corporation (IFC).

[5] Ferry berthing availability was 3 hours per day based on 2014 actuals.

[6] According to documents provided by JICA, the average overcapacity rates for the Atauro and Oecusse routes during the five-year period from 2010 to 2014 were 1.5 times and 1.28 times, respectively.

hampered. For the safe and efficient operation of passenger and cargo transportation, it was essential to separate the passenger ferry terminal from the cargo container yard and to develop a ferry terminal that would allow multiple ferries to arrive at the terminal at the same time.

At the time of ex-post evaluation, as shown in Table 1 below, the volume of containerized cargo handled at Dili Port had increased from 50,994 TEU in 2018 to 60,419 TEU in 2021, indicating that the need for efficient containerized cargo handling remained high[7].

Table 1 Containerized Cargo Volume Handled at Dili Port

(Unit: TEU[8])

	Import	Export	Total
2018	25,649	25,245	50,894
2019	27,663	27,073	54,736
2020	29,863	27,994	57,857
2021	29,562	30,857	60,419
2022(note)	27,082	22,869	49,951

Source: APORTIL

note: Data for 2022 is for the nine months ending September 2022

The number of ferries using the ferry terminal at Dili Port has increased to four (two privately operated and two operated by APORTIL), and the number of services has also increased significantly, from two services weekly on the Oecusse route and one service weekly on the Atauro route at the time of planning to five services weekly on the Oecusse route and six services weekly on the Atauro route (Tables 2 and 3). The new ferry terminal, which allows multiple ferry arrivals and departures at the same time, facilitates the smooth operation of the increased number of ferries. The number of passengers on the Oecusse and Atauro routes were 79,059 and 28,708, respectively, at the time of the ex-post-evaluation in 2022, a significant increase from 44,036 and 21,634 in 2014. This was due to the increased number of ferries and services (Table 7 & Table 8). In 2022, the total cargo transported by ferry on the Oecusse and Atauro routes was 3,030 tons, up from 2,585 tons in 2014 (Table 9). Thus, there has clearly been a high need for the use of ferries to transport residents and daily necessities, and the new ferry terminal has been indispensable in making this possible.

[7] Container cargo handling at Dili Port was transferred to the newly opened Tibar Port in October 2022.

[8] TEU is a unit of measurement for the number of containers converted to 20 feet.

Table 2 Ferry Services[9]

Name of vessel	Operators	Commission	Route
The Berlin Nakroma	APORTIL	2007	Dili-Atauro-Dili/Dili-Oecusse-Dili
The Laju Laju/The Success（note 1）	Private	2016	Dili-Atauro-Dili/Dili-Oecusse-Dili
The Dragon Star Craft（note 2）	Private	2016	Dili-Atauro-Dili
The Berlin Ramelau	APORTIL	2022	Dili-Oecusse-Dili

Source: documents provided by JICA and APORTIL
note 1: The Success took over the Laju Laju and entered service in 2019. The ownership changed in 2022.
note 2: The Dragon Star Craft normally operates between Dilli and Atauro, but it also operates between Dilli and Oecusse when the Berlin Nakroma is out of service for maintenance.

Table 3 Number of Ferry Services

(Unit: services/week)

	Dili – Oecusse	Dili – Atauro
Until 2015	2	1
2019	4	2
At the time of the ex-post evaluation	5	6

Source: documents provided by JICA and APORTIL

As mentioned above, demand for containerized cargo handling operations at Dili Port was high (until October 2022, before transfer to the Port of Tibar[10]) and the separation of the passenger ferry terminal from the containerized cargo yard was necessary for efficient containerized cargo handling and to ensure the safety of ferry passengers. Ferry transportation is essential for the movement of residents and daily necessities, and the demand for ferry use remains high, making a new ferry terminal highly necessary to accommodate the correspondingly increasing number of ferries. Furthermore, in the redevelopment plan of Dili Port, which is currently under consideration, the ferry terminal at Dili Port is scheduled to become a hub for domestic transportation, and the need for such a terminal is recognized as high.

3.1.1.3 Appropriateness of the Project Plan and Approach

The following was pointed out as a lesson learned from past similar projects: “the importance of training to improve the technical capacity of staff in order to systematically and effectively perform administrative tasks related to port entry and exit, cargo, passenger, quarantine, and air safety and security for the entire port.” As described in “3.1.2 Coherence” below, GIZ provided technical assistance to APORTL for human resource development in the maritime transport sector and JICA provided technical assistance for port operations and management,

[9] At the time of planning, one new ferry was to be procured in 2016 and another one in 2017, but due to delays in shipbuilding, one vessel (the Berlin Ramelau) entered service in 2022 and the other (the Haksolok) would be completed in 2023, according to an interview with staff of the Special Zone of Social Market Economy (ZEESM)

[10] See note.5

and for improving the operation and maintenance capacity of facilities and equipment. These assistance activities were coordinated by the two organizations to ensure that the areas of assistance did not overlap and that they were complementary. In addition, a "Port Facility and Safety Advisor (2012-2016)" and a "Port Planning and Facility Maintenance Advisor (2017-2020)" as long-term experts and a "Port Facility Management Advisor (2015)" as a short-term expert were dispatched as part of JICA's technical assistance to provide support in developing a port facility maintenance management plan and manual, in database development, and advice on operation and maintenance. This assistance supported the improvement of the operation and maintenance capacity of the facilities developed by the Project. Therefore, it is considered that the project plan and approach were appropriate.

3.1.2 Coherence (Rating: ②)

3.1.2.1 Consistency with Japan's ODA Policy

At the time of planning, *the Ministry of Foreign Affairs of Japan's Country Assistance Policy for Timor-Leste (2012)* identified the development of infrastructure to revitalize economic activities as one of the priority areas for assistance, and stated that support for infrastructure development, including software, and industrial human resource development, would be emphasized. In addition, *the JICA Country Paper for the Democratic Republic of Timor-Leste* stated that "infrastructure development for revitalization of economic activities" was a priority issue and that infrastructure development related to transportation (roads, bridges, and seaports) would be promoted. This project was therefore consistent with Japan's aid policy at the time of planning.

3.1.2.2 Internal Coherence

For the purpose of improving APORTIL's capacity to maintain and manage facilities and equipment, JICA dispatched long-term experts, an "Advisor for Port Facilities and Security" (2012-2016) and an "Advisor for Port Planning and Facility" (2017-2020) as well as a short-term expert on "Port Facility Maintenance" (2015), who were expected to contribute to the improvement of the capacity for the operation and maintenance of the new ferry terminal developed under the project by conducting tasks closely related to the project. These included formulating maintenance and management plans and maintenance manuals, developing a database of information related to port facilities and equipment, and providing advice on port facility maintenance and management. However, as described in "3.4 Sustainability" below, at the time of the ex-post evaluation, there was no manual or maintenance plan for the maintenance and management of the new ferry terminal, little daily maintenance and work had been conducted, and no training was provided in the department. Thus, it can be said that at the time of the ex-post evaluation it was almost impossible to confirm the specific results of the

cooperation conducted in the past.

3.1.2.3 External Coherence

At the time of planning, it was envisioned that JICA would work with GIZ, which provided technical assistance to APORTIL, to improve the technical skills of APORTIL staff. According to APORTIL and former consultants for GIZ, GIZ's support was mainly for human resource development in the maritime transportation sector, such as strengthening the ferry operation capacity of APORTIL and the maritime administration capacity of the National Direction of Maritime Transportation (DNTM). The JICA support was for port operation and management, and for capacity building for the operation and maintenance of facilities and equipment. The content of the JICA and GIZ support was complementary and did not overlap, and the two parties were well coordinated. A former JICA expert also mentioned that, during the implementation of the project, the GIZ consultants participated in JICA-sponsored workshops, shared knowledge in areas where JICA experts did not have sufficient knowledge and provided technical assistance in collaboration with JICA long-term experts and GIZ. Thus, the collaboration with GIZ functioned to some extent, as the areas of support were determined so that there would be no duplication of efforts and the support would be effective as a whole, with knowledge being shared as necessary. However, as described in "3.4 Sustainability" below, there were some issues with APORTIL's operation and maintenance capacity, and although the collaboration alone would not necessarily improve the operation and maintenance capacity of APORTIL, in light of its current status, it can be said that specific results of the collaboration cannot be confirmed.

