

Ex-Ante Evaluation

1. Name of the Project

Country: The Republic of Madagascar

Project: Toamasina Port Development Project

Loan Agreement: March 23, 2017

Loan Amount: 45,214 million yen

Borrower: The Government of the Republic of Madagascar

2. Background and Necessity of the Project

(1) Current Development State and Issues of the Port Sector in Madagascar

The Republic of Madagascar is an island country located in the Southern Indian Ocean. In this country, marine transportation plays an important role as a key transport mode. Toamasina Port, Madagascar's largest commercial seaport, handles approximately 75% of the domestic cargo and approximately 90% of the international cargo in the country. The nation's GDP growth rate, which had remained less than 3% since the political crisis in 2009, showed a sign of recovery after the new government was established in 2014. The growth rate is expected to go up to about 4% in 2015 and remain constant for the following several years (IMF, 2016). If the economic growth continues, Toamasina Port is expected to witness an increasing demand for container cargo handling. It is likely to exceed the capacity of the Port, which only has a narrow container terminal with short, shallow-draft quays. The Port is also seeing a rapid expansion in the volume of bulk cargo (e.g. unpacked cereals, minerals, and cement). In fact, the bulk cargo volume handled at the Port increased by 1.5 times for the four years from 2011 to 2014 and is expected to continue to grow. Moreover, although bulk cargo ships are becoming larger, the Port's berths handling bulk cargo are also shallow (with a draft of approximately 10m) and not able to accommodate large ships. Therefore, it is urgent to build quays to accommodate large vessels.

Furthermore, the Port imports mechanical equipment and materials and exports finished products for the Ambatovy Project, one of the World's largest nickel mining projects in which a Japanese company participates. In order to meet the increasing demand for the production and export of mineral resources, which play a key role in the economic growth of Madagascar, it is urgent to expand and improve the Port's facilities.

(2) Development Policies for the Port Sector in Madagascar and the Priority of the Project

The Government of Madagascar aims to raise the economic growth rate to 10% per year by 2017, and it is actively developing infrastructure that can serve as the foundation for economic growth. Both the Programme General de l'Etat (PGE; General State Programme adopted in 2014) and the Plan National de Développement (PND; National Development Plan adopted in 2015) identify the construction of core infrastructure that can promote investment and private sector development as a priority challenge. Meanwhile, the Politique Sectorielle des Transports (Transport Sector Policy) gives the highest priority to the development of Toamasina Port.

(3) Japan and JICA's Policy and Operations in the Port Sector

Placing a focus on economic development, JICA has implemented cooperation projects,

mainly for infrastructure development in the transport and traffic sector, such as the Project of Construction of a By-Pass of National Route 7 (Grant Aid) and the Establishment of a Database for Geographic Information Systems of the Capital Area (Technical Cooperation).

Responding to the establishment of the new Government of Madagascar in 2014, the Government of Japan is developing a new country assistance policy. Still, the Government of Japan is planning to continue to support the development of economic infrastructure, which the Government of Madagascar regards as a priority issue in the PGE and PND. One of the cooperation projects implemented to assist the new Government of Madagascar is the Assistance for implementation of Toamasina Port Development Project in the Republic of Madagascar (Technical Assistance Related to ODA Loan from November 2014 to June 2015) consisting of a preparatory study for this Project and a training course for the Société du Port à Gestion Autonome de Toamasina (SPAT) about the procedures for Japanese ODA Loan. Moreover, JICA is planning to implement the Project on Master Plan Formulation for Economic Axis of TaToM (Tananarive-Toamasina, Madagascar) (Development Study from 2016 to 2018) to support the formulation of a master plan to develop the capital city area of Antananarivo and the urban area of Toamasina towards 2033 as well as strengthen the connection between the two cities.

