

Ex-Ante Evaluation**Southeast Asia 5 Division****Southeast Asia and Pacific Department, JICA****1. Name of the Project**

Country: The Republic of the Philippines

Project: Metro Manila Subway Project (Phase 1) (I)

Loan Agreement: March 16, 2018

2. Background and Necessity of the Project**(1) Current State and Issues of the Railway Sector in Metro Manila**

Despite its relatively small size (620 square kilometers), the population of Metro Manila surges by 1.8% every year. It has rapidly increased from 7.92 million people in 1990 to 12.87 million in 2015, an increase of around 60%. However, the total length of the three elevated urban railway lines servicing Metro Manila (including two light rails) is merely 50 kilometers, and the construction of a railway system is lagging behind the need, resulting in further traffic congestion. The social and economic loss caused by the traffic congestion is estimated to be approximately 2.4 billion pesos per day, an indication of how the severity of the situation is harming the international competitiveness of the Republic of the Philippines.

In response to these circumstances, JICA supported the formulation of “the Roadmap for Transport Infrastructure Development for Metro Manila and Its Surrounding Areas (Region III & Region IV-A)” (or called “Infrastructure Roadmap”) in 2014, which was approved by the government of the Philippines. The highest priority of the Infrastructure Roadmap is the development of a subway as part of the large-scale public transportation networks in the north-south direction to strengthen connectivity between Metro Manila and the suburbs in the north and south. The President Duterte, who took office June 30, 2016, initiated the “Build, Build, Build” (BBB) Program, which seeks to accelerate infrastructure spending from 2.4% of the nation’s GDP (average spending for the last 50 years) to 5.4% of its GDP during 2017. Given the highest priority in the project, the Metro Manila Subway Project (Phase 1) (I) is going to develop the central part (approximately 25 kilometers in length) of the whole subway system that stretches to about 60 kilometers in total.

(2) Japan and JICA’s Policy and Operations in the Railway Sector

Under the Country Assistance Policy for the Republic of the Philippines (April 2012), “achieving sustainable economic growth by encouraging investment” is

defined as a key target. Specifically, it mentioned about the supports that should be provided to improve urban transport and traffic networks. The JICA Country Analysis Paper for the Philippines (March 2012) analyzes “infrastructure development focused on urban areas” as a key issue and identifies it as critical to mitigating traffic congestion and improving physical distribution in urban areas through developing infrastructure, particularly the public transportation sector. Therefore, the Project is in line with the assistance policies and analysis of the Government of Japan and JICA. Japanese ODA loans have supported the country’s projects for improving its passenger transportation system. Examples include: the LRT Line 1 Capacity Expansion Project (I) (II) (Loan agreement signed in 1994 and 2000); the Metro Manila Strategic Mass Rail Transit Development (Line 2) (I) (II) (III) (Loan agreement signed in 1997, 1998, and 1999); the Capacity Enhancement of Mass Transit Systems in Metro Manila (Loan agreement signed in 2013); and the North-South Commuter Railway Project (Malolos—Tutuban) (Loan agreement signed in 2015).

(3) Other Donor’s Activities

The Asian Development Bank (ADB) defines improvement in the transferability of human and goods by promoting sustainable urban transportation as a key program under its Country Operations Business Plan (2017–2019), and provides aid to implement Public-Private-Partnership (PPP) policies in order to encourage investment in transportation and traffic infrastructure. The World Bank (WB) defines rapid, comprehensive, and sustainable economic development as a key target area under their Country Partnership Strategy (2015–2018), to assist urban transportation system improvements in Metro Manila and Cebu City.

3. Project Components

(1) Project Objectives

The objective of the Project is to accommodate increasing transportation demand by constructing subway line in Metro Manila, thereby contributing to alleviate serious traffic congestion as well as to mitigate air pollution and climate change.

