

**Preliminary Project Evaluation Sheet**  
**JICA, Southeast Asia and Pacific Department,**  
**Southeast Asia Division 4**

**1. Project name**

**Country:** Republic of the Union of Myanmar (Myanmar)

**Project name:** Yangon-Mandalay Railway Improvement Project Phase II (I)

**L/A signing date:** March 29, 2018

**2. Project background and necessity**

**(1) Current state of and issues in the development of the Myanmar rail sector, and the role of this project**

Myanmar's rail network totals 6,072 km in length (as of 2015) and it is entirely managed and operated by Myanma Railways (MR). Within this network, the Yangon-Mandalay Line is a major line (approx. 620 km, double-track railway) that connects Myanmar's largest commercial city (Yangon) with the capital of Nay Pyi Taw and the second-largest commercial city (Mandalay). Around 40% of the population of Myanmar lives along this route. As the Myanmar economy develops, the number of passengers on the route is expected to grow from 163,300 per day in 2013 to 887,500 per day in 2030; freight is expected to grow from 90,100 tons per day in 2013 to 379,900 tons per day in 2030. However, most of the major rail lines were constructed in Myanmar's era as a British colony, and the deteriorating rail facilities and equipment result in slower rail speeds, delays, derailment accidents, and other problems. Therefore, the renewal and modernization of existing rail facilities and equipment are now pressing issues in Myanmar in order to respond to increasing demand and to improve transport services.

In the Myanmar National Transport Master Plan approved by the cabinet in December 2015, the Yangon-Mandalay Railway Improvement Project Phase II (hereinafter "this project") is established as a priority project for rapid implementation. The current administration, launched in late March 2016, has continued the previous administration's policies focusing on rail development, and the loan contract for the second period of Phase I was signed in March 2017.

## **(2) Japan and JICA's collaborative policies toward the rail sector, and the role of this project**

The Japanese policy on economic cooperation with Myanmar, formulated in April 2012, includes “support for the construction of the infrastructure and organizational systems required for sustainable growth” as an area of priority. One specific policy to this end included in the policy is the “operational improvement and modernization of railroads.” Moreover, this project is in accordance with “IV. Strengthening of transportation infrastructure to connect urban and rural areas,” one of the priority sectors in the Japan-Myanmar Cooperation Program announced in November 2016. This is also included in the project list of that program. In addition, this project can be considered to contribute to the achievement of SDGs Goal 9 (“Build resilient infrastructure”), making it highly necessary for JICA to provide support for its implementation.

In FY 2013, JICA dispatched “rail policy advisors” to Myanmar, and in the same year implemented the Project on Improvement of Service and Safety of Railway in Myanmar as a form of technical cooperation. JICA is currently conducting the Project on Improvement of Railway Service and Rolling Stock Maintenance, which began in FY 2017. In terms of grant aid, JICA has supported the Project for Installation of Operation Control Center System and Safety Equipment (for railways) since FY 2013. In terms of loan assistance projects, JICA has supported the Yangon-Mandalay Railway Improvement Project Phase I (hereinafter “Phase I”) since FY 2014, and the Yangon Circular Line Upgrading Project (hereinafter “YCR”) since FY 2015.

## **(3) Other aid organizations**

China provides support for rolling stock (locomotives / passenger cars) factories, and in May 2015 it provided support to Myanma Railways for eleven 200-horsepower locomotives. In November 2015, South Korea agreed to provide aid for the purchase of 100 new passenger cars. India is also providing aid for the procurement of rolling stock, etc.

## **3. Project overview**

### **(1) Objective**

The objective of this project is to achieve safer high-speed rail service and

build up capacity for passengers and cargo by improving and modernizing the deteriorating facilities and equipment on the section of rail between Taungoo and Mandalay, located on the existing rail route running between Yangon and Mandalay, thereby contributing to the economic development of Myanmar.

**(2) Project site / Target area name**

Bago region, Mandalay region

**(3) Project overview**

This project entails the following improvements and modernizations, focused on the existing rail route between Yangon and Mandalay (approx. 350 km) on the larger double-track railway running between Yangon and Mandalay (approx. 620 km).

- A) Public works (track works [replacement of all rails, rail tracks, roadbeds, sleepers, and clips], replacement of bridges, and Improvement and installation of new signal & telecommunication systems)
- B) Rolling stock (procurement of 180 new diesel-electric multiple units (DEMU))
- C) Train Monitoring System (TMS) procurement
- D) Track rail fastening procurement
- E) Power-supply construction
- F) Implementation of passenger services (train ticket reservation / issuing system)
- G) Consulting services (bidding support, construction management, etc.)

**(4) Total project costs**

207,281 million JPY (of which 171,556 million JPY is for yen loan)

**(5) Project implementation schedule**

Scheduled for March 2018 through December 2026 (total of 106 months). The project will be concluded once construction is concluded in December 2024.

**(6) Project implementation framework**

- 1) Borrower: The Government of the Republic of the Union of Myanmar

2) Guarantor: None

3) Project-implementing body: Myanma Railways (MR)

4) Operation / Administration / Maintenance / Management: MR has performed construction and other work on existing lines in the past, and thus it has some experience with operation, administration, maintenance, and management. Additionally, there are no particular problems in terms of finances, as the central government will allocate budget funds to MR for maintenance purposes.

