

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The Republic of the Philippines

Project: North – South Commuter Railway Project (Malolos - Tutuban)

Loan Agreement: November 27 2015

Loan Amount: 241,991 million yen

Borrower: The Government of the Philippines

2. Background and Necessity of the Project

(1) Current State and Issues on Development of the Railway Sector in Metro Manila and Mega Manila

Being the largest economic center in the Philippines with a concentration of 13 percent of the country's population and 36 percent of the GDP, Metro Manila has grown from 7.92 million people in 1990 to 11.85 million people in 2010, reaching a population density of 191.3 people per square hectare. In Mega Manila - the region encompassing Metro Manila along with neighboring three Provinces - the population has also increased rapidly over that period, rising from 12.93 million people in 1990 to 23.02 million people in 2010, a growth rate has been increasing in accordance with that of Metro Manila.

The improvement of circumferential and radial roads and highways in Metro Manila that was proposed in the "The Study on Metro Manila Urban Transport Integration in the Republic of Philippines" in 1972 supported by JICA has shown a steady progress. However, the development of effective railway transportation still lags behind in general. Operation area of three Light railway transit remained in Metro Manila with their total length of only 50 kilometers. One non-electrified commuter line with a low service frequency that is operated by the Philippine National Railways (hereinafter referred to as "PNR") is running about 28 kilometers from Tutuban in the City of Manila to Alabang in the City of Muntinlupa in Metro Manila southward, while railway in Metro Manila northward has not been developed. Moreover, the area from the central Metro Manila to Malolos in northward has grown its residential population without securing sufficient public transportation system. Residents of the area use highways, etc. by bus, jeepney, car and other transportation means for commuting to the central Metro Manila. However, due to traffic congestion on the way from around the City of Caloocan, the highway exit, to the center of Metro Manila, running speed of these vehicles has been limited to less than 30 km/hour all day which has caused a serious problem in commuting.

As a result, the traffic congestion in Metro Manila worsens, hinders smooth freight transportation and people's traveling, costing an estimated 2.4 trillion yen per year in social expenses thereby, and becomes factor that lower the international competitiveness of the Philippine economy. Therefore, to secure a large scale public transportation which

connects northern and southern area of Mega Manila including Metro Manila has become an urgent issue.

(2) Development Policies for the Railway Sector in Metro Manila and Mega Manila and the Priority of the Project

Based on its urban development plan and transportation network improvement plan (the target year of both plans: 2015) formulated in the “The Study on Metro Manila Urban Transport Integration in the Republic of Philippines” (199 to 1999), the development study implemented by JICA, the Government of the Philippines has improved the interchanges, etc. on Circumferential Road-4 and -5. In addition, the improvement of a large-scale public transportation network which connects the surrounding areas in Metro Manila northward and southward is recognized as one of the most prioritized issues and this Project in particular and placed as a priority project in the “Roadmap for transport infrastructure development for Metro Manila and its surrounding areas” in 2014 (hereinafter referred to as “Roadmap”).

(3) Japan and JICA’s Policy and Operations in the Railway Sector in Metro Manila and Mega Manila

In JICA Country Analytical Paper for the Republic of the Philippines (March 2012), “Infrastructure development centered on the Greater Capital Region” is analyzed as a priority issue to focus on and the necessity to reduce traffic congestion and improve logistics in Greater Capital Region and other areas through expansion of the public transportation and other infrastructure development is recognized. Moreover, “Achieving Sustainable Economic Growth through Further Promotion of Investment” is set as one of the priority areas in Country Assistance Policy for the Republic of the Philippines (April 2012), specifically providing assistance centered on the improvement of traffic and transportation network of the Greater Capital Region. Thus, this Project is consistent with the analysis and policy. In addition, at the Japan-Philippines summit meeting in June 2015, this Project was recognized as having a symbolic implication to both governments based on the Roadmap. To date, Japan has implemented the following ODA Loan projects: “The Study on Metro Manila Urban Transport Integration in the Republic of Philippines” (1999) for the development of truck traffic network in Metro Manila; “Metro Manila LRT Line 1 Capacity Expansion Project (I) and (II)” (1994, 2000), “Metro Manila Strategic Mass Rail Transit Development Project (I), (II), and (III)” (1997, 1998, and 1999), “Capacity Enhancement of Mass Transit Systems in Metro Manila Project” (2013), etc.