From the above, in terms of relevance, the project was consistent with the development policy and development needs of Timor-Leste. Regarding consistency, the project was consistent with Japan's aid policy. In terms of internal consistency and external consistency, although the project was being coordinated with JICA's technical cooperation projects and GIZ support for improving APORTIL's operation and maintenance capacity, as mentioned above, considering that maintenance activities are not currently being implemented, the effectiveness of those efforts cannot be confirmed. Therefore, its relevance and consistency are high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

The plan and actual of this project outputs are shown as Table 4.

Table 4 Planned and Actual Outputs of the Japanese Side

Items	Plan	Actual	Remarks
Ferry Jetty	100 m length ×2 berth Design water depth: 11.5 m	100 m length ×2berth Design water depth: 11.5 m	Top elevation of superstructure was increased by 0.4 m due to design changes caused by the adjustment of Chart Datum Level (CDL)[11], and design changes caused by changes in specification of ferries to be procured
Platform	55 m×52 m + Deformed Area	52 m×51 m + Deformed Area	Top elevation of superstructure was increased by 0.4 m due to design changes caused by the adjustment of Chart Datum Level
Access Way	Hard core + Pavement concrete (400 m^2)	Hard core + Pavement concrete (460 m^2)	Increases due to detailed design changes and the adjustment of Chart Datum Level
Illumination, Water Supply, Fire Hydrants, Power Supply	1 set of each	Same as on the left	As planned
Beacon Light	1 set	2 sets	Design changes associated with countermeasures for sunk vessel
Security Equipment	Surveillance and security TV systems and others	Same as on the left	As Planned
Consulting Services	Detailed design and construction supervision	Same as on the left	As Planned

Source: documents provided by JICA and APORTIL

According to the documents provided by JICA, the changes from the plan and the reasons for the changes were as follows:

- Extension of movable ramp (from 11 m to 16.4 m) and lowering of deck elevation of the jetty (from +4.0 m CDL to +3.2 m CDL) due to specification changes of vessels to be procured from Germany (the Berlin Ramelau) and Portugal (the Haksolok).
- Implementation of countermeasures for a sunk vessel that had not been assumed during the detailed design (partial removal of the sunk vessel, addition of an anticorrosion anode[12], enclosure by steel sheet piles, and installation of light beacons).
- Raising the jetty and platform deck elevation by 173 mm (due to a surveying error by the contractor and implemented at the contractor's expense).
- Raising the height of jetty and platform superstructure, etc., by 400 mm and extending access slope to platform due to the fact that Datum Level (DL)[13] was found to be approximately 400 mm lower than CDL during project implementation (Without the change, there would have been approximately 4 hours in which the vessels planned to be procured from Portugal would not have been able to berth).

11 Chart Datum Level (CDL): Water depth standard, minimum water level

12 One of the methods to stop corrosion by cutting off the corrosion current generated when steel corrodes by supplying electricity; a sacrificial anode is attached to the corrosion prevention target.

13 Datum Level (DL): Reference plane for observing the height to sea level (construction reference plane)

As mentioned above, the main reasons for the design changes were changes in accordance with modification of the specifications of the ferries to be procured, the discovery of a sunk vessel that was not anticipated at the time of planning, and differences in the CDL identified during project implementation, etc. These design changes were considered unavoidable in order to realize the project effects.

Jetty (source: evaluator)

Platform (source: evaluator)

Movable ramp (source: evaluator)

It was agreed that Timor-Leste would bear the costs for land acquisition, the removal of unnecessary obstacles, the construction of a passenger terminal building, import duties on permanent materials for construction, and banking procedures. Of these, all except for the construction of the passenger terminal building were implemented as planned. The construction of this building had not yet started at the time of the ex-post evaluation[14]. According to APORTIL, the construction was scheduled to proceed with budgetary measures in 2023, however, the construction was suspended with the inauguration of the new administration in July 2023 and a resumption date has not yet been determined. Currently, a temporary covered waiting area, ticket

[14] Although budgetary measures were taken and a construction contractor was even selected in 2021 after the project was completed, construction was canceled by the funding agency, the Administrative Council of the Infrastructure Fund (CAFI), for the following reasons: (i) it was assumed that the passenger terminal building in question would be constructed within the Dili Port Redevelopment Area, and (ii) the winning bid price was about half the budget, which raised questions about the quality of construction.

booth, and restrooms have been installed, so it is unlikely that the non-construction of the building has had a significant impact on the project's effects. However, from the perspective of improving convenience for ferry passengers and making effective use of the ferry terminal, it is desirable that the building be constructed as soon as possible.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The project cost was planned to be 2,335 million yen, consisting of 2,197 million yen for the Japanese side and 138 million yen for the Timor-Leste side. The actual project cost on the Timor-Leste side is yet to be determined because the construction of the passenger terminal building has not yet started as mentioned above, but the Japanese side project cost was 2,122 million yen, as shown in Table 5. This was 96.6 % of the planned project cost of 2,136 million yen. While the construction cost of the jetty increased because of changes in the specification of the jetty during project implementation and the increased cost for the detailed design and construction supervision by the consultant due to the extension of the construction period, the total project cost was lower than planned due to a decrease in the yen value of imported materials caused by the exchange rate fluctuations[15].

Table 5 Actual Project Costs for the Japanese Side

(Unit: million yen)

Breakdown	Actual Cost
Demolition	11
Jetty	1,130
Platform	698
Jetty Pavement	37
Revetment	14
Marine Accessories	43
Ancillary Facilities	11
Detailed Design/Construction Supervision	178
Total	2,122

Source: documents provided by JICA and APORTIL

If the amount to be borne by the Timor-Leste side is calculated based on the budgeted amount for the construction of the passenger ferry terminal by APORTIL at the time of ex-post evaluation (US$ 549,000), the actual project cost was US$ 647,000 compared to the planned project cost of US$ 1,146 million, which was within the planned (56.4% of the planned cost) (Table 6). The total project cost, taking into account the Timor-Leste side, was 2,193 million yen, including 2,122 million yen for the Japanese side and 71 million yen[16] for the Timor-Leste

[15] The average exchange rate during the project period was 110.28 yen/US$ compared to the exchange rate of 120.10 yen/US$ at the time that the grant agreement was signed.

[16] US$647,000 × average exchange rate during the project period (110.28 yen/US$)

side, which was 93.9% of the total planned cost of 2,335 million yen. As such, the total actual cost was within the plan.

Table 6 Actual Project Costs for the Timor-Leste side

（Unit: US$）

Breakdown	Actual Cost
Land Purchased Fee	State Land
Demolition of Blockage in the Construction Yard	19,500
Construction of Passenger Terminal Building	TBD（Budget amount: 549,000
Import Tax for Everlasting Construction Materials	59,265
Necessary Cost of Banking Arrangements	20,000
Total	TBD（647,000）

Source: documents provided by JICA and APORTIL

3.2.2.2 Project Period

The planned project period[17] was 30 months (May 2016 to October 2018), including the detailed design and bidding period. The actual project period was 38 months (September 2016 to October 2019), which exceeded the plan by 126.7%. The main reasons for the excess in the planned period were, as stated in "3.2.1 Project Outputs" above, changes in the jetty structure due to changes in the specifications of the ferries to be procured during the project implementation period, measures necessary due to the unexpected discovery of a sunk vessel, and changes in the design of the jetty and other facilities resulting from the discovery of discrepancies in the CDL that had been used[18].

The project output was generally in line with the plan, and the project cost was within the plan, but the project period exceeded the plan. Therefore, efficiency of the project is high.