**(7) Collaboration and division of roles with other projects, other aid organizations, etc.**

1) Japanese support activities: None

2) Support activities by other aid organizations, etc.: None

**(8) Environmental and social considerations / poverty reduction / social development**

**1) Environmental and social considerations**

1. Category: B

2. Basis for categorization: This project does not classify as a large-scale project within the railroad sector according to the JICA Guidelines for Environmental and Social Considerations (published April 2010). This project has been determined to have minimal undesirable impact on the environment, and it does not feature characteristics that would make it likely to have an environmental impact, nor is it located in a region vulnerable to environmental effects as per the same guidelines.

3. Environmental permits: The Environmental Impact Assessment (EIA) for this project was submitted to the Environment Conservation Department (ECD) of the Ministry of Natural Resource and Environment Conservation (MONREC) in December 2017, and the plan is to receive approval by August 2018.

4. Pollution countermeasures: Atmospheric pollution and water pollution expected to be generated during construction will be mitigated through the use of water sprinklers to reduce dust, as well as the installation of drainage channels and (as necessary) grit chambers. Additionally, noise expected to be generated by construction will be mitigated through measures such as by

conducting noisy construction that makes use of construction machinery during the daytime rather than the nighttime. This is expected to keep the impact of such noise to a minimum.

5. Natural environment: The areas targeted by the project are not environmentally vulnerable sites such as national parks, nor are they located in the vicinity of such sites, and thus there is expected to be minimal undesirable impact on the natural environment.
6. Environmental and social: This project aims to improve existing rail facilities and equipment, and thus there will be no new land acquisition. However, 24 unauthorized resident households and 103 such individuals will be affected, with 18 of those households and 82 of those individuals expected to be resettled. Resettlement procedures are to be conducted as per a resettlement plan created based on Myanmar laws and ordinances as well as the JICA Guidelines for Environmental and Social Considerations. No particular opposing opinions were noted at meetings with residents (public consultations).
7. Other / monitoring: During construction, MR will monitor water quality, noise levels, etc. MR will also monitor noise, etc., during resettlement and after opening for public use.

## **2) Cross-sectional items**

**3) Gender category:** Gender Informed (Significant) – gender activity integration project

<Activity content / categorization reason>

With improvement work on station buildings, it is planned to install hygienic toilets taking a “gender-free perspective,” in addition to gender-separated nap rooms. Due to this, this project is categorized as a “project that studies / analyzes gender mainstreaming needs.”

**(9) Other special notes:** None

<b>4. Project outcomes</b>
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## (1) Quantitative outcomes

### 1) Outcomes (Operational / effectiveness indicators)

Indicator name	Reference numbers (2017 estimates)	Target numbers (2026) [2 years after project completion]
Train operation rate (%)*	76.6	85
Passenger Transportation (Man-km / day)**	2,089,247	10,190,618
Freight Transportation (Ton-km / day)**	922,486	2,386,800
Number of running trains / day*	28	104
Passenger Transportation (Train km / day)**	7,815	38,125
Freight Transportation (Train km / day)**	3,297	8,824
Passenger Revenue (Kyat / day)**	13,525,493	310,123,288
Freight Revenue (Kyat / day)**	91,560,700	245,049,315
Time required between Taungoo and Mandalay (Passenger Express Train) (hours and minutes)**	8 hours, 1 minute	4 hours, 49 minutes
Time required between Taungoo and Mandalay (Freight Train) (hours and minutes)**	11 hours, 24 minutes	6 hours, 40 minutes

\*Effects measured across the entire Yangon-Mandalay route.

\*\*Effects measured across the span of track from Taungoo to Mandalay.

## (2) Qualitative outcomes

Safe train operation and invigorated distribution / logistics.

## (3) Internal rate of return

Based on the assumptions below, this project's Economic Internal Rate of Return (EIRR) is 16.89%. Its Financial Internal Rate of Return (FIRR) is 13.55%.

[EIRR]

Costs: Project costs (excl. tax); operational and maintenance costs

Benefits: Reduction in travel times for rail users; reduction in the

number of automobile users

Project life: 30 years

[FIRR]

Costs: Project costs (excl. tax); operational and maintenance costs

Benefits: Fare income; freight shipping income

Project life: 30 years

## **5. Prerequisites / External conditions**

### **(1) Prerequisites**

Procurement of railroad ties, ballasts, and other facilities used on tracks is covered by MR, and they must pay for these without delay.

### **(2) External conditions**

None

## **6. Lessons from similar past projects and how those are applied to this project**

In Phase I as well as YCR, a specific manager has been carried a lot of tasks, which has made the decision-making process very time-consuming in procurement and other procedures. Although setting a Project Management Unit (PMU) was agreed for Phase I (I) and assigning responsible managers to each procurement package in the PMU was proposed for Phase I (II), the PMU does not work well. The failure to include the management division resulted in a low appreciation for the importance of organizational management. As a result, responsible managers were only assigned to some personnel, and no successors were assigned after relevant personnel were transferred elsewhere.

For this project, the general managers of the management division, who is responsible for personnel at MR, shall be assigned as the responsible party (supervisor) for PMU establishment. Supervisor vacancies caused by personnel transfers shall also be avoided by assigning posts rather than individuals. In the interest of long-term personnel development, an urban transportation policy advisor also conducts management training for senior managers at MR (30 to 50 individuals per session).

## **7. Evaluation results**

This project is in line with Myanmar's development issues and Japan's economic cooperation policies. This project also contributes to the construction of resilient infrastructure by improving rail transport capacity and capabilities, and can be considered to contribute to SDGs Goal 9. It is therefore highly necessary for JICA to provide support for the implementation of this project.

## **8. Future evaluation plans**

### **(1) Indicators to be used in future evaluations**

As described in 4. (1) to (3).

### **(2) Future evaluation schedule**

Two years after project completion.