(4) Other Donors' Activity

The World Bank provided financial support for the development of facilities at Toamasina Port (breakwater and Berths B and C) in 1988. In the 2000s, the World Bank also implemented several projects to assist the SPAT with its organizational restructuring as a result of obtaining autonomous port status, as well as its selection of concessionaires.

(5) Necessity of the Project

This Project is in line with the assistance policies of the Government of Japan and the analysis of JICA as well as the development policies of the Government of Madagascar. The Project is also expected to contribute to Sustainable Development Goals 8 and 9. Moreover, the Project is considered to be important as support for infrastructure development to improve the business environment for Japanese and other companies engaged in the production and transport of agricultural products, such as cacao, and mineral resources, such as nickel. Therefore, it is highly necessary for JICA to implement this Project.

3. Project Description

(1) Project Objective

The project will increase the capacity for responding to growing cargo demands and improve the productivity of the cargo-handling in Toamasina Port by expanding and improving the port facilities, thereby, streamlining mineral resource transportation and boosting investments and private sector development so as to contribute to the economic development of the country.

(2) Project Site/Target Area

Toamasina City, Atsinanana Region (Population: 1.27 million, as of 2103)

(3) Project Components

- 1) Package 1 (International Competitive Bidding): Production of blocks (Wave absorption blocks will be first installed along the breakwater to reduce the construction period and

mitigate traffic congestion on roads connecting to the Port during the construction.)

2) Package 2 (International Competitive Bidding):

- Extension of the breakwater (up to 345m in length)
- Construction of the Container Berth C4 with a length of 470m and a draft of 16m
- Extension of the container yard (up to 10ha)
- Deepening of the Container Berth C3 (up to 16m in depth)
- Deepening of the Bulk Cargo Berths C1 and C2 (up to 14m in depth)

The loading and unloading equipment (i.e. three gantry cranes) that will be used at the Container Berth C4 will be procured by the SPAT and the relevant private operator.

3) Consulting Services (Short-listing Method):

- Construction supervision of Package 1
- Detailed design, bidding assistance, and construction supervision of Package 2

(4) Estimated Project Cost

70,207 million yen (Loan Amount: 45,214 million yen)

(5) Schedule

April 2017 to April 2027 (121 months in total). The project completion is defined as the commencement of the service (in April 2026). Services of the Container Berth C4 will be partly commenced in 2021.

(6) Project Implementation Structure

1) Borrower: The Government of the Republic of Madagascar

2) Guarantor: none

3) Project Executing Agency: Société du Port à Gestion Autonome de Toamasina (SPAT)

4) Operation and Management System

The Container Berth C3 is being operated by Madagascar International Container Terminal Services Ltd (MICTSL), a private company which has signed a concession agreement until 2025 with the SPAT. MICTSL is responsible for the daily maintenance of the terminal, while the SPAT is in charge of the repair and maintenance of major structures. The Container Berth C4, a new berth that will be constructed through this Project, is also planned to be operated by MICTSL until 2025. Some of the loading and unloading equipment that will be used at the Container Berth C4 will be procured by MICTSL based on the consultation with the SPAT. It has not been decided who will operate the Container Berths C3 and C4 after 2026, and the SPAT will consider whether to renew the agreement with MICTSL or to select a new operator. The Bulk Cargo Berths C1 and C2 are maintained in a similar way to that for the container berths; Société de Manutention des Marchandises Conventionnelles (SMMC), a state-owned company which has signed a concession agreement with the SPAT, is responsible for their daily maintenance, and the SPAT is in charge of the repair and maintenance of major structures.

(7) Environmental and Social Considerations/Poverty Reduction/Social Development

1) Environmental and Social Considerations

(i) Category: A

(ii) Reason for Categorization

The project is categorized as A because it is located in or near sensitive areas as

specified in the Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (published in April 2002).

(iii) Environmental Permit

The Environmental Impact Assessment (EIA) report for this Project was approved in December 2010 by the National Office for Environment (ONE). In accordance with partial modification of the scope of the project, an additional EIA report was submitted to ONE in 2015. The environmental permit was obtained in June 2015 after the update of the scope.

