

Ex-Ante Evaluation

1. Name of the Project

Country: The Republic of the Union of Myanmar

Project: Yangon-Mandalay Railway Improvement Project Phase I (I)

Loan Agreement: September 5, 2014

Loan Amount: 20,000 million yen

Borrower: The Government of the Republic of the Union of Myanmar

2. Background and Necessity of the Project

(1) Current State and Issues of the Railway Sector in Myanmar

The total length of the railway network managed and operated by Myanmar Railways (MR) is 5,934 km (as of 2013). Since the 1990s, constructed new lines reaches in total of 2,847 km, the total length of 474 km is planned as the new railway lines. As MR is spending large amount of its annual investment on the new line construction, the renewal of existing transportation facilities and equipment has become a pressing task. The Yangon-Mandalay line is an imperative line (approx. 620 km, double track) that connects Myanmar's largest city of commerce (Yangon), its capital city (Nay Pyi Taw), and its second largest city of commerce (Mandalay). The estimated population living along the railway has increased from 19,810 thousand in 2005 to 20,950 thousand in 2009 (average increase: approx. 1.8% per year). While the demand for passenger and cargo transport is rising, delays and train-derailments are major concerns for deteriorated transportation service. In order to ensure measures to meet steadily rising demand and to improve the service, the old transportation facilities and equipment must be urgently renovated and modernized.

(2) Development Policies for the Railway Sector in Myanmar and the Priority of the Project

MR considers prioritizing the renovation of transportation facilities and equipment of existing lines, instead of constructing new lines. At the 1st Myanmar Development Cooperation Forum in January 2013, the Ministry of Rail Transportation announced the Project as having the highest priority among others.

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

According to the aid policy for Myanmar's economy by Japanese government established in April 2012, "Assistance for development of infrastructure and related systems necessary for sustainable economic development" is positioned as the main target in the policy. The Project aims to improve arterial rail transportation service and improve the public transportation service that connects major cities. Thus by contributing to revitalize the economic activities, the Project is consistent with the aid policy above. JICA also implemented an ODA loan project "Railway Rehabilitation Project (1) & (2)" from December 1982 to August 1984, and supported the procurement of rolling stock, essential facilities and materials for those assembly and

maintenance. In addition, JICA began technical cooperation in the form of the “Project on Improvement of Service and Safety of Railway” from May 2013, and is working to enhance the capacity of administration, maintenance, and management.

(4) Other Donors’ Activity

Germany provided technical support for the maintenance and management of railway facilities. China supported the construction of a rolling stock factory (locomotives and passenger coaches), while India supported the procurement of rolling stock in loan projects.

(5) Necessity of the Project

The Project is consistent with Myanmar’s development tasks and development policies, as well as with Japan’s and JICA’s aid policies. Accordingly, both the necessity and relevance for JICA’s support in implementing the Project are high.

3. Project Description

(1) Project Objectives:

The Project aims to renovate and modernize the old facilities and equipment in the section between Yangon and Taungoo of the existing railway that connects Myanmar’s largest and second largest cities (Yangon and Mandalay). The Project also aims to promote safer and faster train service, enhance the capacity for passenger and cargo transport, and thus to contribute to Myanmar’s economic growth.

(2) Project Site/Target Area

Zone between Yangon and Taungoo (approx. 260 km) of the existing railway that connects Yangon and Mandalay (approx. 620 km)

(3) Project Components

Rehabilitation of existing railway and relevant facilities and materials for the section between Yangon and Taungoo (approx. 260 km) of the existing railway that connects Yangon and Mandalay (approx. 620 km)

- 1) Civil engineering work (renovation and improvement of civil engineering structures including tracks)
- 2) Railway system (renewal of signaling and telecommunication facilities)
- 3) Rolling stock (introduction of new rolling stock)
- 4) Consulting service (e.g. bidding support, supervision of construction)

(4) Estimated Project Cost (Loan Amount)

64,263 million yen (Loan Amount 56,936 million yen)

(5) Schedule

The Project is scheduled to be carried out from September 2014 to June 2022 (a total of 100 months); the Project completion is defined as the completion of construction (June 2020).

