

Japanese ODA Loan

Ex-Ante Evaluation (for Japanese ODA Loan)

Southeast Asia Division 5, Southeast Asia and Pacific Department Japan International Cooperation Agency

1. Name of the Project

- (1) Country: The Republic of the Philippines (the Philippines)
 - (2) Project: North-South Commuter Railway Extension Project (II)
 - (3) Project Site/Target Area: Metro Manila, Province of Laguna, Bulacan, and Pampanga (population: approx. 23.01 million)
- Loan Agreement: February 9, 2023

2. Background and Necessity of the Project

(1) Current State and Issues of the Railway Sector in Metro Manila and its Suburbs

Metro Manila is a relatively small urban area of 620 km², however, its population is growing at a rate of 1.6% per year, from approx. 9.93 million in 2000 to 13.48 million, representing a 1.4-fold increase in 2020. In the region including the provinces of Laguna, Bulacan, and Pampanga, which are close to Metro Manila, the population has increased rapidly from approx. 16.01 million to 23.01 million in the 20 years since 2000, and the amount of traffic entering Metro Manila has also increased. Despite the overcrowded population, the development of rail-based public transportation as a means of mass transportation is lagging behind, which is represented by the situation that the three main urban railroads (two of which are for Light Rail Transit (LRT)) in the metropolitan area are only 50 km in total length, so Metro Manila and its suburbs have serious traffic congestion. The economic loss due to traffic congestion is estimated at 2.5 billion pesos (approximately 5.7 billion yen) per day ("Follow-up Survey on Roadmap for Transport Infrastructure Development for Greater Capital Region (GCR)" (2019)), which means that traffic congestion is one of the bottlenecks for smooth logistics and mobility, thus reducing the country's international competitiveness.

Solving traffic congestion and promoting sustainable suburban development in Metro Manila is an urgent issue for the quality growth of the metropolitan area and its suburbs. However, in the southern part of the metropolitan area, there are only a few commuter lines operated as non-electrified lines with a small number of services on the section between Tutuban, Manila and Mamatid, Cabuyao. In the northern part of the metropolitan area, there is no rail-based public transportation. Therefore, residents in the area are forced to commute by bus or car in congested traffic where automobile traffic speeds are limited to less than 20 km/hour throughout the day. In addition, a new terminal at the Clark

International Airport will come into operation soon to mitigate congestion at the Manila International Airport. Furthermore, a redevelopment project of New Clark City (hereinafter referred to as "NCC") is underway using a former US military site. These plans are expected to further increase the demand for commuting and rapid travel between Metro Manila and NCC in the future.

In the "Roadmap for Transport Infrastructure Development for Metro Manila and its Surrounding Areas (Region III & Region IV-A)" (2014), which was created with the support of JICA and approved by the government of the Republic of the Philippines in response to this situation, a proposal was made to strengthen the public transportation network connecting the center of the metropolitan area with the suburbs through the development of a large-scale public transportation system that would serve as a north-south axis for Metro Manila, and to encourage planned urban expansion along this north-south axis and a shift to public transportation in order to eliminate overcrowding and traffic congestion in the center of Metro Manila. The Philippine government is proceeding with public transportation development based on this roadmap. This is expected to increase investment, accelerate economic growth through industrial expansion, mitigate health problems caused by air pollution, noise, etc., and improve people's quality of life by reducing commuting time. The "North-South Commuter Railway Extension Project" (hereinafter referred to as "the Project") is positioned as one of these initiatives. The current Philippine administration, which took office on June 30, 2022, inherited the previous administration's infrastructure development policy "Build, Build, Build" and announced that it would promote "Build, Better, More" to further promote infrastructure investment. The strengthening of the rail network in Metro Manila, including this Project, is ranked as one of the top priorities of the current administration, following up on the previous administration and is consistent with the policies of the Philippine government.