(iv) Anti-Pollution Measures

During the construction period, air, water, and noise pollution will be controlled by maintaining construction vehicles on a regular basis, taking measures to mitigate traffic congestion, installing impermeable sheets during the dredging works, and using the closed-type grab dredging method. Moreover, if the sand dredged for reclamation is contaminated with heavy metals or polychlorinated biphenyls (PCBs), it will be lined and sealed to prevent their seepage into the ocean. After the commencement of operation, air and noise pollution will be controlled by developing and implementing traffic congestion mitigation measures, in cooperation with the local government, to alleviate the impact of large vehicles, which are likely to increase in number around the Port.

(v) Natural Environment

Although the coral reef habitats in the vicinity of the project site have been designated as sensitive areas by the authorities of Madagascar, the surrounding areas are allowed to be developed. The coral reefs will be protected by transplanting precious species during the construction period and using wave absorption blocks on which it is easy for coral polyps to form reefs. Moreover, measures will be taken to prevent water pollution. Therefore, this Project is not likely to have a significant adverse impact on the natural environment. Moreover, because this Project may cause coastal erosion and soil sedimentation, a detailed study will be conducted to consider the construction of groins.

(vi) Social Environment

This Project will not involve land acquisition or involuntary resettlement because it is to expand an existing port. The extension of port facilities, however, may strengthen port security measures, which may cause a negative impact on the livelihood of fishermen. In such a case, livelihood recovery measures will be taken based on the request of the affected fishermen.

(vii) Other/Monitoring

In this Project, the quality of air and water, the levels of noise, the changes of the shoreline and coral reefs, and the livelihood of fishermen will be monitored by the implementing agency during the construction period and after the commencement of operation. In particular, there is a concern that the extension of the breakwater may promote the erosion of Tanio Point located on the opposite side of the Port. Therefore, the detailed study of this Project will simulate potential erosion and explore necessary

countermeasures, which will be put into action by the implementing agency after the commencement of operation.

2) Promotion of Poverty Reduction

None in particular.

3) Promotion of Social Development (e.g. Gender Perspective, Measures to Prevent Infectious Diseases Including AIDS, Participatory Development, Consideration for Handicapped, etc.)

This Project will entail large scale construction works involving a number of construction workers, which may enhance the risk of HIV infection. Therefore, this Project is designed to ensure that the contractors will take HIV/AIDS prevention measures, including measures to assure labor safety and sanitation, in cooperation with local NGOs. Moreover, this Project will apply the “same pay for same work” principle to all construction workers as well as install facilities (e.g. separate toilets) for female workers.

(8) Collaboration with Other Donors

None in particular.

(9) Other Important Issues

This Project is expected to involve Japanese companies as it is planned to use the technologies and methods in which Japanese companies have comparative advantage, such as (i) using large wave absorption blocks that are stable against high waves and other hazards in waters facing the open sea, (ii) utilizing an environmentally friendly dredging method, and (iii) constructing a berth with steel pipe sheet piles so as to make it resilient to cyclones and other natural disasters, enable construction in the deep water and on the soft ground, reduce the construction period, and strengthen the foundation.

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcomes (operation and effect indicators)

Indicators	Baseline (Actual value in 2014)	Target (2027) [Two years after project completion]
Annual volume of containers handled at Berths C3 & C4 (TEU)	206,990	459,887
Annual average volume of containers handled at Berths C3 & C4 per operation hour (TEU/h)	40.55	50.00
Annual average volume of cargo handled at Berths C1 & C2 (tons/year)	277,744	616,762
Volume of cargo handled at Berths C1 & C2 per vessel (tons/vessel)	20,000	50,000
Berth occupation ratio at Berths C1 & C2 (%)	24.31	50.00

(2) Qualitative Effects

Spillover effects of the increase in the cargo volume handled at Toamasina Port on the economic growth of Madagascar; facilitation of trade and transport between Madagascar and neighboring countries; promotion of private investment; and improvement of port services at Toamasina Port

(3) Internal Rate of Return

Base on the conditions below, the Economic Internal Rate of Return (EIRR) of this project was calculated as 18.3% and the financial internal rate of return (FIRR) will be 7.2%.