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

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

(Operation and Effect Indicators)

At the time of planning, ferry berthing time and annual number of ferry passenger were listed

[17] Since the definitions of the project start date and project completion date were unknown at the time of the ex-ante evaluation report, the project period was calculated based on the process chart shown in the preparatory survey report. In the report, project completion was defined as the completion of the construction work. However, the date of exchange of note and the date of grant agreement were not included as the project start. Therefore, the project starts in both the plan and actual was defined as the date of exchange of note and the date of grant agreement at this ex-post evaluation.

[18] In Dili Port, it was recognized and utilized for the repair works of the port that DL was equal to CDL until the implementation of this project. However, as described in 3.2.1 above, the DL was found to be approximately 400mm lower than the CDL during the implementation of this project.

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

as operation and effect indicators. In the ex-post evaluation, the actual values of these indicators were confirmed as shown in Table 7 below.

Table 7 Operation and Effect Indicators

		Baseline Value	Target Value	Actual Value		
		2014	2021	2020	2021	2022
			3 Years After Completion	1 Year After Completion	2 Years After Completion	3 Years After Completion
Berthing hours of Ferry (hours per day)		3	24	24	24	24
Annual number of Passengers (person/year) (note)	Atauro route	21,634	28,392	31,503	5,112	29,706
	Oecusse route	44,036	70,985	39,309	8,588	79,059

Source: documents provided by JICA, APORTIL, and DNTM

note: since APORTIL does not have data related to the number of passengers for ferries operated by private operators, data from DNTM, which is the harbor master and receives passenger count reports from vessels when they enter or leave Dili Port, is used in this ex-post evaluation.

Ferry berthing can be available 24 hours a day because the relocation and construction of the new ferry terminal eliminated the waiting time that had been necessary during container loading/unloading operations occurring at the old ferry terminal. In addition, the introduction of movable ramps at the jetty has made stable berthing possible even during high tides and high waves.

The annual ferry passenger volume target was achieved for all routes. For the Atauro route, the target of 28,392 annual passengers per year was achieved in 2020, one year after the completion of the new ferry terminal. In 2021, the number of ferry passengers decreased due to the impact of COVID-19 and the suspension of the Berlin Nakroma's service for maintenance[20], but the target was achieved again in 2022, three years after the completion of the ferry terminal. The Oecusse route achieved its target of 70,985 annual passengers in 2022, three years after completion, largely due to the Berlin Ramelau entering service in 2022[21](Table 8).

[20] The Berlin Nakroma did not operate from January 2021 to October 2022 due to maintenances.

[21] The Berlin Ramelau does not serve Atauro because it cannot berth at Atauro port due to its vessel size。

Table 8 Number of Passengers per Year by Ferry in Operation

(Unit: number of people)

		2014 (at the time of planning)	2019	2020	2021	2022
Atauro Route	The Berlin Nakroma	21,634	25,410	31,503	0	2,919
	The Dragon Star Craft (note 1)	-	0	0	0	16,816
	The Success (note 2)	-	18,204	0	2,644	8,973
	Others (note 3)	-	-	-	2,458	-
	Total	21,634	43,614	31,503	5,112	28,708
Oecusse Route	The Berlin Nakroma	44,036	36,552	39,309	0	2,060
	The Berlin Ramelau	-	-	-	-	51,413
	The Dragon Star Craft (note 1)	-	0	0	0	12,162
	The Success (note 2)	-	37,980	0	7,089	13,424
	Others (note 3)	-	-	-	1,499	-
	Total	44,036	74,532	39,309	8,588	79,059

Source: documents provided by DNTM and JICA
note 1: The Dragon Star Craft did not operate from 2019 to 2021 due to vessel license renewal and maintenance. Operation resumed from January 2022.
note 2: The Success did not operate in 2020 for maintenance. It resumed operation from August 2022 after a change of ownership.
note 3: When the Berlin Nakroma was out of service, alternative vessels operated for a period of time.

The following are identified as other quantitative effects.

(Increase in the Number of Ferry Operations)

At the time of planning, the number of ferry services was two per week for the Oecusse route and one per week for the Atauro route, as stated in "3.1.1 Relevance" above. At the time of the ex-post evaluation, the number of ferry service had increased significantly to five per week for the Oecusse route and six per week for the Atauro route, which has improved transportation convenience and access from these areas to Dili. This is due to the fact that, in addition to the start of private ferry operations, the completion of the new ferry terminal under the project at the end of 2019 has allowed multiple vessels to arrive and depart simultaneously, while the relocation of container cargo handling to Tibar Port has allowed the old ferry terminal to be used when tidal and wave conditions allow for safe boarding and disembarking. With the increase in the number of ferry services, an increase in the number of passengers as well as in the volume of logistics such as ferry cargo was expected. However, as shown in

Table 9 below, the actual cargo volume and the number of vehicles and motorcycles carried by ferries in 2022 were lower than the actual volume and number in 2019 when the project was completed, This could be attributed to the fact that the Berlin Nakroma rarely operated in 2021-2022.

Table 9 Ferry Cargo Volume, Vehicles, and Motorcycles (Atauro and Oecusse routes combined)

	Cargo (tons)	Vehicles (number)	Motorbikes (number)
2014 (at the time of planning)	2,585	991	1,379
2019 (Completion)	4,763	2,597	3,109
2020 (1 Year after Completion)	1,157	1,834	2,168
2021 (2 Years after Completion)	1,252	799	443
2022 (3 Years after Completion)	3,030	2,444	2,797

Source: documents provided by JICA and DNTM

(Effects on Containerized Cargo Operations Efficiency)

As shown in

Table 10 below, a comparison of the number of containerized cargos handled per hour before and after the relocation of the ferry terminal in Dili Port shows that the number of containerized cargos handled increased after the relocation. It can be considered that the relocation of the old ferry terminal, which was adjacent to the containerized cargo loading and unloading area, had some effect on improving the efficiency of containerized cargo operations.

Table 10 The Number of Containerized Cargos and Others Handled per Hour

	2019 (Completion)	2020 (1 year after completion)
The number of containerized cargos and others handled per hour (note)	14.43	15.39

Source: documents provided by APORTIL

note: Total number of containerized cargos and others handled (including imports and exports) /container vessel berthing time.

3.3.1.2 Qualitative Effects (Other Effects)

In order to confirm the qualitative effects and impacts of the project, interviews with implementing agencies, relevant ministries and agencies, and ferry users (including children, elderly, and physically challenged persons) were conducted during the field survey[22]. As a result, the following qualitative effects were confirmed.

[22] In addition to the implementing agencies, key informant interviews were conducted around the ports of Dili, Oecusse and Atauro with the following to ascertain the qualitative effects and impacts of the project. (Dili: Ministry of Transport and Communication, DNTM, private ferry operators (2), container cargo handlers (2), transporter (1), taxi driver (1), Timor-Leste Chamber of Commerce and Industry, ferry passengers (24), Oecusse: Special Social Market Economic Zone, ferry passengers (10), retailers (4), building materials distributor (1), tuk-tuk driver (1), Atauro: Atauro District Office, retailers (2), guesthouse and catering (1), fishermen (1)).

(Ensuring Passenger Safety When Boarding and Disembarking from Ferries)

According to interviews with ferry users and others, the majority of the respondents were of the opinion that passenger safety when boarding and disembarking from ferries at the new ferry terminal has been greatly improved compared to the situation at the old ferry terminal. The following is a summary of specific comments.