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of the Union of Myanmar
- 2) Guarantor: None

- 3) Executing Agency: Myanmar Railways (MR)
- 4) Operation and Maintenance System: MR
- (7) Environmental and Social Consideration/Poverty Reduction/Social Development
 - 1) Environmental and Social Consideration
 - (i) Category: B
 - (ii) Reason for Categorization

The Project does not fall under the large-scale railway sector as per the “Japan International Cooperation Agency Guidelines for Environmental and Social Consideration” (hereinafter referred as “JICA guidelines”) (issued in April 2010), and is judged to have minimum undesired impact on the environment. Since the component is mainly focus on renovating and rehabilitating existing facilities, the Project is not likely to have a significant adverse impacts specified by the JICA Guidelines.
 - (iii) Environmental Permit: Myanmar’s domestic laws do not require the preparation of an environmental impact assessment (EIA) report concerning the Project.
 - (iv) Anti-pollution Measures: Taking measures against air pollution and water contamination expected during construction work, such as maintaining construction machinery, reducing dust by sprinkling water, and constructing sewage and a sedimentation basin as needed, are expected to minimize negative impact. Adjustments in the work schedule and the maintenance of construction machinery will also be adopted to minimize expected noise levels during construction.
 - (v) Natural Environment: The Project does not include any national parks or other areas susceptible to impact so as to have minimum undesired impact on the natural environment.
 - (vi) Social Environment: The Project is conducted on land owned by MR, and does not need the acquisition of land. However, the Project does include the involuntary resettlement of 24 residents. According to the JICA Guidelines, those residents will be relocated in line with the Resettlement Action Plan for relocating residents prepared by MR in November 2013. No specific objection about relocation issues was raised in the stakeholder meeting. Sufficient compensation and support including the provision of information in advance) will be provided to the residents.
 - (vii) Other / Monitoring: MR will monitor air pollution, water quality, and noise during construction and after provision.
 - 2) Promotion of Poverty Reduction: Not in particular
 - 3) Promotion of social development (e.g. gender perspective, measures for infectious diseases including HIV/AIDS, participatory development, considerations for persons with disabilities):
Not in particular
- (8) Collaboration with Other Donors: None
- (9) Other Important Issues: None

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual Value in 2013)	Target (2026) [Expected value 4 years after project completion]
Quantity of passenger transportation (person/km/day) *	3,317,908	27,524,873
Volume of cargo transportation (ton/km/day) *	2,789,477	15,815,649
Number of train service (number of service per day)	27.5	164
Car-Kilometer (km per day)	11,112	52,119
Travel Time between Yangon and Taungoo (hours)	6 hours, 54 minutes	3 hours, 20 minutes

*Measuring section: Yangon-Mandalay(Whole section)

2) Internal Rate of Return

Based on the conditions indicated below, Economic Internal Rate of Return (EIRR) of the Project is calculated to be 23.0%, and Financial Internal Rate of Return (FIRR) is 12.0%.

[EIRR]

Expenses: Project cost (excluding tax), cost of administration, maintenance, and management

Benefits: Reduced transportation time for railway users, reduced cost of driving automobiles, less time spent driving automobiles and increased income derived from transportation income

Project life: 30 years

[FIRR]

Expenses: Project cost (excluding tax), cost of administration, maintenance, and management

Benefit: Income derived from transportation income

Project life: 30 years

4 Qualitative Effects

- Safe operations of trains

5. External Factors and Risk Control

- Decrease of cargo and passenger transportation due to rapid deterioration of Myanmar's economy
- Significant change in policies for the rail transportation sector

6. Lessons Learned from Past Projects

(1) Evaluation of Similar Projects

Ex-post evaluation of the "Railway Rehabilitation Project (1) & (2)" in Myanmar pointed out that MR constantly faces the problems of a shortage of spare parts, an insufficient number of rail engineers, and thus a need for improvement of maintenance and management system.

(2) Lessons Learned from Past Projects

In line with the lessons learned above, through technical cooperation in the form of the

“Project on Improvement of Service and Safety of Railway” (ongoing since 2013), the capacity of maintenance and management should be improved. The budget for spare parts confirmed secured for the Project.

7. Plan for Future Evaluation

(1) Indicators to be Used

Quantity of passenger transport (person/km/day), volume of cargo transport (ton/km/day), number of train services (number of train services per day), total distance (km per day), travel time required between Yangon and Taungoo (hours), income derived from train fares (kyat per year)

(2) Timing

Four years after completion of the Project (when the rehabilitation of the whole section of Yangon-Mandalay railway line is completed)