【EIRR】

Cost: Project cost (excluding tax), operation and maintenance expenses

Benefit:

- Increase in the revenue from the transshipment of containers by constructing and deepening container berths
- Reduction in the cost of transshipping containers at a neighboring port (in Port Louis, Mauritius)
- Reduction in the cost of hiring small carrying ships from the Port of Port Louis to Toamasina Port
- Reduction in the cost of marine transport by facilitating the gigantism of bulk cargo ships
- Reduction in the transport time by making it unnecessary to transship cargo at a neighboring port (in Port Louis, Mauritius)

Project Life: 35 years

【FIRR】

Cost: Project cost, operation and maintenance expenses

Benefit: Revenue from cargo handled, ship's harbor charges

Project Life: 35 years

5. External Risk Factors and Control

The political situation in Madagascar does not become unstable. The macro economic conditions do not deteriorate significantly.

6. Lessons Learned from Past Projects

(1) Evaluations of similar projects undertaken in the past

The evaluation of the Batangas Port Development Project (Phase II) in the Republic of Philippines pointed out that the operating ratio of the new terminal constructed through the project had remained low. Therefore, the achievement level was assessed as low in terms of the volume of containers handled, which was used as an operation and effect indicator for the project. One of the reasons suggested in the evaluation study was because the demand forecast had not been accurate enough, from which a lesson was learned that the demand forecast should have taken as much account as possible of the medium-to-long term outlook on the industrial structure in the hinterland of the port, the needs of potential client companies, and the possible course of action to be taken by the shipping companies that actually deal with cargo.

Moreover, the ex-post evaluation of the Subic Bay Port Development Project, also implemented in the Republic of Philippines, indicated that port facilities can be optimized for future use by examining and analyzing the policies and plans on other relevant projects (including projects for development of cities, industries, and trunk roads around the port), differentiating the roles of the port from those of other ports inside and outside the country, and selecting a port operator at an appropriate time.

(2) Lessons for this project

The preliminary study of this Project collected and analyzed information on the trend of (container and bulk) cargo ships becoming larger, the operations of shipping companies, the conditions and roles of ports in Madagascar and neighboring countries, and the efficiency of the cargo handling operations of Toamasina Port in comparison with neighboring ports to make a demand forecast.

Moreover, in order to promote the effective use of the port facilities that will be constructed and improved through this Project, JICA started the Development Study Project on Master Plan Formulation for Economic Axis of TaToM (Tananarive-Toamasina, Madagascar) (2016-2018) in the third quarter of 2016 to support the formulation of a comprehensive city development plan for the regional economic area including the capital city of Antananarivo and the city of Toamasina. JICA is also planning to continue to assist Madagascar with the implementation of this development plan and provide other support over the medium-to-long term.

With regard to the operation of the container berths after 2026, the SPAT will consider whether to renew the existing agreement or to select a new private operator. It is essential to pay regular attention to the deliberations of the SPAT so that it can appoint a private operator for the terminal at a proper time.

7. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- 1) Annual volume of containers handled at Berths C3 & C4 (TEU)
- 2) Annual average volume of containers handled at Berths C3 & C4 per operation hour (TEU/h)
- 3) Annual average volume of cargo handled at Berths C1 & C2 (tons/year)
- 4) Volume of cargo handled at Berths C1 & C2 per vessel (tons/vessel)
- 5) Berth occupation ratio at Berths C1 & C2 (%)
- 6) Economic internal rate of return (EIRR) (%)
- 7) Financial internal rate of return (FIRR) (%)

(2) Timing:

Two years after project completion