(2) Japan's and JICA's Cooperation Policy and Operations in the Railway Sector in Metro Manila and its suburbs (especially in relation to major foreign policies such as the Free and Open Indo-Pacific (FOIP))

Japan's Country Development Cooperation Policy for the Republic of the Philippines (April 2018) sets "Strengthening a Foundation for Sustainable Economic Growth" as a priority area and states that Japan will provide support for high quality infrastructure development including transportation networks mainly in the major metropolitan areas and regional cities. "Republic of the Philippines JICA Country Analysis Paper" (July 2020) states that Japan will develop the necessary socioeconomic infrastructure in the urban areas of the Philippines as a direction of future support so that, in the Philippines that shares basic values such as democracy, the rule of law, and a market economy, the middle class that benefits from these values will improve in both quality and quantity. It also states that given the fact that the Philippine government has placed "Build, Build, Build" and "Build, Better, More" policy as a

catalyst for economic recovery from the economic downturn caused by the spread of the new coronavirus infection (hereinafter called as "COVID-19"), Japan will continue to cooperate with efforts related to high-quality infrastructure investment in response to the above. The Project is consistent with these policies. In addition, it is considered that the Project will contribute to SDGs Goal 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), 11 (Make cities and human settlements inclusive, safe, resilient and sustainable), and 13 (Take urgent action to combat climate change and its impacts).

Japan has been supporting the development of a track-based transportation network in Metro Manila through development of masterplans, ODA yen loans, and technical cooperation. With regards to the masterplans, Japan has been supporting the actual transportation survey and urban transportation planning through the "Roadmap for Transport Infrastructure Development for Metro Manila and its Surrounding Areas (Region III & Region IV-A) in the Republic of the Philippines" (2014) and the "Follow-up Survey on Roadmap for Transport Infrastructure Development for Greater Capital Region (GCR)" (2019), which revised the infrastructure roadmap of 2014. As ODA loan projects, Japan has implemented the "Capacity Enhancement of Mass Transit Systems in Metro Manila" (2013), the "Metro Rail Transit Line 3 Rehabilitation Project" (2018), the "North-South Commuter Railway Project (Malolos-Tutuban)" (2015), and the "Metro Manila Subway Project (Phase 1) (I) (II)" (2018 and 2021), in addition to past projects aimed at easing traffic congestion in Metro Manila. As for technical cooperation, Japan has been dispatching experts to the Department of Transportation (hereinafter referred to as "DOTr") of the Philippines for many years, and has also been supporting the Philippines in developing human resources in the railway field by way of the " Technical Assistance Project to Establish of the Philippine Railway Institute (hereinafter referred to as "PRI") "

(3) Other Donors' Activities

The Asian Development Bank (hereinafter referred to as ADB), in its Country Operations Business Plan (2021-2023), focusing on accelerating infrastructure projects that bring economic synergies and long-term growth, has been co-financing with JICA in the Project. The ADB has also been providing procurement assistance to private operators for the operation and maintenance of the Metro Manila Subway Project and the North-South Commuter Railway Project through the Transaction Advisory Service for the Public Sector of the ADB's Office of Public-Private Partnership. It has also granted a technical assistance loan "Infrastructure Preparation and Innovation Facility" (L/A signed in November 2017), for the purpose of bidding assistance in the civil works package for the Project it is financing.

3. Project Description

(1) Project Description

① Project Objective

The objective of the Project is to enhance urban transport connectivity for Metro Manila and ease traffic congestion there and in its surrounding areas by extending the North-South Commuter Railway (Malolos-Tutuban) in Metro Manila southward to Calumba, Laguna Province and northward to the Clark International Airport, Pampanga Province, thereby contributing to expanding the economic sphere of Metro Manila, improving its investment environment, and easing local air pollution and climate change.

② Project Components

Loans will be provided by JICA for items 2), 3), and 4), and by the ADB for item 1), among the following.

- (a) Civil works (main line (approx. 113 km) and two depot
- (b) Railway system and track construction
- (c) Rolling stocks (304 commuter train cars and 56 express train cars for a total of 360 train cars)
- (d) Consulting services (reviews and finalization of detailed design, bidding assistance, construction supervision, and assistance for environmental and social friendliness and railway operation, maintenance, and management)

(2) Estimated Project Cost

1,632,801 million Yen (of which the present loan amount is 270,000 million Yen)

(3) Schedule:

From January 2019 to April 2030 (135 months in total). The commencement of the facility operation is considered as the completion of the Project (April 2028).