(4) Other Donor’s Activity

Asian Development Bank (ADB) recognizes the need to improve the movements of goods and people by promoting sustainable urban transport as one of its major programs in its Country Partnership Strategy (2011-2016). Specifically, it has provided assistance for the improvement of road maintenance and management capacity, the implementation of PPP to boost-up investment in transportation and traffic infrastructures, etc. The World Bank recognizes the need to extend assistance to improve urban traffic in Manila and

Cebu as “rapid, inclusive and sustained economic growth,” one of its engagement areas, in the Country Partnership Strategy (2015 to 2018), and prioritizes assistance for private-sector-oriented development as its strategy for East Asia and Pacific region including the Philippines, in particular. The International Finance Corporation provided its bidding assistance for concession of civil work and railway system to business operators for extension project of LRT Line 1, which is a relevant project of the “Capacity Enhancement of Mass Transit Systems in Metro Manila Project” (2013).

(5) Necessity of the Project

The Project will construct a commuter line interval, running from Malolos, the capital city of Bulacan Province which is north of Metro Manila, to Tutuban in the City of Manila, thereby enhancing the connectivity of the transportation network and alleviating the serious traffic congestion in Metro Manila, with the objectives of expanding the economic sphere of Metro Manila and reducing air pollution. The Project is consistent with the development policy of the Philippines, the assistance policy of Japan and JICA, etc., as it will address issues on the improvement of investment climate in the country. Special Terms for Economic Partnership (STEP) will be applied to this Project. Therefore, it is highly necessary and relevant for JICA to support this Project.

3. Project Description

(1) Project Objective

The objective of the Project is to expand the economic sphere of Metro Manila and reduce air pollution by constructing a commuter line interval, running from Malolos, the capital city of Bulacan Province at the north of Metro Manila to Tutuban in the City of Manila, thereby enhancing the connectivity of the transportation network and alleviating the serious traffic congestion in Metro Manila.

(2) Project Site/Target Area

Metro Manila and Province of Bulacan

(3) Project Components

- 1) Civil and building works for banking and elevated parts (approximately 38 km including tracks and stations)
- 2) Improvement of Depot
- 3) Railway system improvement (electricity, machine, signal, communication)
- 4) Rolling stocks procurement (104 cars)
- 5) Consulting services (review of detailed design (D/D), bidding assistance, construction supervision, response to warranty period, support for coordination with relevant projects)

(4) Total project cost

287,929 million yen (of which, for loan amount: 241,991 million yen)

(5) Project Implementation Schedule

November 2015 to November 2021 (73 months in total). Project completion is defined as when the facility operation is commenced.

(6) Project Implementation Structure

- 1) Borrower: Government of the Philippines
- 2) Guarantor: none
- 3) Project Executing Agency: Department of Transportation and Communications (DOTC)
- 4) Operation and Maintenance System: The operation and maintenance body will be determined before the commencement of service, taking into consideration concession to the private sector. To assure that quality of operation and maintenance is properly secured, support for strengthening evaluation and monitoring capacity of DOTC will be provided through consulting services.

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

1) Environmental and Social Consideration

- ① Category: A
- ② Reason for Categorization: : This project is classified as Category A because it has characteristics that are likely to exert the railway sector and has social impact under the “JICA Guidelines for Environmental and Social Considerations” (published in April 2010) (hereinafter the “JICA Guidelines”).
- ③ Environmental Permit: The Environmental Performance Report and Management Plan (EPRMP) of this Project was prepared by the Executing Agency (DOTC) and approved by the Department of Environment and Natural Resources (DENR) on April 28, 2015. The Environmental Compliance Certificate (ECC) was also issued by DENR on the same date.
- ④ Anti-Pollution Measures: Impact of air pollution during the construction is reduced by sprinkling water regularly and installing temporary fence at the construction site. Measures for noise pollution will be taken by equipping muffler and silencer with construction machines, installing noise barrier, etc. while for vibration, impact is reduced by adopting a construction machine of low-vibration-type, a method requires less vibration, etc. During the commencement of services, noise will be reduced by installing noise barrier while vibration will be reduced by constructing long rail, installing rail dumper, etc. Measures for water pollution in surrounding environment will be taken by installing wastewater treatment equipment in depot and hygiene equipment in station building. Furthermore, contractor (during construction period) and DOTC and local government units (LGUs) (after the commencement) will implement a traffic management plan during and after the construction prepared by DOTC to reduce traffic congestion.
- ⑤ Natural Environment: Since the Project is not located in or around sensitive areas such as national parks, its adverse impact on the natural environment is assumed to be minimal.