- At the old ferry terminal, boarding and disembarking from ferries was significantly dangerous due to the following conditions:(i) the ferry terminal was located in the middle of the containerized cargo handling yard, creating the dangerous situation where ferry passengers and container cargo handling traffic lines were intermingled, container cargo handling vehicles passed close by ferry passengers, and containers were stacked high in the vicinity of passenger paths, (ii) because ramps from ferries were hung over the fixed ramp for boarding and disembarking, there was insufficient distance during low tide when the ramp could not maintain the proper angle, and during high waves and rain, the ramp was very slippery for passengers boarding and disembarking, (iii) frequently, ferry passengers rushed onto the ramp when boarding and disembarking, pushing each other off the ramp to the seaward side, (iv) when there were many ferry passengers, the line of passengers waiting for ferries overflowed from the port and lines were formed even on the sidewalks of public roads,
- Many commented that the new ferry terminal has greatly improved the safety of boarding and disembarking from ferries and that there is now no danger at boarding and disembarking because (i) the flows of lines for ferry passengers and containerized cargo handling are clearly different, and (ii) the adoption of movable ramps at the jetty has made it possible to get on and off the ferries on an almost flat ramp.
- The majority of respondents also agreed that the new ferry terminal does not pose any danger to children, the elderly, and physically challenged people when boarding and disembarking from ferries (In this ex-post evaluation, a qualitative study from the perspective of Leave No One Behind (LNOB) was conducted on safety when boarding and disembarking from ferries, the results of which are shown in the box below).

As described above, it can be considered that the relocation of the ferry terminal by this project has contributed to the improvement of the safety of ferry passengers when boarding and disembarking from ferries by the separation of the lines of flow between containerized cargo handling operation and ferry passengers, and the adoption of movable ramps which enables safe berthing at all times even during high tides.

At the old ferry terminal (waiting at the public roadside) (source: JICA)

At the old ferry terminal (passengers walking toward a ferry) (source: JICA)

At the old ferry terminal（boarding a ferry）(source: JICA)

At the new ferry terminal (waiting area) (source: evaluator)

At the new ferry terminal (corridor to ferries) (source: evaluator)

At the new ferry terminal (boarding a ferry) (Source: evaluator)

On the other hand, there are issues related to safety inside ferries, such as the fact that when

disembarking from the ferries, passengers rush to disembark quickly using only one narrow passageway inside the ferries. The elderly, children, etc., are pushed by other passengers. Also, there were comments that passengers and vehicles disembarking from ferries and vehicles entering the platform to load disembarking passengers' luggage and cargo are mixed together at the platform, which may be dangerous if a child suddenly jumps out of the platform or looks away. While this is not the issue of facilities constructed by this project, it is believed that safer boarding and disembarking from ferries would be possible by implementing ferry operation measures such as thorough announcements on the ferries, staggered disembarkation, and traffic guidance to clearly separate the lines of flow between vehicles and passengers.

Slope for wheelchair users from waiting area to platform (source: evaluator)

Disembarking from a ferry at the new ferry terminal (source: evaluator)

Results of beneficiary interviews regarding safety when boarding and disembarking ferries from the perspective of Leaving No One Behind.

In this ex-post evaluation, an interview survey was conducted using the triangulation method[23] to see if there were any differences in the intended qualitative effect of the project, "ensuring the safety of ferry passengers when boarding and disembarking from ferries," between ferry users such as children, the elderly, and the physically challenged people and other ferry users from the perspective of "Leave No One Behind (LNOB)". The survey and a summary of the results are as follows.

1. Survey Contents

(1) Interviewees

(a) Ferry passengers: children, the elderly, and the physically challenged: total 11 people (note 1), (b) Other ferry passengers: total 8 people (note 2), (c) Passenger guidance staff of ferry operators: total 4 people (note 3)

(2) Questionnaire by Interviewee

- Interviewees (a) above: Existence/non-existence of hazards when boarding and disembarking from ferries at the new and old ferry terminal and the nature of such hazards,
- Interviewees (b) above: Whether or not you feel that children, the elderly, and physically challenged people are unsafe when boarding and disembarking from ferries at the new and old ferry terminal, and the nature of such unsafe conditions,
- Interviewees (c) above: Whether or not you feel that children, the elderly, physically challenged people and other ferry passengers at the new and old ferry terminal feel unsafe when boarding and disembarking from ferries, and the nature of such unsafe conditions.

(3) Survey Location: Dili Port Ferry Terminal and Oecusse Port Ferry Terminal

2. Summary of Survey Result

[23] Triangulation is a method that combines several different perspectives, methods, or views, and in this case, is a combination of opinions from several different groups.

(1) The safety of ferry passengers when boarding and disembarking from ferries at the new ferry terminal has greatly improved for all types of passengers, and there are few areas where ferry passengers feel unsafe, confirming that there is no difference in the project effect in terms of safety when boarding and disembarking among ferry passengers.
  - At the old ferry terminal, the situation was dangerous for ferry passengers, in particular for the elderly, children, and the physically challenged as follows:
    - passengers passed by containerized cargo loading and unloading vehicles,
    - the ferry ramp moved up and down intensely during high tide and high waves, making the ramp slippery when soaked in water, and
    - passengers were pushed by the crowd and fell off the ramp.
  - At the new ferry terminal, the ferry passenger flow line is separated from the container cargo flow line, the ramp is always flat and easy to get on and off, even during high tide and high waves through the introduction of movable ramps. There is no issue in terms of passenger safety for boarding and disembarking from ferries.

(2) On the other hand, the following comments were made by some interviewees:
  - Three out of the four elderly interviewees said that they had never felt unsafe when boarding and disembarking from ferries at either the old or the new ferry terminals, and that safety at boarding and disembarking had been ensured at both. This may be due to differences in judgment criteria regarding safety and the level of durability.
  - With regard to the safety of the elderly, physically challenged, and child passengers in particular, these and other users of the ferry confirmed that the narrow, single aisle inside ferries makes it dangerous for physically challenged and child passengers as they push each other to get off the ferry as quickly as possible when disembarking.

(3) Reasons why there is no difference in the project effect among users of the new ferry terminal in terms of ensuring safety when boarding and disembarking include the following:
  - The relocation of the ferry terminal from the middle of Dili Port to the west end has completely eliminated the traffic flow confusion between containerized cargo handling operations and ferry passengers.
  - Due to the introduction of the movable ramps at the jetty, the ramp is always flat even in high waves,
  - The slope for the physically challenged and the elderly was installed in the passageway from the passenger gate to the platform at the suggestion of APORTIL during the detailed design stage.

(note 1) Children 5 people (male: 3, female: 2), the elderly 4 people (male: 1, female: 3), the physically challenged people: 2 (male: 1, female: 1)
(note 2) Total 8 people (male: 4, female: 4)
(note 3) APORTIL (2 people), JAJ Oceans Agency (the Success operator) (1 person), Dragon Star Ship (the Dragon Star Craft operator) (1 person)

(Efficient Ferry Boarding)

Interviews with ferry users and others confirmed that the new ferry terminal has reduced the time required to board ferries by separating the flow line from those of containerized cargo loading and unloading operations. According to the interview survey, at the old ferry terminal, ferry passengers had to wait while containerized cargos were being loaded and unloaded. Ferry passengers were required to arrive at the terminal three hours before boarding time. At the new ferry terminal, there is no such waiting time, and ferry passengers can board ferries as soon as they arrive at the terminal on time for boarding, making boarding more efficient.

(Efficient Containerized Cargo Operation)

Interviews with container cargo-handling operators revealed that the relocation of the ferry terminal has improved the efficiency of container cargo handling operations. Specifically, before the relocation of ferry terminal, (i) the space was too cramped and there was not enough room for containers, and (ii) the lines of flow for container cargo handling operations and those for ferry passengers were intermingled, and in some cases container cargo handling operations had to be

stopped to accommodate ferry passengers. This resulted in inefficient container cargo loading and unloading operations. The relocation of the ferry terminal has improved the efficiency of containerized cargo handling operations, such as increasing the volume of containerized cargos handled per hour, by securing space for containers and eliminating stoppages in containerized cargo handling operations due to passengers boarding and disembarking from ferries. The results of the survey confirmed the increase in the number of container cargos handled per hour after the completion of the project, as described in the quantitative effect section above.

(Improved Access to Enclave and the Remote Islands)

Interviews with ferry users and businesses operators on the remote islands and enclave confirmed that the construction of the new ferry terminal and the increased number of ferry services have increased the availability of ferries and the ability to go to Dili when necessary, increasing the convenience of ferry transportation and access from the remote island and enclave to Dili and vice versa.