(2) Project Site/Target Area

Metro Manila

(3) Project Overview

- 1) Civil works (25-km main line and railyard including a training center)
- 2) Railway system

- 3) Procurement of 152 train cars
- 4) Consulting services (e.g. bidding assistance, supervision of construction, capacity building for O&M, and support for implementing Transit Oriented Development (TOD))
- 5) Consulting services (capacity building of the executing agency)
- (4) Estimated Project Cost (Loan Amount): 793.526 billion yen (Loan Amount: 573.737 billion yen)
- (5) Project Schedule
February 2018 to September 2027 (116 months in total). The project completion is defined as the commencement of the service of the facilities (other than training center) (scheduled in September 2025).
- (6) Project Implementation Structure
 - 1) Borrower: the Government of the Republic of the Philippines
 - 2) Guarantor: None
 - 3) Executing Agency: Department of Transportation (DOTr)
 - 4) Operation and Maintenance Agency: Before commencement of the service, the operation and maintenance body will be determined in consideration of private sector outsourcing. From the perspective of ensuring appropriate operation and maintenance quality, JICA plans to provide support to create tender documents and evaluation criteria to DOTr through consulting services, in order to ensure the selection of an operation and maintenance body that has no technical or financial problems. Meanwhile, the government of the Philippines plans to establish the Philippine Railway Institute (PRI) to develop personnel specializing in railway operation, and JICA and the Japanese government are considering to provide supports through a scheme such as Yen Loan Projects and Grant Aid. The operation and maintenance body of this Project is expected to receive basic training at the PRI.
- (7) Collaboration and Division of Work with Other Projects and Donors
None in particular
- (8) Environmental and Social Considerations/Poverty Reduction/Social Development
 - 1) Environmental and Social Considerations
 - i. Category: A
 - ii. Reason for Categorization: This project targeted the road sector and areas vulnerable to the features and impacts defined in the JICA

Guidelines for Environmental and Social Considerations (Promulgated in April 2010, "JICA Guidelines").

- iii. Environmental Permit: Environmental Impact Assessment (EIA) report has been submitted and Environmental Compliance Certificate (ECC) for this project has already been acquired from Department of Environment and Natural Resources (DENR) in October 2017.
- iv. Anti-Pollution Measures: In terms of construction waste, a vast amount of soil is expected to be excavated from the tunnels. The soil should be reused if it is qualified for reuse and no contamination is detected by regular concentration testing for heavy metals. If the soil is contaminated with heavy metals, they shall be disposed of in existing disposal sites according to the stipulations of domestic laws and regulations. During construction, measures are to be taken to minimize adverse impacts on noise and vibration level by adopting a shield tunneling method and using soundproof sheets for shaft construction. After the commencement of service, the impact of surface vibrations will be governed by the nighttime regulation standards stipulated by the Tokyo Metropolitan Government.
- v. Natural Environment: The project site is not located in or around sensitive areas such as national parks, and adverse impact on the natural environment is assumed to be minimal.
- vi. Social Environment: The project may cause impact on the structures of 1,123 households (including business owners). Land acquisition and resettlement will begin in accordance with the country's laws and regulations and a Resettlement Action Plan (RAP) that satisfies JICA guidelines. During the resident discussion on the project for resettlement, explanations were given to the participants, including a project overview, compensation, and support details. In response to the opinions presented from business owners and their employees to seek compensation for the drop in income and dismissal of employees, it was decided that income compensation for them during business suspension and dismissed employees would be given.
- vii. Other/Monitoring: During the construction period, the contractor will monitor water and air quality, noise, vibration, waste and the like on

the project site under the supervision of the executing agency (DOTr), based on Environment Management Plan and Environment Monitoring Plan. After the commencement of service, the operation and maintenance body will monitor noise, vibration, etc., under responsibility of the DOTr. The DOTr will monitor land acquisition, resettlement, and the success of income restoration efforts.

2) Cross-Cutting Issues:

i. Climate change measures

This project helps reduce GHG emissions as an alleviating measure for climate change. The expected amount of climate change (GHG gas emission) mitigation through this Project is 242,415 tons of CO₂ per year (2045).

ii. Measures to Prevent Infectious Diseases Including HIV/AIDS

To mitigate the infectious risk of HIV/AIDS during construction, the project will include preventative measures in the bidding documents to urge contractors to provide preventative programs to their labor force.

iii. Participatory development/ Consideration for people with disabilities

The Philippines ratified the Convention on the Rights of Persons with Disabilities (CRPD), and will introduce universal design (elimination of obstacles and barriers to ensure equal accessibility) in accordance with Article 9 "Accessibility". Specific efforts should include the installation of elevators, accessible toilets, and studded paving blocks (to aid the blind) in station buildings, the introduction of accessible train cars, and the elimination of differences in level between platforms and train cars.