- ⑥ Social Environment: The total number of affected households in this Project is 1,160 (2,045 residents), of which 300 households (1,185 residents) require resettlement. The area required for land acquisition is about 16.1ha. The procedures of the resettlement and land acquisition are taken in line with the Philippine laws and regulations and Resettlement Action Plan (RAP) which is prepared based on the JICA Guidelines. At a stakeholders' meeting held during the RAP preparation, explanation and consultation was made on the Project description, compensation and contents of support of resettlement process, relocation place, etc. From the consultation, there are no specific adverse opinion observed against the implementation of this Project. Support of resettlement process is provided by the National Housing Authority (NHA) and LGUs under the responsibility of DOTC.
- ⑦ Other/Monitoring: Based on the environmental management plan and environmental monitoring plan, contractor implements monitoring of air, noise, vibration, etc. of the project site under the supervision of DOTC during the construction period. Operation and maintenance body which will be determined prior to the commencement of services will implement monitoring of noise and vibration from railway, wastewater, etc. from depot and station building under the supervision of DOTC. The implementation status of land acquisition and resettlement and the state of affected residents' livelihood recovery are monitored by Internal Monitoring Agent formed in PMO which is established under DOTC.

2) Promotion of Poverty Reduction: Amid those residents required for relocation, many of those are illegally residing households in the densely Right of the Way (ROW), obtained by the Northrail Project or a narrow area close to the existing ROW owned by PNR with vulnerable houses. Those illegal residents will be relocated to residence in an area where basic infrastructures are improved by NHA before the implementation of this Project. They will be offered preferential hiring for the construction work in this Project, capacity development program including vocational training, etc., support for microfinance, and livelihood recovery program, including additional payment of compensation equivalent to 15,000 pesos so that their living standards may be upgraded.

3) Promotion of Social Development: In Resettlement Action Plan, those relocating female-headed households will be paid higher compensation than other relocating households. Moreover, at least one carriage in each railway will be equipped with a women-only section and toilet will be separated by gender in each station. Taking handicapped users into consideration, escalator, elevator, slope for wheelchair, a wide-type ticket gate, and guidance block and display of each facility for visually impaired person will be installed.

(8) Collaboration with Other Donors: none

(9) Other Important Issues: Special Terms for Economic Partnership (STEP) will be applied to this Project as Japanese technologies of seismic design method, construction in narrow part, anti-corrosion steel for truss bridge construction, high safe and punctual traffic signal system, and light and high energy-saving effect railway vehicle are utilized.

4. Targeted Outcomes

(1) Quantitative effect

1) Operation and Effect Indicator

Indicator	Baseline (Actual Value in 2015)	Target (2023 [2 years after project completion])
Passenger transportation volume (person · km) *1	—	4,913,000
The number of services (No. of train/day) *1	—	142
Rate of operation (%)	—	82.4
Car-kilometer (km)	—	85,236
Time required (Malolos - Tutuban)	85 min. (travel using road traffic*2)	35 min. 20 sec.

*1: Premising that highway project which will be improved nearby the Project site is completed, and North-South Railway Project (southern section) and a project for extending LRT Line 2 towards the western side are built prior to completion

*2: The shortest travel time using private vehicle.

2) Internal Rate of Return

Based on the conditions indicated below, the economic internal rate of return (EIRR) of the Project is 17.4% and the financial internal rate of return (FIRR) is 10.0%.

【EIRR】

Cost: Project cost (tax excluded), operation and maintenance cost

Benefit: Vehicle operation cost saving, time saving

Project Life: 35 years (after the commencement of services)

【FIRR】

Cost: Project cost, operation and maintenance cost

Benefit: Income from fees, etc.

Project Life: 35 years (after the commencement of services)

(2) Qualitative effect: Strengthening connectivity of urban traffic between Metro Manila and the northern suburbs, improving air pollution, mitigating climate change, expanding economic zone of Metro Manila, and Improvement of investment climate in Metro Manila as a result.

5. External Factors and Risk Control

(1) Coordination with relevant projects

1) Coordination with highway project in the section driving in parallel

DPWH plans to construct highway as a PPP project nearby some sections in this Project. Therefore, proper coordination with DPWH and a private business operator which will be the implementing body of the PPP project is necessary at both design and construction stages.