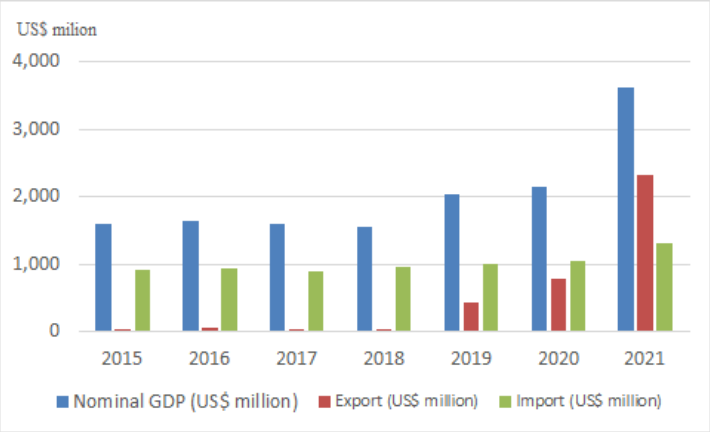
3.3.2 Impacts

3.3.2.1 Intended Impacts

The intended impact envisioned by the project was to "improve access to enclave and remote islands" and "promote economic activities through the expanded maritime transportation".

Timor-Leste's nominal GDP increased from US$ 2,029 million in 2019 to US$ 3,621 million in 2021, partly due to increased exports (see Figure 1 below). As mentioned in "3.1.1 Relevance" above, the export volume of containerized cargo handled at Dili Port increased from 27,703 TEU in 2019 to 22,869 TEU (30,492 TEU on an annual basis[24]) by September 2022, when containerized cargo operations were transferred to Tibar Port. In addition, as mentioned above, it is also confirmed that the efficiency of containerized cargo handling operation has been increased by this project. Thus, the project is considered to have supported a part of this increase in exports. However, it is difficult to quantitatively measure the contribution of the project.

[24] The export volume per month in 2022 was 2,541 TEU, and the annual export volume would be 30,492 TEU when recalculated over 12 months.



Source: The World Bank World Development Indicator

Figure 1 Nominal GDP, exports and imports of Timor-Leste

Through the interviews with ferry passengers, container cargo handlers, transporters, and retailers around Oecusse Port and Atauro Port in the ex-post evaluation, the following qualitative impacts were confirmed, although these are not impacts of this project alone.

(Improving the Quality of Life of Local Residents in Enclave and Remote Islands)

In the interviews with local residents, it was heard that the construction of the new ferry terminal, which has enabled an increase in ferry services, has improved the quality of life of local residents on remote islands and enclave. Specifically, the increase in the number of ferry services has: (i) made it easier to purchase and transport goods from Dili, making it possible to purchase daily necessities such as rice and cooking oil at local stores and to purchase new goods such as construction materials[25], (ii) created employment opportunities and increased income earning opportunities through the expansion of existing retail stores as well as the entry of new retail stores, and (iii) made it more convenient to travel to Dili when necessary for hospitals, meetings, etc. As such, certain contributions made by this project to the improvement of living standards and convenience for local residents in enclave and remote islands by increasing accessibility to Dili have been confirmed.

(Revitalization of Economic Activity on Remote Islands and Enclave)

The construction of a new ferry terminal and increased ferry services have improved transportation to enclave and remote islands, which has had a positive impact on existing businesses and the entry of new businesses, confirming the revitalization of the local economy,

[25] When the number of ferry services was limited, the transportation of goods from Dili was delayed when ferry services were cancelled due to rain or other reasons, causing local retailers to run out of food and other daily necessities.

albeit only partially. Specifically, as mentioned above, local retailers have found it easier to purchase products to sell, which has led to an increase in the volume of products purchased and sold, as well as an increase in revenues due to the expansion of the types of products sold (in addition to daily necessities, including snacks, clothing, and building materials). This has led to the expansion of existing stores and the entry of new retailers, which has had a positive impact on the retail industry. On the other hand, there were few comments regarding the impact on increases in consumers' income. Most of the comments were that, with the increase in ferry services, local retailers are now able to keep necessary quantities of daily necessities and other items in stock at all times and consumers are able to purchase necessary quantities.

This has led to increases in retailers' sales, while previously consumers could not purchase necessary amounts of these goods due to the insufficient stock in the local retail shops. In the fishing industry, one of the main industries on Atauro Island, dried fish used to be the main product sold, but with the increase in fresh fish purchases for sale from Dili due to increased ferry services and the increase in fish consumption by tourists, fishermen's income has increased. This has led some fishermen to start seaweed farming and fishnet sales as a side business, confirming the positive impact on fishermen. While the construction of the new ferry terminal and the increased number of ferry services may have had an impact on stimulating economic activities in certain segment of industries, many respondents said that it had not led to an overall increase in economic activity.

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

At the time of project planning, it was judged that the project was not regarded as a large-scale project in the port sector and that any undesirable impact on the environment through project implementation would be insignificant. The project area did not fall under the sensitive characteristics and sensitive areas based on *JICA's Guideline for Environmental and Social Considerations (April 2010)*. Thus, the project was categorized as Category B. The simplified environmental impact statement for the project was approved in June 2017. According to the implementing agency, during the construction period, the contractor monitored air, water, waste, soil pollution, vibration, noise, and odor according to the determined frequency and content, and the environmental monitoring report obtained from the implementing agency did not show any negative impact on the natural environment. In addition, no specific complaints were reported from surrounding residents or other parties.

2) Resettlement and Land Acquisition

The project site was within existing port facilities, and no relocation of residents or land acquisition occurred as a result of project implementation.

3) Gender Equality, Marginalized People, Social Systems and Norms, Human Well-being, and Human Rights

There were no issues related to gender equality, marginalized people and social systems and norms, human well-being, and human rights in this project. As for the impact on marginalized people, the introduction of a movable platform has ensured the safety of all ferry passengers, including children, the elderly, and physically challenged people, by allowing boarding and disembarking to take place on a flat ramp. In addition, although not envisioned in the preparatory study for this project, a slope to the platform has been installed beside the passenger walkway for the use of wheelchairs, etc., ensuring safe boarding and disembarkation for the elderly and physically challenged people. For the results of the qualitative study conducted at the time of this ex-post evaluation regarding ensuring safety for children, the elderly, and physically challenged people when boarding and disembarking from ferries, see the box in "3.3.1.2 Qualitative Effectiveness" above.

As mentioned above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy and System

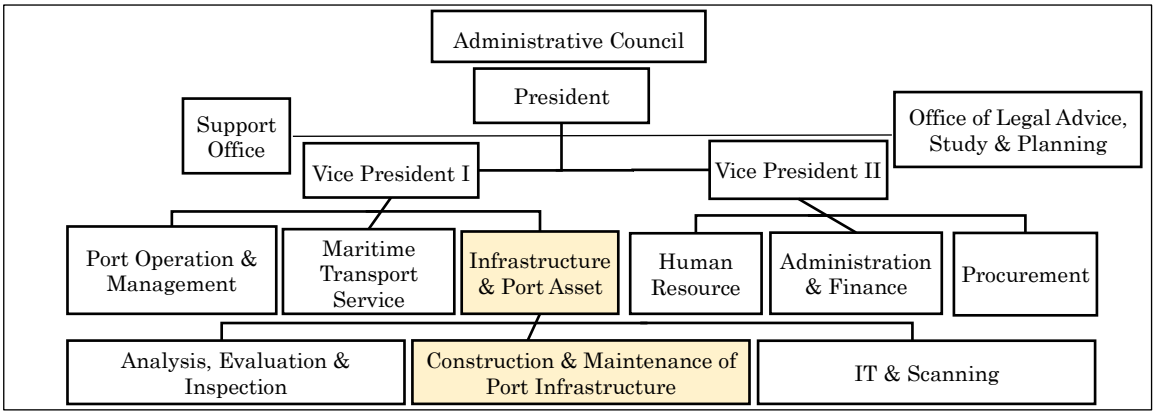
As mentioned in section “3.1.1 Relevance”, the national-level development plan focuses on infrastructure development in the port sector with no policy changes. The proposed redevelopment plan for Dili Port, which is currently under consideration, calls for Dili Port to be developed as a tourist marina, with hotels, apartments, commercial facilities, a cruise terminal, a marina, parks, and other facilities through PPP, while the new ferry terminal will continue to be operated and maintained by APORTIL and will also serve as a domestic passenger ferry terminal connecting Dili Port to the regional ports that are planned to be developed in the future.