3) Gender Categorization: Gender Informed (Significant)

<Activity Content and Reason for Classification>

To ensure that women are able to use the subway system safely and comfortably, the Project will install security cameras and emergency alarms in each train car, while introducing women-only cars.

(9) Other Important Issues

Advanced Japanese technologies are expected to be introduced such as underground tunnel excavation, construction in narrow spaces, safe and highly reliable time signal systems, and light-weight/energy-efficient train cars, and the Special Terms for Economic Partnership (STEP) is adopted.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (2017 actual)	Target (2027) [Two years after project completion]
Volume of Transportation (Person x km)	-	5,129,957
Number of Running trains (Number of running trains as return trips/Day)	-	94
Operation Rate (%)	-	86.5
Running Distance (km/Day)	-	37,750
Running hours for Specific Section (Hours) between Mindanal Ave- Quirino Highway Station and FTI Station (Local with passing)	-	42 minutes 20 seconds
Running hours for Specific Section (Hours) between Mindanal Ave- Quirino Highway Station and FTI Station (Local w/o passing)	-	39 minutes 20 seconds
Running hours for Specific Section (Hours) between Mindanal Ave- Quirino Highway Station and FTI Station (Rapid)	-	31 minutes 30 seconds

Note*: between Mindanao Avenue station and FTI station

2) Qualitative Effects

Transit Oriented Development (TOD) along the subway, mitigation of severe traffic congestion in Metro Manila, and alleviation of air pollution and climate change.

3) Internal Rate of Return (IRR)

Based on the conditions indicated below, the Economic Internal Rate of Return (EIRR) of this project is calculated as 10.3%, while Financial Internal

Rate of Return (FIRR) is 2.9%.

[EIRR]

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

Benefit: saving running costs, shortening travel times

Project Life: 40 years

[FIRR]

Costs: Project cost, operation and maintenance expenses

Benefit: Revenues from fares, advertisement, and income other than railway business

Project Life: 40 years

5. Pre-conditionas and Important Assumptions

- (1) Prerequisites: None in particular
- (2) Important Assumptions: None in particular

6. Lessons Learned from Past Projects

Past ex-post evaluations for projects in the Philippines (e.g. Improvement and Modernization of Commuter Line South Project) indicate the necessity of thorough investigation on the feasibility of possible measures taken by the executing agency and the determination of role-sharing among institutions implementing resettlement, and preparation of the implementation plan with sufficient time to complete the resettlement. This is because reports indicate that projects involving resettlement of squatters are highly likely to require a long time to complete. According to the Ex-post evaluation for India's Delhi Mass Rapid Transport System Project, special measures need to be taken to establish a systematic and effective urban transportation system including other means of transportation, in order to ensure profitability and feasibility through encouraging more use of the transport system.

Since this Project involves the resettlement of 1,123 households (including business owners) in or around the railyard, the land acquisition and resettlement of residents will be performed quickly once the boundary of the land is determined based on the Resettlement Action Plan (RAP) prepared by the DOTr. To ensure a timely determination of the boundary, the parties involved (such as the National Housing Authority (NHA) and Local Government Units (LGUs)) should engage in sufficient collaboration. The Project will ensure more use of the subway and convenience of users through integrated development of railway stations and the surrounding area together with the development of transport

hub facilities involving feeder transportations at stations, while considering convenient transit and connection with other lines.

7. Evaluation Results

This Project aims to take measures for increasing transportation demands through developing a subway in Metro Manila and contributes to the mitigation of severe traffic congestion in the metropolitan area. Therefore, the Project is aligned with the Philippines' development policy and Japan and JICA's country assistance policies. Furthermore, the Project is expected to contribute to Sustainable Development Goals (SDGs) Goal 9 (Build resilient infrastructure), making JICA's support of the Project necessary and relevant.

8. Plan for Future Evaluation

(1) Indicators for Future Evaluation:

Per 4. (1) to (3).

(2) Timing of Next Evaluation

Two years after project completion

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