2) Connection to North-South Railway Project (NSRP) (southern section)

The Government of the Philippines plans to improve the section about 650 km starting from Metro Manila directing to southern part of Luzon Island by NSRP under PPP scheme, which the NEDA Board has been approved together with this project. The NSRP is planned to improve existing tracks of PNR by repairing them and ADB is appointed as a transaction advisor. As the NSRP is planned to connect their railway to the track of this Project at Tutuban, it is necessary to have a close coordination with DOTC, ADB as the transaction advisor, and PPP concessionaires to be selected regarding design and construction of station facility, railway system, etc. of both projects in Tutuban.

(2) Financial soundness with proper fee setting

There are some cases in the past railway projects in the Philippines, where fare is excessively low due to political considerations which made it difficult to secure financial soundness of an operation and maintenance body. Thereby operation and maintenance expenses are not sufficiently allocated. In this Project, it is necessary to monitor examination progress of DOTC and the actual operating and maintenance body to ensure that fee is set in a level that enables to maintain suitable rate of return as well as to ensure proper budget allocation in case sufficient income from the fee is not secured.

6. Lessons Learned from Findings of Similar Projects Undertaken in the Past

Ex-post evaluation of the “Project for Revitalization of Mainline South” points out that relocation of illegal residents is expected to require time for its implementation so that it is necessary to adequately check the feasibility of response to be made by executing agency and the role of organizations related to relocation, as well as preparation of implementation plan adequately incorporating period required for the response. Since about 200 illegally residing households will be relocated in this Project, it is necessary to secure adequate collaboration with NHA, LGUs and other related organizations based on RAP prepared by DOTC and ensure a prompt resettlement after the completion of the detailed design. Moreover, in the project which PNR is the project executing body, maintenance and repair are not properly carried out due to insufficient allocation of budget required because of deteriorated financial situation as well as lack of technical capacity. Given such circumstances, PNR is not assumed to be selected as operation and maintenance body in

this Project, while it is necessary to secure proper project management structure through providing support for strengthening capacity for setting a proper fee level, efficient project management, and maintenance and repair.

Ex-post evaluations of “Metro Manila LRT Line 1 Capacity Expansion Project (I) and (II)” (1994, 2000) and “Metro Manila Strategic Mass Rail Transit Development Project (I), (II), and (III)” (1997, 1998, and 1999) pointed out that many of railway vehicles owned have become the status of operation failure since repair was not carried out immediately at the time of vehicle failure because spare parts were not available. Thus, the necessity to clarify the way to procure spare parts and, where procurement/arrangement is judged to be difficult, to include in the contract the purchase of sufficient amount of spare parts when procuring the railway vehicle at the stage of project planning is suggested in the ex-post evaluation of “Metro Manila Strategic Mass Rail Transit Development (I), (II), and (III)” (1997, 1998, and 1999). Therefore, this Project includes expenses for purchasing the necessary amount of spare parts at the time of the commencement of services.

Meanwhile, ex-post evaluation of “Delhi Mass Rapid Transport System Project,” etc. points out the necessity of measures for establishing systematic and efficient urban transportation together with other traffic organizations in order to increase the utilization ratio and thereby increase rate of return and secure feasibility. This project aims to improve an integrated urban traffic network with other traffic mode by realizing connection to other line at Tutuban station through an extension project of LRT Line 2 to the western side from Recto station, the present terminal station, to Tutuban station as well as improving facility at each station connecting to feeder traffic.

Furthermore, some other projects in the transportation sector in the Philippines apply under STEP have been proposing rapid construction, etc. to reduce congestions, etc. Based on the fact that those projects faced with a problem of quality management at the construction stage,, it is necessary to ensure: a) strict checking of implementation structure including joint venture (JV) and track records of companies at a bidding stage; and b) reporting to JICA from contractors and consultants at the construction supervision stage as well as early consultation and response system when a problem occurs.

7. Plan for Future Evaluation

(1) Indicators for Future Evaluation

- 1) Passenger transportation volume (person · km)
- 2) The number of services (No. of train/day)
- 3) Rate of operation (%)
- 4) Car-kilometer (km)
- 5) Time required (Malolos - Tutuban)
- 6) Economic internal rate of return (EIRR)

(2) Timing of Next Evaluation: 2 years after project completion