As stated above, the current ferry terminal will continue to be operated under its current legal status and operation and maintenance regime without being affected by the redevelopment of Dili Port. Thus, no issues have been observed.

3.4.2 Institutional/Organizational Aspect

APORTIL is responsible for the operation and maintenance of the facilities developed under the project. At the time of the ex-post evaluation, APORTIL had 94 employees, and the Division of Infrastructure Ports Assets, with 11 staff members, 6 of whom are engineers, was in charge of

the maintenance of the facilities. According to APORTIL, since large-scale maintenance work[26] is outsourced to outside contractors through a bidding process, the number of staff required for the current maintenance work is generally sufficient, and there are no issues related to maintenance caused by staff shortages. At the time of the ex-post evaluation, no specific problems in terms of the number of personnel were identified in the maintenance of the facilities developed in this project. On the other hand, some problems were identified in the technical aspects, as described below.



Source: documents provided by APORTIL

Figure 2 APORTIL Organization Chart

3.4.3 Technical Aspect

Minor maintenance tasks are performed by three of the six engineers, while major maintenance tasks are outsourced to outside contractors through a bidding process. According to the implementing agency, three of the engineers in charge of maintenance have sufficient technical competence, but the technical competence of the staff, including the other three engineers, was not sufficient. Although the implementing agency has been receiving support to enhance the capacity for facility maintenance and management from JICA experts, the number of new staff members has been increasing due to personnel transfers, etc., and according to the implementing agency, ongoing support for the strengthening of technical capacity is necessary.

There are no maintenance manuals and maintenance plans for the ferry terminal, and basically no periodic preventive maintenance has been performed at the time of the ex-post-evaluation, with some exception[27], JICA long-term experts (2012-2016 and 2017-2020) prepared inspection and maintenance manuals as well as specific details for and frequency of preventive maintenance.

[26] For example, permanent repair of jetty concrete damages caused by a ship collision as pointed out in the defect inspection report described below.

[27] The only periodic maintenance performed is electrical corrosion protection of the jetty, which is performed annually.

They also provided awareness-raising and technical guidance related to maintenance activities. According to the implementing agency, the technical assistance by JICA long-term experts greatly contributed to the staff's ability to maintain and manage the facility. However, these manuals and other documents have not been updated for the new ferry terminal and were not being used by the staff at the time of the ex-post-evaluation. According to a former JICA long-term expert, the reasons for this were: (i) a lack of awareness of the need for periodic maintenance and insufficient technical knowledge, (ii) insufficient transfer of the technical knowledge provided by JICA experts due to personnel transfers and staff turnover, and (iii) inadequate maintenance budget. With regard to (i) above, although JICA experts had conducted activities to enhance the knowledge and awareness of staff regarding the need for preventive maintenance and the appropriate use of facilities during their assigned period, it is believed that the reform of such awareness within the organization has not taken root due to staff transfers and other factors.

As mentioned above, although the implementing agency has recognized the need to improve the technical capacity of their staff, there are no regular training programs on maintenance and management within the organization, and training programs supported by JICA and other donors are only occasion for the staff training. The condition and the maintenance status of the port facilities can be ascertained from the port facilities database that was developed with the assistance of JICA's short-term expert (2015). However, due to flood damage in April 2021, the PC on which the database was installed broke down and the database could not be restored. At the time of the ex-post evaluation, the database was still unusable and there were no plans for its restoration.

As described above, in terms of the technical aspects of facility maintenance, there are no manuals or plans for the maintenance of the facilities developed under this project, and while there are a few staff with sufficient technical skills, regular training programs are not conducted within the organization to improve staff skills. Despite the support and guidance of JICA experts, regular maintenance is rarely implemented except for a few exceptions. Although JICA experts promoted knowledge and awareness-raising regarding maintenance, there are many technical issues, such as the fact that such awareness-raising has not taken root in the organization due to staff transfers and other factors. Currently, the implementation of proactive efforts to improve maintenance capacity has not been recognized in APORTIL, and ongoing supports are needed to improve maintenance capacity. In view of this situation, JICA is planning to continue to support APORTIL in strengthening its maintenance capacity by inviting APORTIL staff to participate in JICA training and dialogue programs, dispatching JICA experts, and developing an action plan to improve APORTIL’s maintenance and management system as a part of the ongoing technical cooperation "The Project on Strategic Port Master Plan in Timor Leste". However, as long as there is no indication of awareness and efforts toward proactive capacity

building, the results of capacity building through continued supports are uncertain.

As it continues to be difficult to allocate sufficient budget for maintenance, in order to properly implement maintenance activities within the limited budget, it is necessary to give priority to routine preventive maintenance works and to strive for the early detection and repair of problems so that repairs that require large budgets do not occur. Thus, in order that the appropriate maintenance activities are conducted, continuous supports for non-technical aspects, such as raising the awareness of staff and increasing their knowledge will be necessary, in addition to post-project support, such as continuous monitoring by JICA experts and others, until a system is established as an organization in which their awareness of preventive maintenance among the staff in charge takes root. On top of this, regular internal training programs should be conducted to improve the knowledge and technical skills of the staff in charge and to establish a system whereby guidance can be provided through on-the-job training, in order to improve the organizational capacity.

In light of the above, in addition to the lack of manuals and plans related to maintenance and management and the lack of regular internal training, continuous supports are needed to be provided to APORTIL because there is insufficient awareness regarding the maintenance, and no awareness or commitment to proactive capacity building is recognized. However, the results of the ongoing supports are unclear. Thus, it is considered that there are some issues in the technical aspect.

3.4.4 Financial Aspect

APORTIL's income and expenditure in recent years are shown in Table 11. APORTIL's revenues include ferry fees, containerized cargo handling revenues, and warehouse revenues, which are collected by APORTIL and paid to the national treasury, not directly allocated to APORTIL's expenditure. Thus, APORTIL's current revenues are allocated from the Consolidated Fund for Timor-Leste based on an annual budget request to the government[28]. Both the amount allocated from the Consolidated Fund for Timor-Leste and the revenues collected by APORTIL are shown in Table 11. It should be noted that APORTIL is to become financially independent since 2016, but the budget and accounting methods remain the same as in the previous method.

A comparison of the amounts collected by APORTIL with its expenditure shows that in each year, the amounts exceeded expenditure, resulting in an operating surplus. On the other hand, as

[28] Other characteristics of APORTIL's financial aspects include: (i) if there is a budget shortfall during the fiscal year, a budget request is made mid-year and funds are allocated as needed; (ii) if there is a surplus of funds from the allocated budget from the Consolidated Fund for Timor-Leste at the end of the fiscal year, it is required that the surplus be returned to the Fund; and (iii) APORTIL uses the cash basis accounting method with single-entry book keeping, and while there are assets and liabilities belonging to APORTIL, a balance sheet has not been prepared. Neither has a calculation of the depreciation of assets such as buildings been performed. Therefore, the final status of income and expenditure is unknown.

shown in Table 12 below, the operating income and expenses for APORTIL-owned ferries (the Berlin Nakroma and the Berlin Ramelau) have shown a significant deficit every year. The reason for the significant decline in revenues in 2021 was due to the fact that the Berlin Nakroma did not operate until October 2021 due to maintenance. With the transfer of port cargo handling operations at Dili Port to Tibar Port in October 2022, APORTIL is no longer able to collect revenues related to such operations. It is not possible to exactly determine the revenues related to port cargo handling operations since revenues other than APORTIL's ferry operation revenues, and water charges used by other vessels, are booked in the same account item in the APORTIL. However, "The Project on Strategic Port Development Master Plan in Timor-Leste", a JICA technical cooperation project currently underway, analyses that APORTIL's revenue will decrease significantly due to the transfer of all port cargo handling at Dili Port to Tibar Port, and that it will not be financially self-sustaining based on ferry operation revenue alone. Therefore, APORTIL has been considering other sources of income besides ferry operation in the A*ction Plan for Improvement of Port Operation and Maintenance System by APORTIL* to be developed under the project. Comparing the revenues from APORTIL-owned ferry operations to the total amounts APORTIL collected, the ratio of ferry operation revenues to APORTIL's overall revenue collections between 2018 and 2022 ranged from 1.5% to 19.6% (except for 2021 when the Berlin Nakroma was not operated, the ratio then ranging between 11.2% and 19.6%) (Table 12).