(4) Project Implementation Structure

- ① Borrower: Government of the Republic of the Philippines
- ② Guarantor: None
- ③ Executing Agency: Department of Transportation (DOTr)
- ④ Operation and Maintenance System: To be determined through a tender process since the DOTr assumes that the operation, maintenance, and management duties will be contracted out to private-sector entities

(5) Collaboration and Sharing of Roles with Other Donors

① Japan's Activity

In the North-South Commuter Railway Project (Malolos-Tutuban) (the "Malolos-Tutuban Project"), construction work is now underway on the route connecting Malolos City, Bulacan Province, a near-suburb area lying north of Metro Manila to Tutuban situated in central Metro Manila (approx. 37.7 km in length). This project is intended to extend the route southward and northward. The Project for Assisting Establishment and Operating Skill Enhancement of the PRI is now ongoing as an ODA yen loan-related project for the Malolos-Tutuban Project. The

PRI is now assisting in the project and will ensure that the railway staff engaged in the project gain improved skills.

② Other Donors' Activity

For the Project, JICA will provide co-financing with the ADB, which will offer a loan for a package involving civil engineering work (mainline and depot).

(6) Environmental and Social Consideration

① Environmental and Social Consideration

(a) Category: A

(b) Reason for Categorization: The Project involves a Railway Sector that is specified in the JICA Guidelines for Environmental and Social Considerations, released in April 2010, (the "JICA Guidelines") and that has an influential characteristic that will likely affect these considerations (large-scale involuntary resident relocation).

(c) Environmental Permit: As regards the environmental impact statement (EIS) for the Project, an Environmental Permit (ECC) was obtained from the Department of Environment and Natural Resources (DENR) in August 2018. As for the subway connection route to be transferred from the Project (the route between the Senat Station South, FTI Station, and the Bicutan Station), a revised EIA was put together in September 2019 in the project set forth on the left and an ECC was obtained in November the same year. It has been verified that no ECC was required to be obtained additionally owing to the transfer of the route under the laws of the Philippines.

(d) Anti-Pollution Measures: Although effects such as air pollution, noise, and vibration will likely occur while the work project is underway, these effects are expected to be minimized through mitigation measures such as: i) spraying water periodically; ii) imposing speed limits on vehicles carrying work residual soil; iii) attaching mufflers and silencers to construction machines; iv) installing soundproof walls; and v) using low-vibration construction machines. While the train service is in operation, effects such as noise, vibration, and water quality issues will likely occur, these effects are expected to be minimized by taking mitigation measures such as: i) installing soundproof walls; ii) laying long rails; iii) placing wastewater treatment facilities at depot and sanitation equipment at the station.

(e) Natural Environment: Since the areas targeted by the Project are neither ones prone to be affected by national parks, etc., nor nearby ones, any undesirable impacts on the natural environment will likely be minimal. Although the north extension route will partly pass through Manila Bay zones designated as Important Bird Areas and/or Key Biodiversity Areas, the areas targeted by the Project do not fall under significant natural habitats since existing Philippine National Railways routes will be used as planned project sites and no endangered species have been

found in nearby baseline examination spots.

- (f) Social Environment: The Project is assumed to involve an acquisition of land approx. 4,758,698 m² in size and affect 19,671 households (75,444 people) and 605 business operators. The resident relocation and land acquisition procedures will therefore be implemented in accordance with a resident relocation plan meeting the applicable domestic procedures of the Philippines and the JICA Guidelines.
- (g) Others/Monitoring: While work is underway in this Project, contractors will monitor air quality, noise, and vibration, etc. at the responsibility of the execution agency (the DOTr). When the train service is in operation, the operation, maintenance, and management entity will monitor noise, vibration, and water quality, etc. at the responsibility of the DOTr. It will monitor the state of land acquisitions and resident relocations that are implemented as well as the status of livelihood recovery on the part of residents.

(7) Cross-Sectoral Issues

- ① Climate Change Countermeasures: The Project will contribute to reducing greenhouse gas (GHG) emissions as a measure to mitigate climate change. Climate change mitigation effects from the Project and the Malolos-Tutuban Project (approximate GHG emission reduction volume) will be approx. 685,477 tons a year on a CO₂ translation basis (2035).
- ② Measures against AIDS/HIV and Other Infectious Diseases: As a control measure against infectious diseases such as AIDS, the tender documents for the Project will contain AIDS provisions. During the work period, work contractors will enforce control measures against infectious diseases such as AIDS for workers. In response to the spread of COVID-19 infections, the DOTr laid down and strictly enforced, as counter-infection guidelines, measures to: i) ensure that work site staff are subjected to a temperature check and do hand washing and gargling; ii) acquire offices to be operated without having any of “3 Cs” (closed spaces, crowded places, and close-contact settings); iii) limit shared use of personal belongings; iv) disinfect workplaces; and v) arrange for self-quarantine when a potential case of infection is detected. In its detailed design statement, JICA proposed installing toilets in a number as used for the railway lines in Japan and using train cars capable of ventilating air as well as those of Japanese railway lines, which is designed to counter infectious diseases such as COVID-19. In the aforementioned technical assistance project for the PRI, JICA is now additionally holding counter-infectious disease training courses online as part of its safety measures for employees and passengers. In addition, in response to concerns of contractors and consultants, the DOTr is now in the process of compiling guidelines on handling a work period

extension and additional costs stemming from the infectious disease in projects run by the ministry.

- ③ Disability Consideration: To provide a universal design, the executing agency will introduce elevators at train station buildings, install toilets for persons with disabilities as well as braille blocks, adopt barrier-free train cars, and shift to barrier-free features for providing level platform access to train cars.

(8) Gender Category

[Gender cases] GI (S) Gender Informed (Significant)

<Details of Activities/Reason for Categorization >

In this Project, security cameras and emergency reporting equipment will be installed on female-only train cars and other types of train cars so that females can use the train services safely and comfortably.

(9) Other Important Issues

The advanced expertise of Japan (signal systems that are high in safety and punctuality and train cars that are light in weight and superior in energy-saving effect) will be used for the train systems and train cars.

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline Actual value in 2017)	Target (2030) [2 years after the Project completion]
Number of train services (No. of trains/day)	-	305
Running distance (km/day)	-	37,292
Operation rate (%)	-	87
Volume of transportation (1,000 persons x km)	-	29,450
Time required (between Calamba and Clark International Airport) (minutes)	240 (*1)	111.75 (*2)

*1 The journey between Calamba and Manila by existing commuter rail line and the journey between Manila and the Clark International Airport by car

*2 When the express train service is used

(2) Qualitative Effects

Enhancing the connectivity of the urban transportation network in Metro Manila and its suburbs, improving air pollution, mitigating climate change, expanding the economic sphere of Metro Manila, and improving the investment environment as a result.

(3) Internal Rate of Return

If the Project and the Malolos-Tutuban Project are regarded as one single undertaking under the following preconditions, then the economic internal rate of return (EIRR) will

be 12.20% and the financial internal rate of return (FIRR) will be 0.85%.

[EIRR]

Costs: Project costs, operation, maintenance, and management expenses (excluding taxes)

Benefits: Reduced vehicle running costs, shortened travel time, and lower greenhouse gas emissions, etc.

Project Life: 40 years

[FIRR]

Costs: Project costs, operation, maintenance, and management expenses

Benefits: Fare revenues

Project Life: 40 years

5. External Factors and Risk Control

- (1) Preconditions: Site acquisition and excavation relocation as scheduled
- (2) External Factors: Put the connection route into operation as scheduled. Terminate COVID-19 infections.

6. Lessons Learned from Past Projects

An ex-post evaluation of the “Delhi High-Speed Transport System Construction Project” in India states that it is necessary to take measures to build systematic and efficient urban transport services in conjunction with other transport services to step up the utilization rate and thereby earn increased revenues and secure business viability. For this reason, the Project will pay attention to appropriate transfers to and from other railway lines and adequate connections to them as well as promote the use of railway services and secure passenger convenience by developing transport connection facilities to and from feeder transport sites around each train station.

7. Evaluation Results

The Project is aligned with the development policies of the Philippines as well as Japan's and JICA's cooperation policies and analysis given that the Project will: i) develop a railway line connecting nearby-suburb areas on the north-south axis in Metro Manila, thereby enhancing the connectivity of urban transport in Metro Manila and its Suburbs and easing traffic congestion in both of them; and ii) contribute to expanding the economic sphere of Metro Manila, improving the local investment environment, and mitigating air pollution and climate change there. It is highly necessary to assist in implementing the Project since it is regarded as contributing to achieving SDGs Goal 9 (Build resilient infrastructure), Goal 11 (Make cities and human settlements inclusive, safe, resilient, and sustainable), and Goal 13 (Take urgent action to combat climate change and its impacts).

8. Plan for Future Evaluation

(1) Indicators to be Used

As indicated in 4.

(2) Future Evaluation Schedule

Ex-post evaluation: 2 years after the project completion

End

Attachment: Map of the North-South Commuter Railway Extension Project (II)

Map of the North-South Commuter Railway Extension Project (II)

Railway Alignment Map

Alignment Map

November 15, 2021