Table 11 APORTIL Operating Income and Expenses (Actual)

(Unit: Thousand US$)

	2018	2019	2020	2021	2022
Fund transfer from Consolidated Fund for Timor-Leste	2,207	3,638	2,270	3,896	3,640
Government subsidies (note1)	—	—	—	—	531
Amounts APORTIL collected (A)	4,118	3,461	3,230	3,535	4,264
Vessel related revenue (note 2)	3,374	2,808	2,834	3,217	3,934
Other related revenues (note 3)	740	653	396	317	330
Others	3	1	0	1	0
Expense(B)	2,033	2,948	2,001	1,652	3,061
Personnel expenses	1,012	1,111	1,215	1,141	1,454
O&M expenses	539	1,149	110	236	827
Other expenses （note 4）	481	688	676	278	779
(A)-(B)	2,085	513	1,229	1,873	1,203

Source: documents provided by APORTIL
note 1: Government subsidies in 2022 was based on applications from APORTIL due to rising fuel costs.
note 2: Vessel related revenue includes ferry fares, vessel docking fees, and containerized cargo handling fees.
note 3: Other related revenues include warehouse rental fees and water and electricity supply.
note 4: Other expenses include foreign traveling, vehicle rental, fuel, IT related expenses, other administration expenses.

Table 12 Operating Revenues and Expenses for Ferries Owned by APORTIL (the Berlin Nakroma& the Berlin Ramelau)

(Unit: Thousand US$)

	2018	2019	2020	2021	2022
Revenue from ferry operations (A)	548	389	516	55	838
Ferry related expenses (B))	1,600	1,792	1,380	815	2,277
Ferry operating balance ((A)-(B))	▲1,052	▲1,403	▲963	▲760	▲1,439
Revenue from ferry operations/total amounts APORTIL collected (Table 11 above)	13.3%	11.2%	16.0%	1.5%	19.6%

Source: documents provided by APORTIL

The maintenance budget for Dili Port is about US$ 80,000 per year, according to the APORTIL division in charge of maintenance. This amount can cover small-scale repair work, but is not sufficient for large-scale maintenance work, making it difficult to manage maintenance within the current budget. Budget allocation at an appropriate level is desirable, and in order to control future repair costs under budget constraints, it is necessary to implement maintenance activities focusing on preventive maintenance. Based on the above, there are concerns about financial sustainability. On the other hand, the government has continued to support APORTIL financially including the provision of the funds for the restoration of the facilities that needed to be repaired which was confirmed during the ex-post evaluation through a separate application to the government, and increased APORTIL budget for 2023 to US$ 5,486 million.

From the above, it can be seen that although the government continues to support financially, some issues were confirmed in terms of the perspective of aiming for financial independence.

3.4.5 Environmental and Social Aspect

With regard to environmental monitoring of the items stipulated in the simplified environmental impact assessment report approved in June 2016 after completion of the project, APORTIL has neither established nor implemented a regular monitoring system as required by the report. When the Division of Port Operation and Management discovers a problem, the department informs the Division of Infrastructure and Ports Assets. This is an ad hoc base implementation system, and it cannot be said that sufficient environmental monitoring is being conducted as required. According to APORTIL, no environmental problems have been reported so far, but there are issues with the environmental monitoring system and implementation after the project.

3.4.6 Preventative Measures to Risks

At the time of planning, the following risk factors were identified: (i) construction of the passenger terminal building to be borne by the recipient country; (ii) ferry procurement as planned; and (iii) securing the budget for operation and maintenance. As for the construction of the passenger terminal building, as mentioned above, it is scheduled to be constructed in the

future, and temporary waiting areas and a restroom have been constructed. Although this is not an issue that affects the sustainability of the project effect, its early completion is desirable from the viewpoint of effective utilization of the new ferry terminal. As for ferry procurement, at the time of the ex-post evaluation, four vessels were in operation, including those operated by private operators, and the risk of underutilization of the ferry terminal was avoided. As for the operation and maintenance budget, while budget allocation has not been sufficient, as mentioned above, a significant decrease in APORTIL's revenue is expected with the relocation of container cargo handling operations to the Tibar Port. How the APORTIL is involved in the redevelopment plan of Dili Port will have an impact on its role, organizational structure, and financial situation. Thus, close monitoring of the situation will be needed.

3.4.7 Status of Operation and Maintenance

The maintenance status of the Dili Port Ferry Terminal facilities showed that there were no problems that would interfere with the functionality of the facilities. However, there were several areas in need of repair, including damage to the handrails of the movable ramp and tilting of the LED light pole on the jetty caused by a ship collision, rust on the rampway of the movable ramp and the ramp protection plate on the jetty, failure of the LED lighting on the jetty, damage to the fire hoses, and a depleted UPS battery in the movable ramp control room[29]. In addition, children can enter the ferry terminal from the left side of the passenger gate, and immediate action is required to prevent a serious accident from occurring[30]. Among these, replacement parts for the LED lighting on the jetty and the UPS in the movable lamp operation room are not distributed in Timor-Leste and must be imported. However, importing small lots is relatively expensive, making procurement difficult. Therefore, it is desirable that the equipment selected at the time of detailed design can be easily procured locally for repair parts.

A defect inspection conducted one year after the completion of the project recommended to APORTIL that the following five items need to be addressed, three of which have not yet been addressed. Although routine visual inspections and cleaning have been conducted, periodic maintenance and repair works have not been carried out due to the lack of a sufficient maintenance budget and the lack of sufficient technical capacity on the part of staff, other than three engineers in the department in charge. The damage to the concrete portion of the jetty is

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[29] For these, an additional budget for repairs has been approved by the government, and the repair work was scheduled to begin in September 2023.

[30] A fence was installed in 2020 to prevent encroachment, but it was damaged by wind in late 2020 and no fence has not been installed since then and according to APORTIL, there have been cases of children trespassing at night. At the time of the ex-post-evaluation, a temporary fence was installed, and budgetary measures had been taken to install a permanent fence and repair damaged areas, which were expected to be completed by the end of 2023 after a contractor bidding process.

scheduled to be repaired by the end of this year. In addition, as mentioned above, the construction of the passenger terminal building, which was cancelled after the budget was secured in 2021, was scheduled to proceed with construction in 2023 with budgetary measures again. However, the project was suspended with the inauguration of the new administration in July 2023, and a resumption date has not been determined.

Table 13 Responses to the Five Items Suggested in the Defect Inspection Report

	Suggested items	Response
1	Conduct periodic inspection of the facility and perform proper maintenance	Not yet responded
2	Permanent repair of damaged concrete area of the jetty caused by “Success” collision	Not yet responded
3	Installation of buffer material to prevent direct contact of the ferry ramps with the top of the movable ramps	Responded
4	Raise ferry ramps during bad weather conditions to prevent damage to the movable ramps caused by ferry movement	Responded
5	Construction of passenger terminal building	Not yet responded

Source: documents provided by JICA, and interviews with APORTIL

Although no factors were found to hinder the functional aspects of the facilities constructed by the project, there are some areas that need to be repaired, and there are also problems that could lead to serious accidents, such as children entering the ferry terminal, which require immediate action. Daily and periodic maintenance are also rarely implemented except for visual inspections, cleaning, and electrical corrosion protection of the jetty. Some of the items suggested in the defect inspection report have also not been implemented, suggesting that there are issues regarding the current state of maintenance and operation.

As mentioned above, some minor issues have been observed in the technical, financial, and environmental and social aspects including the current status of operation and maintenance. They are not expected to be improved. Therefore, sustainability of the project effects is moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was conducted to meet the increasing demand for passenger and cargo transportation and ensure their safe and efficient operation by promoting the separation of cargo and passengers at the international port in the capital city of Dili through the relocation and expansion of the existing ferry terminal, thereby contributing to the improvement of access to the enclave and remote islands, and the promotion of economic activities through the expansion of maritime transport. The project was fully in line with the country's development policy and development needs. The project was fully consistent with Japan's aid policy. While the project was linked to other JICA projects and technical assistances from other donors, the results of the links were not fully confirmed. Thus, the relevance and consistency of the project was high. While

the project period exceeded the plan due to design changes during project implementation, the project cost was kept within the plan, and thus the efficiency of the project is high. The targets for ferry berthing times and the annual number of ferry passengers, which were the operation and effect indicators, were both achieved, and a certain contribution to an increase in the number of ferry operations and efficient operation in handling containerized cargo and so on was confirmed. Through on-site interviews, qualitative effects were recognized such as ensuring the safety of passengers including children, the elderly, and physically challenged people when boarding and disembarking from ferries, efficient ferry boarding, and improved access to remote islands and enclave. In addition, project impacts such as improved quality of life and revitalization of the economic activities of residents of the enclave and remote islands were confirmed. No negative impacts on the natural and social environment due to the project were observed. Therefore, the effectiveness and impact of the project are high. Some minor issues have been observed in technical, financial and environment and social aspects of operation and maintenance including the current status of the facilities. Therefore, the sustainability of the project effect is moderately low.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Prompt responses to suggestions made in the defect inspection report and other necessary repair

Items recommended in the defects inspection that have not yet been addressed (periodic inspections and proper maintenance of the facility, permanent repairs of damages to jetty concrete caused by ship collision, construction of passenger terminal building) and the items identified during the actual field survey of this ex-post evaluation (damage to the handrails of the movable ramp and jetty due to ship collision, tilting of the LED lighting pole, rusting of the rampway of movable ramps and pier ramp protection plates, failure of LED lighting on the pier, damage to fire hoses, UPS battery depletion in the movable ramp operation room, etc.) need to be addressed as soon as possible. In particular, immediate remedial actions are required to prevent children from entering the ferry terminal, which could cause serious accidents.

(2) Completion of the Timor-Leste side output

The construction of the passenger terminal building, which was to be constructed by Timor-Leste side, had not been started at the time of the ex-post evaluation. Since this passenger terminal building is essential for the effective utilization of the new ferry terminal and the convenience of ferry passengers, the construction should be carried out as planned.

(3) Improvement of the technical capacity for facility maintenance

APORTIL needs to improve its organization-wide technical capacity for facility maintenance, periodic inspections and maintenance of the new ferry terminal. As part of the ongoing development study-type technical cooperation " The Project on Strategic Port Development Master Plan in Timor-Leste ", JICA is scheduled to support APORTIL in developing an action plan to improve the APORTIL port operation, maintenance and management system, including organizational and institutional design for operation and maintenance. JICA will also dispatch a new JICA long-term expert in "Maritime Administration Management and Port Operation", in order to improve the maintenance capacity of APORTIL. It is necessary to improve maintenance capacity as an organization, through such technical assistance, by developing maintenance and operation plans and maintenance manuals, etc., for the new ferry terminal facilities and by conducting training for staff on maintenance.

(4) Additional efforts to improve safety when disembarking from ferries

Although ferry passengers' safety when boarding and disembarking from ferries has been significantly improved by this project, there are still some cases where passengers are crowded in the aisles of ferries, which is dangerous for children and the elderly, and where disembarking passengers, disembarking vehicles, and vehicles that enter to the platform to pick up luggage as well as cargo mix together on the platform, which can also sometimes be dangerous. Therefore, it is necessary to adopt measures to improve safety during disembarkation, such as announcements and guidance inside the ferry, and traffic guidance and clear separation of vehicles and passengers at the platform.

(5) Restoration of the port asset management database that serves as a ledger of port facilities and equipment

The database that serves as a ledger of port facilities and equipment, which was established with JICA assistance, was damaged by flooding in April 2021, and is still unusable. Since this database is important for proper facility maintenance management, it needs to be restored as soon as possible.

4.2.2 Recommendations to JICA

It is desirable that JICA encourage APORTOL to implement the above recommendations, monitor their implementation status, and encourage the relevant agencies as necessary.

4.3 Lessons Learned

(1) Ongoing support to improve the maintenance capacity of the implementing agency

Despite the fact that JICA provided support to the implementing agency to improve their capacity for facility maintenance through the dispatch of long-term and short-term experts during

project implementation, there were no maintenance manuals or maintenance plans at the time of the ex-post evaluation, and no maintenance work related to periodic preventive maintenance was being conducted. This is largely due to the lack of awareness of the importance of preventive maintenance and periodic maintenance activities in the implementing agency, which is thought to reflect the lack of sufficient experience and knowledge related to maintenance activities to date.

It is often difficult for small and new countries and organizations such as Timor-Leste to secure sufficient maintenance budgets, and maintenance activities with a limited budget should be focused on preventive maintenance in a way that incurs as little repair cost as possible. To this end, it is necessary to change the mindset of staff involved in maintenance activities from thinking about repairing damage when it occurs to thinking about what should be done to prevent damage, and to share knowledge and experience about the importance of preventive maintenance, so that regular maintenance activities can take root within the organization. Therefore, for organizations that do not have sufficient awareness of such preventive maintenance, it is desirable that support of JICA experts and others be provided to encourage a change in awareness of maintenance activities during project implementation, and also to promote awareness of the importance of preventive maintenance and other periodic maintenance within organizations through continuous support and periodic monitoring of implementation for several years after project completion.

(2) Selection of equipment considering local conditions

As described in 3.4.7 “Status of Operation and Maintenance," repair parts for LED lighting on the jetty and UPS in the movable ramp operation room are not available in Timor-Leste and must be imported from overseas. However, importing parts is often difficult due to the relatively high cost of importing in small lots. Therefore, in countries where it is not easy to import repair parts, such as in the case of small island countries, it is desirable to examine whether it is possible to use local repair parts and choose easily procurable equipment at the time of the overall design of the project.

(3) Continuous collaboration with donors providing assistance in the same sector

Technical assistance related to this project was provided to the implementing agency by GIZ and JICA. At the time of planning, the areas of the assistance were determined based on discussion between GIZ and JICA so that they would be complementary and comprehensive with no overlap: GIZ support for human resource development in the maritime transport sector, and JICA support for port operations and management, and capacity building for the maintenance of facilities and equipment. In addition, during implementation of the project, continuous information sharing, participation in workshops, knowledge sharing in areas where JICA experts did not have sufficient knowledge, and other continuous collaboration were implemented. When multiple donors provide related technical assistance to the same implementing agency, it is desirable that coordination take

place not only to avoid duplication of assistance areas, but also to coordinate and collaborate with other donors to enhance the overall effectiveness of the assistance through continuous information and knowledge sharing during project implementation.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

JICA has recognized the need for continuous support for the maintenance and operation of APORTIL, as awareness of maintenance and operation did not take root in APORTIL, and adequate maintenance activities were not implemented. Thus, JICA provided technical assistance during the implementation of the project, including the dispatch of JICA long-term experts and sending APORTIL staff in charge of facility maintenance to training programs in Japan. Even after completion of the project, JICA has continued to implement initiatives to improve the maintenance capacity of the implementing agency by formulating an action plan to improve the port operation and maintenance management system as part of the ongoing technical cooperation " The Project on Strategic Port Development Master Plan in Timor-Leste " as well as dispatching new JICA long-term experts, and other efforts.

5.2 Additionality

None

(End)